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INTRODUCTION

THIS *sixth Britannica Book of the Year appears in the 175th anniversary year of the Encyclopædia Britannica. It is not a happy year. It is one in which the enemy is a force sufficiently powerful to threaten the privileges of democracy. From the beginning, the Encyclopædia Britannica has reflected the anxiety of peoples to have a reasonably happy time living. Encyclopædia Britannica has, since 1768, pointed the advantages of an enlightened public—a people aware of what is going on about them—a people privileged to know what is going on about them.*

In no dictator-controlled country could the Book of the Year be published. This obvious fact should have a significance for those who own or read this volume. Here is news of 1942—censored only where the fact might help the enemy, but recording without governmental restraint, the defeats and achievements of the year. It is a compilation which the Hitlers of the world could not permit. The fact that this volume can be published in a generation shocked by the harsh coercion of dictators is rich promise of final release from the madness that grips the world.

The year 1942 reveals death and destruction on a scale hitherto undreamed of. But since the essential facts of the year can be recorded without evasion, somewhere, anywhere in the world, there is guarantee that an enlightened public—which never tolerates dictatorships—means to survive this ordeal. Without such an enlightened public democracies must perish.

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R.Ra.	**ROBERT RAE.** Professor of Agriculture, University of Reading, England.	**Agriculture** *(in part)*
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R.R.W.	**RUSSELL R. WAESCHE.** Vice Admiral; Commandant, U. S. Coast Guard.	**Coast Guard, U. S.**
R.St.	**REGINALD STAMP.** Member of the London County Council; Editorial staff, *Town and County Councillor;* Vice-Chairman L.C.C. Parliamentary Committee, 1940–42.	**London**
R.Wg.	**ROANE WARING.** National Commander, The American Legion.	**American Legion**
S.An.	**SIRI ANDREWS, B.A.** Assistant Professor, School of Librarianship, University of Washington, Seattle, Washington.	**Children's Books**
S.A.W.	**SARA A. WHITEHURST (Mrs. John L. Whitehurst).** President, General Federation of Women's Clubs.	**Women's Clubs, General Federation of**
S.B.F.	**SIDNEY B. FAY, Ph.D., Litt.D., L.H.D.** Professor of History, Harvard Univ. and Radcliffe College, Cambridge, Mass.	**Germany, etc.**
S.B.Wi.	**S. B. WILLIAMS, Litt.B., E.E.** Editor, *Electrical World.*	**Electrical Industries**
S.C.Ha.	**SIDNEY CHANDLER HAYWARD, B.S., M.A.** Secretary of Dartmouth College, Hanover, N. H.	**Dartmouth College**
S.D.McC.	**S. D. McCOMB.** Manager, Marine Office of America, New York.	**Insurance** *(in part)*
S.J.Bu.	**SOLON JUSTUS BUCK, Ph.D.** Archivist of the United States. Author of *The Granger Movement*; etc.	**Archives, National**
S.J.McK.	**S. JUSTUS McKINLEY, Ph.D.** Professor of Social Sciences, Emerson College, Boston, Mass.	**Boston**
S.J.W.	**SIDNEY JOHN WORSLEY, D.S.O., M.C., T.D.** Fellow of King's College. Academic Registrar, University of London, since 1930, and Acting Principal, 1936–37.	**London University**
S.Lea.	**STEPHEN LEACOCK, B.A., Ph.D., Litt.D., LL.D., D.C.L.** Professor Emeritus, McGill University, Montreal.	**Canada** *(in part)*
S.McC.C.	**SAMUEL McCREA CAVERT, D.D.** General Secretary, The Federal Council of the Churches of Christ in America.	**Federal Council of the Churches of Christ**
S.McC.L.	**SAMUEL McCUNE LINDSAY, Ph.D., LL.D.** Professor Emeritus of Social Legislation, Columbia Univ., New York.	**International Labour Organization**
S.M.Ha.	**SHELBY M. HARRISON, LL.D.** General Director, Russell Sage Foundation.	**Russell Sage Foundation**
S.O.R.	**SAMUEL O. RICE, Ph.B.** Formerly Editor of *Capper's Farmer* and of the weekly *Kansas City Star.*	**Barley** **Livestock, etc.**
S.P.J.	**S. PAUL JOHNSTON, B.S.** Formerly Co-ordinator of Research, National Advisory Committee for Aeronautics. Washington Manager, Curtiss-Wright Corporation.	**Air Forces of the World** *(in part)*
S.R.C.	**SIDNEY R. CAMPION.** Barrister-at-Law and Journalist; Press Officer to the British General Post Office; formerly chief of the Allied Newspapers Parliamentary Gallery Staff.	**Newspapers and Magazines** *(in part)* **Post Office** *(in part)*
S.R.S.	**SAMUEL RAY SCHOLES, Ph.D.** Professor of Glass Technology, New York State College of Ceramics, Alfred University, Alfred, New York.	**Glass**
S.S.H.	**S. S. HUEBNER, Ph.D., Sc.D.** President, American College of Life Underwriters. Professor of Insurance and Commerce, Wharton School of Finance and Commerce, University of Pennsylvania, Philadelphia, Pa. Chairman, Board of the American Institute for Property and Liability Underwriters, Inc.	**Stocks and Bonds**
S.So.	**SAMUEL SOSKIN, M.D., M.A., Ph.D.** Director of Metabolic and Endocrine Research, Michael Reese Hospital. Professorial Lecturer in Physiology, School of Medicine of the Division of Biological Sciences, University of Chicago, Chicago, Ill.	**Endocrinology**
S.Sp.	**SIGMUND SPAETH, Ph.D.** President, National Association for American Composers and Conductors, New York. Author of *The Art of Enjoying Music; Music for Fun;* etc.	**Music** *(in part)*
S.Tf.	**SOL TAISHOFF.** Editor, *Broadcasting.* Vice-president, Telecommunications Reports, Washington, D. C.	**Radio** *(in part)*
T.C.B.	**THEODORE C. BLEGEN, M.A., Ph.D., L.H.D.** Dean of Graduate School, University of Minnesota, Minneapolis, Minn.	**Minnesota**
T.H.MacD.	**THOMAS H. MacDONALD, B.C.E.** Commissioner, Public Roads Administration, Federal Works Agency, Washington, D. C.	**Roads and Highways**
T.H.O.	**THOMAS H. OSGOOD, M.A., B.Sc., M.S., Ph.D.** Head, Department of Physics, Michigan State College of Agriculture and Applied Science, East Lansing, Mich. Co-author of *An Outline of Atomic Physics.*	**Physics**
T.J.D.	**THOMAS J. DEEGAN.** Publicist, New York.	**Air Races** **Automobile Racing, etc.**
T.J.S.	**REV. THOMAS J. SHANAHAN, S.T.B., A.M.L.S.** Librarian, St. Paul Seminary, St. Paul, Minn. President, Catholic Library association; Editor, *Ninth National Eucharistic Congress;* Contributor to *Catholic Library World.*	**Catholic Library Association**
T.Pk.	**THOMAS PARK, S.B., Ph.D.** Associate Professor of Zoology, University of Chicago, Chicago, Ill. Editor of *Ecology.*	**Zoology**

T.S.G.	**THOMAS S. GATES, LL.D.** President, University of Pennsylvania, Philadelphia, Pa.	**Pennsylvania, University of**
T.T.S.	**THEODORE T. STONE, M.D., Ph.D.** Associate Professor in Nervous and Mental Diseases, Northwestern University Medical School. Chairman, Department of Neurology, Cook County Hospital. Attending Neurologist, Wesley Memorial Hospital, Chicago, Ill.	**Nervous System**
V.M.K.	**VIRGINIA MERGES KLETZER (Mrs. William Kletzer).** President, National Congress of Parents and Teachers.	**Parents and Teachers, National Congress of**
V.R.	**VIOLA RIPLEY, B.Sc.** Assistant Lecturer in Biology, Huddersfield Technical College, Huddersfield, England, 1926–28.	**Zoological Gardens**
V.S.	**VILHJALMUR STEFANSSON, A.M., Ph.D., LL.D.** Geographer, Anthropologist; Commander of several arctic expeditions; since 1932 adviser on northern operations to Pan American Airways.	**Exploration and Discovery**
W.A.D.	**WILLIAM A. DUNLAP.** Manager, Public Relations Department, Kiwanis International.	**Kiwanis International**
W.B.Pu.	**WILLIAM BARROW PUGH, D.D., LL.D.** Stated Clerk, The Presbyterian Church in the United States of America.	**Presbyterian Church**
W.C.	**WILLIAM CROCKER, A.B., A.M., Ph.D.** Managing Director, Boyce Thompson Institute for Plant Research, Inc., Yonkers, N.Y.	**Botany** *(in part)*
W.C.C.	**WALTER C. COFFEY, B.S., M.S., LL.D.** President, University of Minnesota.	**Minnesota, University of**
W.Cy.	**WAYNE COY.** Liaison Officer, Office for Emergency Management; Assistant Director, Bureau of the Budget, Executive Office of the President, Washington, D. C.	**Emergency Management, Office for**
W.D.L.	**WILLIAM DRAPER LEWIS, LL.B., Ph.D., LL.D.** Director, American Law Institute, Philadelphia, Pennsylvania.	**American Law Institute**
W.D.Ma.	**WILLIAM D. MARTIN, A.F.I.A.** (Australia). Economic and Statistical Research Section, Intelligence Branch, Australia House, London, since 1927.	**Australia, Commonwealth of** **New South Wales, etc.**
W.D.McC.	**WILLIAM D. McCAIN, B.S., M.A., Ph.D.** Director, Department of Archives and History, State of Mississippi, Jackson, Miss. Editor, *Journal of Mississippi History.*	**Mississippi**
W.D.Mn.	**WILLARD D. MORGAN, B.A.** Writer, Photographer, Publisher. Founder and partner of firm, Morgan & Lester, New York. Editor, *The Complete Photographer,* National Educational Alliance, Inc.	**Photography**
W.E.Bt.	**WILLIAM E. BRANDT, A.B.** Manager, Service Bureau, The National League of Professional Base Ball Clubs, New York, N. Y.	**Baseball**
W.E.Ga.	**W. E. GARRISON, Litt.D., B.D., Ph.D.** Professor of Church History, Disciples Divinity House and Associate Professor of Church History, University of Chicago, Chicago.	**Disciples of Christ**
W.E.O.	**WILLIAM E. OGILVIE.** Assistant Manager, International Live Stock Exposition, Chicago.	**Shows** *(in part)*
W.E.Ss.	**WAYNE EDSON STEVENS, M.A., D.Ph.** Professor of History, Dartmouth College, Hanover, New Hampshire.	**New Hampshire**
W.F.B.	**WALTER F. BOGNER.** Architect, Associate Professor of Architecture, School of Design, Harvard University, Cambridge, Mass.	**Architecture**
W.F.Br.	**WILLIAM F. BRAASCH, M.D.** Mayo Clinic, Rochester, Minnesota. Professor of Urology, University of Minnesota Graduate School, Minneapolis, Minn. Editorial Committee, *Journal of Urology.*	**Urology**
W.G.	**WILLIAM GREEN.** President, American Federation of Labor, Washington, D. C.	**American Federation of Labor**
W.G.Ca.	**WALTER G. CAMPBELL, LL.B.** Commissioner of Food and Drugs, Food and Drug Administration, Federal Security Agency, Washington, D. C.	**Drugs and Drug Traffic** *(in part)*
W.H.Ch.	**WILLIAM HENRY CHAMBERLIN.** Author and journalist, former correspondent for *The Christian Science Monitor* in the Soviet Union, the Far East and France.	**Japan, etc.**
W.H.Ds.	**WILLIAM H. DAVIS.** Chairman, National War Labor Board, Washington, D. C.	**War Labor Board, National**
W.H.G.	**WALTON HARLOWE GREEVER, A.M., D.D., LL.D.** Secretary, United Lutheran Church in America, New York.	**Lutherans**
W.J.Bt.	**W. J. BRETT.** Editor, *Fur Trade Review,* New York.	**Furs**
W.J.C.	**WILLIAM J. CUNNINGHAM, A.M.** James J. Hill Professor of Transportation, Graduate School of Business Administration, Harvard University, Boston, Mass.	**Railroads** *(in part)*
W.J.Sh.	**WILLIAM J. SCHALDACH.** Fishing Editor, *Field and Stream,* New York City.	**Angling**
W.Ju.	**WILL JUDY.** Editor of *Dog World.*	**Shows** *(in part)*
W.L.Be.	**WILLIAM L. BENEDICT, M.D.** The Mayo Clinic, Rochester, Minn. Professor of Ophthalmology, University of Minnesota Graduate School, Minneapolis, Minn.	**Eye, Diseases of**
W.L.C.	**W. L. CLAYTON.** President, War Damage Corporation, Washington, D. C.	**Insurance** *(in part)*
W.L.Pi.	**WARREN LEE PIERSON, LL.B.** President, Export-Import Bank of Washington, D. C.	**Export-Import Bank of Washington**
W.L.S.	**WILLIAM LOMMER STURDEVANT.** Director of Information, Tennessee Valley Authority, since 1933.	**Tennessee Valley Authority**
W.L.T.	**W. L. TREADWAY, M.D.** Medical Director, U. S. Public Health Service, Los Angeles, California.	**Intoxication, Alcoholic**
W.McM.	**WHEELER McMILLEN, LL.D.** Editor in Chief, *Farm Journal and Farmer's Wife.*	**Chemurgy**
W.P.Hl.	**WALTER P. HALL, Ph.D.** Dodge Professor of History, Princeton University, Princeton, N. J.	**Italy**
W.Pr.	**WALTER PRICHARD, M.A.** Officier d'Academie. Professor and Head of the Department of History, Louisiana State University, University Station, Baton Rouge, La. Editor, *Louisiana Historical Quarterly.*	**Louisiana**
W.P.S.	**WARREN P. SPENCER, Ph.D.** Professor of Genetics, College of Wooster, Wooster, Ohio.	**Genetics**
W.R.Ck.	**WILLIAM R. CLARK.** On the staff of *Newark Evening News,* Newark, N. J.	**New Jersey**
W.S.Ad.	**WALTER S. ADAMS, A.M., D.Sc., LL.D.** Director, Mount Wilson Observatory, Carnegie Institution of Washington, Pasadena, Calif.	**Telescopes**
W.S.G.	**WALTER S. GIFFORD, A.B., LL.D.** President, American Telephone and Telegraph Company, New York.	**Telephone**
W.S.To.	**WALTER S. TOWER, M.A., Ph.D.** President, American Iron and Steel Institute, New York.	**American Iron and Steel Institute**
W.T.M.	**WILLIAM T. MANNING, D.C.L., LL.D.** Protestant Episcopal Bishop of New York.	**Protestant Episcopal Church**
W.T.St.	**W. TETLEY STEPHENSON, M.A., M.Inst.T.** Lecturer and Cassel Reader in Transport at the London School of Economics and Political Science, 1906–39.	**Motor Transportation** *(in part)*
W.W.B.	**WILLARD W. BEATTY.** Director of Education, Office of Indian Affairs, U. S. Department of the Interior, Chicago, Ill.	**Aliens** *(in part)* **Indians, American**
W.W.Sr.	**W. W. SKINNER, B.S., M.S., Sc.D.** Chief, Bureau of Agricultural Chemistry and Engineering, U. S. Department of Agriculture, Washington, D. C.	**Chemistry and Engineering, Agricultural, U.S. Bureau of**
X	**ANONYMOUS.**	

1942

JANUARY

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1944

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THE year 1943 of the Christian Era corresponds to the year of Creation 5703–5704 of the Jewish calendar; to the year 1361–62 of the Mohammedan hegira; to the 167th of the United States; and to the 175th year of the *Encyclopædia Britannica.*

JANUARY, 1943

1 New Year's day.
6 Epiphany, or Twelfth Night.
6 First session of 78th U.S. congress convenes.
7 Mohammedan year 1362 begins.
8 Jackson day.
13 Festival of St. Veronica.
20 Eve of St. Agnes.
22 Feast of St. Chrysostom.
26 Foundation day, Australia.
29 Centenary, birth of William McKinley, 25th U.S. president.

FEBRUARY

2 Candlemas. Purification of the Virgin.
2 Ground-Hog day.
4 Total eclipse of sun; ends Feb. 5 Greenwich civil time; invisible in Washington, D.C.
8 Boy Scout day, U.S.A.
12 Birth of Abraham Lincoln, 1809.
14 St. Valentine's day.
20 Partial eclipse of moon.
21 Septuagesima Sunday.
22 Washington's birthday, 1732.
24 Feast of St. Matthias.

MARCH

1 St. David's day, patron saint of Wales.
2 150th anniversary, birth of Sam Houston, U.S. general and statesman.
2 Texas Independence day.
4 Franklin D. Roosevelt's first inauguration; 10th anniversary.
7 Quinquagesima Sunday.
9 Shrove Tuesday. Mardi Gras.
10 Ash Wednesday.
12 Girl Scout day, U.S.A.
17 St. Patrick's day, patron saint of Ireland.
21 Equinox (12:03 P.M. Greenwich civil time); beginning of spring.
25 Annunciation. Quarter day.
30 Seward day, Alaska.

APRIL

1 All Fools' day.
6 Army day.
13 200th anniversary, birth of Thomas Jefferson, third U.S. president.
14 Pan-American day.
15 Centenary, birth of Henry James, U.S. author.
18 Palm Sunday.
20 Jewish Passover; 1st day.
22 Maundy Thursday.
23 Good Friday.
23 St. George's day.
24 200th anniversary, birth of Edmund Cartwright, English inventor.
25 Easter Sunday.
25 St. Mark's day.
26 Confederate Memorial day (also May 10, June 3).

MAY

1 May day. International labour festival.
5 Cinco de Mayo, Mexican holiday.
9 Mother's day, U.S.A.
24 Empire day. Queen Victoria born, 1819.
27 St. Bede's day.
30 Memorial or Decoration day, U.S.A.
30 Rogation Sunday.
31 Union day, South Africa.

JUNE

3 Ascension day.
9 Shebuoth (Jewish Pentecost).
9 Trooping the colour in honour of King George VI's birthday. His majesty was actually born on Dec. 14.
11 Feast of St. Barnabas.
13 Pentecost (Whitsunday).
14 Flag day, U.S.A.
15 Centenary, birth of Edvard Grieg, Norwegian composer.
20 Trinity Sunday.
20 Father's day, U.S.A.
22 Solstice (7:13 A.M. Greenwich civil time); beginning of summer.
22 Third anniversary, signing of Franco-German armistice.
24 St. John's day.
30 St. Paul's day.

JULY

1 Corpus Christi.
1 Dominion day, Canada.
4 Independence day, U.S.A.
7 Sixth anniversary, beginning of Chinese-Japanese war.
14 Bastille day.
15 St. Swithin's day.
22 Feast of St. Mary Magdalene.
26 St. Anne's day.
31 Greatest brilliancy of Venus.

AUGUST

1 Annular eclipse of sun; invisible at Washington, D.C.
1 Swiss Independence day.
6 Feast of the Transfiguration.
10 Feast of St. Lawrence.
15 Assumption.
15 Partial eclipse of moon; invisible at Washington, D.C.
24 Feast of St. Bartholomew.
26 200th anniversary, birth of Antoine Laurent Lavoisier, French chemist.

SEPTEMBER

1 Fourth anniversary, beginning of World War II.
3 Fourth anniversary, entrance of Great Britain into World War II.
6 Labor day, U.S.A. and Canada.
13 Election day in Maine.
16 Mexican Independence day.
17 Constitution day, U.S.A.
23 Equinox (10:12 P.M. Greenwich civil time); beginning of fall.
26 Dominion day, New Zealand.
29 Michaelmas. Quarter day.
30 Feast of St. Jerome.
30 Rosh Hashanah (Jewish New Year), beginning year 5704.

OCTOBER

4 Feast of St. Francis of Assisi.
9 Yom Kippur (Jewish Day of Atonement).
12 Columbus day.
14 Succoth (Jewish Feast of Tabernacles), 1st day.
21 Trafalgar day.
25 St. Crispin and St. Crispinian.
27 Navy day, U.S.A.
28 Czechoslovak independence day, 25th anniversary.
31 Hallowe'en.

NOVEMBER

1 All Saints' day. All Hallows.
2 General election day, U.S.A.
3 Proclamation of Polish republic; 25th anniversary.
5 Guy Fawkes' day.
9 Lord Mayor's show, London.
11 Armistice day, 25th anniversary.
16 Feast of St. Edmund.
22 300th anniversary, birth of René Robert Cavelier, sieur de La Salle, French explorer.
25 Thanksgiving day, U.S.A.
28 First Sunday in Advent.
30 St. Andrew's day, patron saint of Scotland.

DECEMBER

3 Admission of Illinois to Union; 125th anniversary.
5 U.S.S.R. Constitution day.
7 Second anniversary, Japanese attack on Pearl Harbor.
8 Immaculate Conception.
8 U.S. declaration of war on Japan; 2nd anniversary.
11 Centenary, birth of Robert Koch, German bacteriologist.
17 Aviation day, U.S.A.
21 Forefathers' day.
22 Solstice (5:30 P.M. Greenwich civil time); beginning of winter.
25 Christmas.
26 Boxing day. English bank holiday.
28 Childermas. Holy Innocents' day.

CALENDAR OF EVENTS, 1942

For elections and disasters of 1942, see under those headings in the text. For obituaries of prominent persons who died during 1942, see under the entry Obituaries.

JANUARY

1 Gen. MacArthur united his armies into single line girdling Manila as Japanese prepared final onslaught on Philippine capital; British acknowledged loss of Sarawak on north coast of Borneo; Nipponese submarines shelled Kauai, Maui and Hawaii, three islands in the Hawaii group.

Representatives of all 26 countries at war with axis signed in Washington a "Declaration by United Nations," pledging not to make separate armistice or peace and to employ all military resources to beat axis.

British commandos staged successful raid on nazi-held Lofoten islands off northern Norway, London said.

Complete ban on retail sale of new passenger automobiles and light and heavy trucks was imposed by OPM.

Marshal Pétain, in New Year's day speech, appealed to reich to ease harsh occupation terms imposed on France.

2 Manila and Cavite naval base fell to Japanese as U.S.-Filipino forces withdrew to Bataan peninsula; Japanese landed more troops in Malaya as fighting in the west and central Malayan fronts grew heavier; Chinese force, sent at request of Allies, reached Burma.

Russian armies ringed 150,000 nazis on Mozhaisk front and recaptured town of Maloyaroslavetz in that zone.

South African desert troops captured Bardia, Libya, releasing 1,000 British prisoners of war.

3 Pres. Roosevelt and Prime Minister Churchill announced creation of unified command in southwest Pacific area with Gen. Wavell as supreme commander of all Allied forces in that area; Maj. Gen. George H. Brett of U.S. air corps was appointed deputy commander and Adm. Thomas C. Hart commander of naval forces; Gen. Chiang Kai-shek accepted command of Allied land and air forces in Chinese theatre of war.

4 Gen. MacArthur consolidated his lines in Bataan, Pampanga and Zambales provinces; Japanese armies broke through Perak river defenses in Malaya; Japanese landing force pushed into British North Borneo, perilling remaining allied positions on island.

Chungking high command said 30,000 Japanese had been killed or wounded in Changsha battle, bringing total Japanese casualties to 52,000 in 72 hours.

Russian armies captured Borowsk Mala in flanking movement south of Mozhaisk.

5 Big U.S. bombers scored three direct hits on Japanese battleship, sank Japanese destroyer and damaged other enemy craft off Davao, war dep't announced; Japanese landed forces in Kuala Selangor, port city 240 mi. north of Singapore.

Bureau of Immigration appeals board rejected a recommendation to deport Harry Bridges, west coast C.I.O. leader, for "subversive" activities.

6 Pres. Roosevelt, in annual message on state of union, told congress U.S. would spend $56,000,000,000 in fiscal year 1942–43, more than half national income, to prosecute war against axis; he said orders had been issued for production of 60,000 planes, 45,000 tanks, 20,000 anti-aircraft guns and 8,000,000 tons of merchant shipping for 1942 and 125,000 planes, 75,000 tanks, 35,000 anti-aircraft guns and 10,000,000 tons of shipping for 1943; he also said American expeditionary forces would be sent to many fronts, including British Isles.

Japanese armies seized Kuantan airfield in eastern Malaya.

Russians made two landings on Crimean peninsula, recapturing Yalta and Eupatoria in big drive to lift siege of Sevastopol.

7 A record budget of $58,927,902,000, of which $52,786,186,000 was slated for war expenses, was submitted to congress by Pres. Roosevelt; he recommended new taxes of at least $9,000,000,000.

Laurence A. Steinhardt was named U.S. ambassador to Turkey.

Powerful drive carried Russian troops into Meshchovsk, 50 mi. southwest of Kaluga.

Tokyo dispatches said Japanese forces were withdrawing from Changsha after "accomplishing their objectives."

Ex-King Carol of Rumania in Mexico City said he intended to proclaim himself regent of his former kingdom and thus assume leadership of a Rumanian government in exile.

8 German siege of Sevastopol had been lifted, according to Moscow broadcast, as nazi armies in Crimea were reported withdrawing to lines southwest of Simferopol.

Japanese spearheads pierced British lines north of Kuala Lumpur on western Malaya front.

American volunteer pilots helped R.A.F. bomb Japanese-held airfields in Bangkok; U.S. submarine sank enemy transport and 3 large freighters in far eastern waters, navy dep't announced; U.S. navy also announced 7 Japanese warships had been destroyed by marines who defended Wake island.

9 British military authorities warned Singapore would be gravely perilled unless reinforcements came quickly; Chinese armies pierced outer defenses of Canton, Chungking said.

Dean James M. Landis of Harvard law school was made "executive" of Office of Civilian Defense by Pres. Roosevelt, to help Mayor La Guardia, OCD national director.

Joe Louis, in 20th defense of world championship heavyweight title, knocked out Buddy Baer in first round.

10 Alfred Duff Cooper was recalled from his post in Singapore, where he had been resident minister presiding over far eastern affairs since Dec. 19, 1941.

Russian counterdrive near Murmansk compelled German general Dietl's armies to withdraw to new lines.

Mutual Broadcasting system sued NBC and RCA, charging violation of Sherman anti-trust act, and asked for $10,275,000 in damages.

11 Japanese armies invaded Tarakan, Dutch oil island off Borneo; Netherlands forces battled parachutists and seaborne troops in Minahassa on Celebes island.

Tokyo announced capture of Kuala Lumpur, key city in Malaya.

Russian armies captured Lyudinovo, important rail junction on Rzhev-Bryansk line.

12 Soviet troops won control over mountain spur commanding entrance to Petsamo, Kuibyshev dispatches said.

William H. Davis was named head of new 12-man National War Labor board, which was given broad powers to settle labour disputes.

U.S. food reserves on Jan. 1, 1942 were largest on record, but wholesale prices averaged 25% higher than year previous, dep't of agriculture statisticians announced.

Joint U.S.-Mexico defense commission established for wartime co-operation, White House announced.

Dr. Slovodan Yovanovitch replaced Gen. Dusan Simovitch as premier of Yugoslav government in exile in London; Gen. Draja Mikhailovitch, leader of Serb guerrillas against axis, was named war minister.

13 Dutch admitted fall of Tarakan island to Japanese; British troops evacuated Port Swettenham, 40 mi. southwest of Kuala Lumpur.

Mozhaisk gap in nazi lines was widened as soviet units seized Gorokhovo, 8 mi. west of Mozhaisk on Moscow-Smolensk road.

Donald M. Nelson was named chairman of new War Production board by Pres. Roosevelt and was given broad powers to make "final" decisions on procurement and production.

14 Gen. MacArthur's armies on Bataan peninsula hurled back two Japanese attacks, navy dep't announced; Adm. Thomas C. Hart had successfully evacuated entire U.S. Asiatic fleet from Cavite naval base after Manila's fall.

U.S. blacklisted 1,800 companies in five remaining neutral countries of Europe doing business with axis powers.

15 U.S. Undersec'y of State Welles urged Latin-American countries to break all ties with axis at opening session of Inter-American conference of foreign ministers at Rio de Janeiro.

Russian troops captured Selizharuva, 100 mi. west of Kalinin, in swift drive to flank German forces in Staraya Russa.

JANUARY—*Continued*

Mohandas K. Gandhi announced Pandit Jawaharlal Nehru would succeed him as leader of All-India Congress committee.

Iraq and Iran military zones were transferred to command of Gen. Sir Claude Auchinleck, commander-in-chief of British middle east armies.

16 Japanese seized port of Malacca, 90 mi. north of Singapore, and penetrated deep into Johore state; Nipponese armies launched third drive into Burma at Myitta, 15 mi. from Thai border.

Gen. Sir Alan Fleming Hartley was appointed to succeed Gen. Wavell as commander in chief of India.

Sir Archibald Clark Kerr, British ambassador to China, was appointed to succeed Sir Stafford Cripps as British ambassador to U.S.S.R.

17 At least 150 civilians were killed or wounded in heavy Japanese air raid on Singapore island; Nipponese armies won foothold on south bank of Muar river, 90 mi. north of Singapore.

Prime Minister Churchill returned to London after lengthy visit with Pres. Roosevelt in Washington.

More than 5,000 axis troops besieged in Halfaya pass in Libya surrendered to British forces.

18 Batu Pahat, 70 mi. north of Singapore, captured by Japs.

Burmese Prime Minister U Saw, suspected of complicity with Japanese, was detained by British authorities.

19 Nipponese troops captured Tavoy, Burma coastal port 235 mi. southeast of Rangoon.

Pres. Roosevelt asked congress for $28,500,767,495 in supplemental war appropriations for army and navy.

20 U.S. army bombers sank Japanese cruiser in southwestern Pacific area, war dep't said; U.S. navy reported that 5,000-ton Japanese ship was sunk by torpedo boat in Subic bay, Philippines.

Russian armies recaptured Mozhaisk, key city in defense of Moscow, after 18-day battle.

New daylight saving bill, designed to remain operative throughout war emergency, signed by Pres. Roosevelt; effective Feb. 9, 1942.

21 Japanese and Thai troops swept toward Lower Burma and won positions 45 mi. from Moulmein.

Interstate Commerce commission granted U.S. railroads authority to boost passenger fares 10% to meet increased operating costs.

Chairman Nelson of War Production board abolished Office of Production Management and set up new organization to gear industry for all-out war effort.

22 Japanese ships were sighted 15 mi. northwest of Rabaul on New Britain island; Gen. MacArthur shortened lines of American forces in Bataan peninsula; Dutch authorities set fire to Balik Papan oil fields in Borneo to thwart possible Japanese capture.

Gen. Erwin Rommel launched surprise counterattack in Libya, driving British 10 mi. back, beyond Mersa el-Brega.

23 Russian armies captured 2,000 towns including Kholm, in drive through the Valdai region 150 mi. south of Leningrad.

British armies retreated to within 60 mi. of Singapore and fell back on Burma front to positions 30 mi. east of Moulmein.

Australian Army Minister Francis M. Forde appealed to U.S. and Britain for immediate aid as Japanese landed invasion forces on Solomon islands and on New Britain.

24 Supreme Court Justice Robert's report on Pearl Harbor disaster said success of Japanese blitz was due mainly to failure of Adm. Kimmel and Lt. Gen. Short to take adequate joint defense measures despite repeated war and navy dep't warnings.

Navy dep't said U.S. destroyers had sunk or damaged 3 large ships in attack on Japanese convoy in Strait of Makassar east of Borneo.

Peru and Uruguay took lead among South American republics in breaking relations with axis powers.

25 U.S. warships sank 5 enemy transports in Japanese convoy lanes in Strait of Makassar between Borneo and Celebes.

Australian armies battled Japanese on New Britain island; Prime Minister John Curtin demanded Australian representation in imperial war cabinet and creation of Pacific war council of United Nations.

26 First American expeditionary force of World War II, several thousand strong, landed in Northern Ireland.

Bolivia and Paraguay severed diplomatic and economic relations with axis.

27 Between 6 and 10 U.S. expeditionary forces were operating outside U.S., said Pres. Roosevelt; Maj. Gen. James E. Chaney became commander of U.S. expeditionary force in Northern Ireland; Prime Minister de Valera protested arrival of U.S. forces in Ulster, complaining that Eire was not consulted on U.S. plans.

Mersing, on east Malayan coast 50 mi. above Singapore, captured by Japanese.

British admiralty revealed that 31,000-ton battleship "Barham" was sunk Nov. 26, 1941, in Mediterranean.

28 British high command ordered evacuation of civilians from northern shore of Singapore island as Japanese advanced to within 40 mi. of island fortress.

Inter-American conference of American foreign ministers adjourned in Rio de Janeiro after 21 delegates signed final resolution calling for severance of all ties with axis; Pres. Vargas of Brazil broke off relations with axis.

Brig. Gen. Patrick J. Hurley, sec'y of war in Hoover cabinet, was named minister to New Zealand by Pres. Roosevelt.

29 Prime Minister Churchill won 464-to-1 vote of confidence in house of commons.

Gen. Rommel's columns recaptured Bengasi, important Libyan port, as axis desert drive gathered momentum.

Maj. Gen. Millard F. Harmon was named chief of U.S. army air staff; Brig. Gen. Carl Spaatz was assigned as chief of army air combat command.

Ecuador and Peru signed agreement to end century-old boundary dispute; Ecuador also broke off diplomatic relations with axis.

30 Japanese armies pushed British back to within 18 mi. of Singapore.

Official Eire statement charged that landing of U.S. troops in Northern Ireland "violated" Eire's neutrality and represented recognition of "Quisling" rule in Ulster.

Adolf Hitler predicted eventual nazi victory but cautiously declared that he did not know whether war would end in 1942.

Pres. Roosevelt signed controversial price control bill but declared that expansion of farm prices to 110% of parity endangered price structure and might lead to inflation.

31 Japanese drove weary British imperial forces from Malaya mainland across Strait of Johore and laid siege to Singapore; British were also forced to evacuate strategic port of Moulmein, Burma, 92 mi. from Rangoon; Japanese struck with great force at Dutch island of Amboina, Indies naval base in southwest Pacific.

Marshal Timoshenko's armies captured Berestovoya, 115 mi. west of German-held Taganrog in Don basin drive.

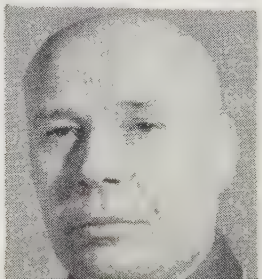
U.S. Pacific fleet units raided Marshall and Gilbert islands, destroying 16 Japanese ships, 38 planes and shore installations.

FEBRUARY

1 Japanese launched new drive to cross Salween river in Burma.

The pictures on this page are, left to right:

LANDIS	Jan. 9
HART	Jan. 14
DE VALERA	Jan. 27
TIMOSHENKO	Jan. 31
AGUINALDO	Feb. 6



FEBRUARY—*Continued*

Juan Antonio Ríos, Popular Front candidate, was elected president of Chile by majority of more than 55,000 votes.

Vidkun Quisling was proclaimed premier of Norway by Reichcommissar Josef Terboven.

2 **Gen. Mac Arthur's armies** fought off Japanese attempt to encircle U.S. forces on Bataan peninsula; U.S. Flying Fortresses shot down 9 Japanese planes in Strait of Makassar.

3 **26 Japanese bombers** attacked Dutch naval base of Surabaya in first aerial assault on Java, causing heavy damage; U.S. marines and army troops smashed Japanese efforts to make midnight landing on Bataan.

Plans to draft U.S. men previously deferred because of dependents or minor physical defects were announced by Gen. Hershey, selective service director.

German health ministry reported 126 cases of spotted typhus in Germany proper and 138 cases in occupied eastern countries.

4 **Gen. Wavell,** United Nations supreme commander, urged Singapore to hold out, declaring that "great reinforcements" of British and U.S. forces were on their way.

German troops in Libya recaptured port of Derna.

1,292 officers and men of U.S. navy and marine corps were prisoners of war or listed as missing, spokesman of both armed services disclosed.

Lord Beaverbrook was named to newly created British cabinet post of minister of war production.

5 **British admitted Japanese crossing** of Salween river in Burma and capture of Paan by the enemy.

German Afrika Korps advanced to within 55 mi. of British-held Tobruk in Libya.

The pictures on this page are, left to right:

YAMASHITA	Feb. 15
PERCIVAL	Feb. 15
CHIANG KAI-SHEK	Feb. 19
GRIGG	Feb. 22
BENNETT	Feb. 26

Mustafa Nahas Pasha formed new Egyptian cabinet, succeeding Hussein Sirry Pasha as premier.

6 **Gen. MacArthur ignored broadcast** plea of Emilio Aguinaldo, leader of Philippine insurrection in 1899, to surrender; Japanese troops occupied Samarinda, oil centre in Borneo.

7 **Vice Adm. Herbert F. Leary** of U.S. navy was placed in command of United Nations naval forces in Australia-New Zealand area; Vice Adm. William A. Glassford, Jr. was given command of U.S. naval forces in southwest Pacific.

8 **Japanese effected landings** on Singapore island.

9 **Tenga airdrome,** only 10 mi. from Singapore city, captured by Japanese, who also bombed Batavia, capital of Netherlands Indies, for first time.

Adm. William H. Standley named by Pres. Roosevelt U.S. ambassador to soviet union.

10 **Japanese troops** reached points 5 mi. from centre of Singapore city; another Japanese army landed in southwestern Celebes near Makassar; Nipponese units in Burma captured Martaban.

First objective of United Nations' strategy was to prevent axis break-through and wage war of attrition until U.S. reached full strength for all-out offensive, Pres. Roosevelt declared.

11 **British defenders of Singapore** rejected a Japanese demand for surrender; Vice Adm. C. E. L. Helfrich of Netherlands navy succeeded Adm. Thomas C. Hart of U.S. navy as head of United Nations supreme naval command in southwest Pacific.

U.S. state dep't announced that American troops had been sent to Aruba and Curaçao in Dutch West Indies to guard oil refineries there.

12 **Two German battleships,** "Scharnhorst" and "Gneisenau," and cruiser "Prinz Eugen" slipped out of Brest, France, under strong plane protection and successfully ran gauntlet of British ships and aircraft in Strait of Dover.

Bandjermasin, capital of Borneo, and Makassar, capital of Celebes, captured by Japanese.

13 **Japanese armies cut off Singapore's water supply** as small force of British imperial troops fell back to "last ditch" positions; Gen. MacArthur's beleaguered forces in Bataan weathered heavy Japanese plane assaults.

Laura Ingalls, aviatrix, was convicted by federal court jury on charge that, as paid German agent, she failed to register with U.S. state dep't.

14 **Japanese parachutists** landed on Sumatra and attacked Palembang oil refineries.

15 **Singapore surrendered unconditionally** to Japanese; Lt. Gen. Arthur E. Percival of the British garrison and Lt. Gen. Tomoyuki Yamashita, Japanese commander in chief, signed surrender documents.

7,020,000 Americans between 20 and 45 registered in third U.S. draft.

Dutch armies blew up oil refineries in Palembang area as Japanese landed troops along Musi river in Sumatra; Gen. Count Juichi Terauchi was named commander of Japanese forces in southwest Pacific.

16 **German U-boats** shelled oil refinery on Aruba island, Dutch West Indies, and sank 3 tankers with loss of 23 lives.

Japanese captured Palembang, Sumatra oil centre; Nipponese armies in Burma occupied Thaton, forcing British back to Bilin river; Tokyo said 60,000 British imperial troops were captured in Singapore; Japanese premier Tojo said Singapore's fall would enable Japan to conquer Burma, China, India, Netherlands Indies, Australia and New Zealand in that order.

17 **Japanese renamed Singapore "Shonan"** (Light of the South).

18 **Axis U-boats shelled Aruba** and Port of Spain, Trinidad, sinking tanker and damaging 2 ships.

Mohandas K. Gandhi and Chiang Kai-shek met in Calcutta for first time and conferred on critical far east situation.

19 **Prime Minister Churchill** reorganized war cabinet, naming Sir Stafford Cripps to post of lord privy seal; Capt. Oliver Lyttleton was made minister of state with general supervision over production.

Daladier, Blum, Gamelin, La Chambre and Jacomet stood trial on French war guilt charges as Riom trials opened.

Japanese planes bombed Port Darwin in first raid on Australia proper; U.S. destroyer "Peary" sunk in harbour; Jap armies crossed Bilin river in Burma and threatened Pegu railway junction north of Rangoon.

Brig. Gen. Dwight D. Eisenhower was named chief of U.S. war plans division.

Chiang Kai-shek made arrangements in India for new supply route to replace Burma road.

20 **Japanese invaded island of Bali** in drive to close in on Java from both Sumatran and Celebes bases; Jap armies also invaded Portuguese Timor, "in self-defense," but promised to withdraw after ousting British and Dutch.

Mrs. Eleanor Roosevelt resigned as associate director of Office of Civilian Defense to end "political" attacks on agency.

21 **Chiang Kai-shek appealed to Britain** to give India "real political power."

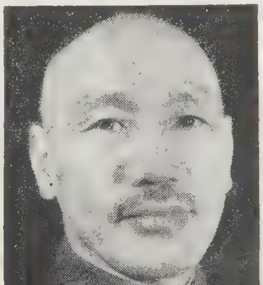
Premier de Oliveira Salazar of Portugal lodged "energetic protests" against Japanese occupation of Portuguese Timor.

Uruguayan Pres. Alfredo Baldomir spiked attempted coup of Herrerista opposition, dissolved congress and dispatched troops to occupy all strategic points in Montevideo.

22 **U.S. and Dutch sea and air forces** sank or damaged at least 19 Japanese warships and transports in Java sea battle.

British cabinet reshuffled by Churchill, who dropped Capt. Margesson from war office and Col. Moore-Brabazon from aircraft production ministry; Sir James Grigg was named war sec'y.

King George nominated Dr. William Temple, archbishop of York, to succeed Dr. Cosmo



FEBRUARY—*Continued*

Gordon Lang, as archbishop of Canterbury; Dr. Cyril Forster Garbett, bishop of Winchester, was nominated as archbishop of York.

23 **Pres. Roosevelt said U.S.** would soon take offensive in war against axis but warned that more losses were to be expected before tide turned.

Refinery near Ellwood oil field on California coast, 12 mi. west of Santa Barbara, shelled by Japanese submarine.

Japanese overran Bali, capturing Den Pasar airfield; Australia placed entire Port Darwin area under military rule.

U.S. and Britain, in joint declaration signed by Lord Halifax and Sumner Welles, U.S. undersec'y of state, agreed to create liberal economic international system after war.

Russian troops occupied Dorogobuzh in drive to outflank nazis in Vyazma and Smolensk sectors.

24 **U.S. naval task force** attacked Japanese-held Wake island, destroying enemy installations there; announcement of raid was withheld until March 25.

25 **British authorities** applied "scorched earth" policy in Rangoon, burning all installations of possible use to enemy.

26 **Gen. MacArthur's armies advanced 5 miles** in Bataan area in surprise drive against Japanese.

Maj. Gen. Henry Gordon Bennett, commander of Australian imperial armies in Malaya, reached Batavia after fleeing Singapore in Chinese junk.

Lt. Gen. P. A. Kurochkin's Russian armies completed encirclement of 96,000 Germans in Staraya Russa sector.

27 **Allied and Japanese warships** engaged in battle for control of Java seas; Allies on March 14 announced sinking or damaging of 7 Japanese ships and admitted loss of 12 Allied ships, including U.S. aircraft tender "Langley" and cruiser "Houston," during engagement, which continued until March 1.

Marshal Pétain promised to keep French fleet out of nazi hands, in formal assurances to U.S. state dep't.

28 **Java invaded by Japanese,** who ran gauntlet of United Nations warships to land in middle and western parts of island.

Rear Adm. Husband Kimmel and Lt. Gen. Walter Short would face courts-martial for "dereliction of duty" at Pearl Harbor, U.S. navy and war dept's announced.

Temporary wholesale price ceilings placed by Leon Henderson on 25 varieties of canned fruits and vegetables to prevent price increases and hoarding.

U.S. destroyer "Jacob Jones" was sunk by enemy U-boat off Cape May, N.J.; all but 11 of crew went down with ship.

MARCH

1 **Japanese troops poured into Java** from three beachheads and streamed toward principal objectives—Surabaya, Batavia and Bandung.

U.S. naval tanker "Pecos," carrying survivors of aircraft tender "Langley," was sunk by Japanese dive-bombers in southwest Pacific.

2 **Gen. Wavell was transferred** from command of southwest Pacific to former post as commander in chief of India and Burma; command of United Nations forces in Java passed to three Netherlands chiefs: Lt. Gen. Hein ter Poorten of army, Vice Adm. C. E. L. Helfrich of navy and Maj. Gen. L. H. van Oyen of air force.

Pres. Roosevelt streamlined army and put air force on equal footing with ground force; Lt. Gen. Henry H. Arnold was made commander of air forces, Lt. Gen. Leslie J. McNair commander of ground forces and Lt. Gen. Brehon B. Somervell commander of supply services.

Australian gov't ordered compulsory service for all civilians and tightened control over armed services.

3 **Pursuit planes and warships** of U.S. Pacific fleet shot down 16 of 18 attacking Japanese bombers in air battle west of Gilbert islands, navy dep't disclosed.

R.A.F. bombers blasted Renault factories in Billancourt, France, in heavy air raids over industrial suburbs of Paris.

4 **Japanese armies won mastery of air** over Java and hurled back United Nations forces in all sectors; British armies retreated beyond Sittang river in Burma; Gen. MacArthur's tiny air force sank 3 Japanese ships in Subic bay in Philippines.

Marcus island raided by U.S. naval forces, which destroyed Jap radio station and numerous installations; announcement of attack was made March 25.

Thousands of additional U.S. troops disembarked at an unnamed Northern Ireland port.

Henry Francis Grady was named to head new U.S. mission to India.

5 **Japanese troops occupied Batavia** as United Nations defenses in Java collapsed; Netherlands Indies officials, complaining bitterly of delay in sending aid to Java, asserted that 1,000 additional planes would have turned tide of battle in southwest Pacific in favour of Allies.

WPB ordered "freezing" of all new and used typewriters in move to ration all sales of machines.

George Sylvester Viereck was convicted of concealing vital information when he registered as axis agent with state dep't.

Russian armies on central front captured Yukhnov in Rzhev sector.

6 **Lt. Gen. Harold R. L. G. Alexander** made commander of British in Burma.

A German major and 5 U.S. citizens of German origin were convicted of espionage in federal court in New York city in first spy trial in U.S. since beginning of U.S. entry into World War II.

7 **Netherlands Indies radio station** in Bandung went off air with final message: "Goodbye till better times. Long live the Queen!"; Japanese units crushed United Nations resistance in Bandung area.

Halt in manufacture of radios and phonographs for civilian use, as of April 22, ordered by WPB Chairman Donald Nelson.

Free French forces captured axis outpost in Fezzan province in extreme southern area of Tripolitania.

8 **Japanese transports landed troops** on Salamaua and Lae in New Guinea island.

Rangoon fell to Japanese armies pushing westward in Burma.

Gen. Mac Arthur's command reported that Lt. Gen. Masaharu Homma, commander of Japanese armies in Philippines, committed hara-kiri because of his failure to destroy U.S. forces in Bataan.

9 **10 Japanese planes bombed Port Moresby,** capital of Papua, New Guinea; Japanese asserted that 93,000 Netherlanders and 5,000 Australian, British and U.S. troops had surrendered in Java.

Adm. Ernest J. King succeeded Adm. Harold R. Stark as U.S. chief of naval operations and retained his post as commander in chief of U.S. fleet.

Gen. Tomoyuki Yamashita, conqueror of Malaya, was assigned to head Japanese armies opposing Gen. MacArthur's forces in Bataan, U.S. war dep't disclosed.

Huge R.A.F. bombing force poured tons of explosives on Essen, Germany.

U.S. submarine sank Japanese destroyer and naval tanker and damaged 4 other Nipponese warships in far east waters, navy dep't disclosed.

20 French hostages, selected from "communist" ranks, were executed by nazi occupation authorities in reprisal for slaying of German sentry.

10 **Japanese occupied Finschhafen,** New Guinea port northeast of Lae.

Lt. Gen. Joseph W. Stilwell of U.S. army was made chief of staff of United Nations armies in China theatre of operations.

British Foreign Sec'y Anthony Eden charged Japanese armies committed atrocities against civilian and military prisoners.

Nicholas von Kallay formed Hungarian cabinet to succeed that of Dr. Ladislaus de Bardossy.

11 **Reich's giant battleship "Tirpitz"** escaped from an attack by R.A.F. torpedo planes off Norway waters.

Brazil recalled all merchantmen to home ports as Pres. Vargas ordered seizure of property belonging to axis nationals in retaliation for sinking of Brazilian ships.

Prime Minister Churchill announced that Sir Stafford Cripps, lord privy seal, would go to India with British plan for Indian independence.

Premier Peter Gerbrandy of Netherlands government-in-exile declared Dutch would wage bitter guerrilla warfare against Japanese in East Indies.

12 **Ezio Pinza,** Metropolitan opera basso, was taken to Ellis island as enemy alien by F.B.I.

U.S. navy bared sinking of 4 more ships in American coastal waters but, in line with new policy to give no information of value to enemy, banned disclosure of identities of vessels.

14 **Pres. Roosevelt advocated cut** in motor car speed limits

MARCH—*Continued*

to 40 mi. per hour to conserve tires.

15 **Total destruction** of Russia's "bolshevist hordes" by summer of 1942 was predicted by Adolf Hitler.

Air Marshal Sir Richard E. C. Peirse, new India air commander, predicted Allies would put up strong "offensive" battle in Burma.

17 **Gen. MacArthur,** after leaving Philippines at behest of Pres. Roosevelt, reached Australia and assumed command of United Nations armies in southwest Pacific; Maj. Gen. Jonathan M. Wainwright assumed command of U.S. and Filipino armies in Philippines.

Germany closed all of Norway's ports as reports spread that Hitler would try to cut Allied supply lines via northern European seas to Murmansk, Russian Arctic port.

Uruguay seized interned German ship "Tacoma" in retaliation for sinking of Uruguayan ship "Montevideo" off coast of Haiti.

Third U.S. draft lottery held in Washington, D.C.

18 **U.S. and Australian pilots** bombed 23 ships in raids on Japanese bases in New Guinea, sinking possibly 3 cruisers, 3 destroyers and 5 merchantmen ard damaging remaining 12 craft.

WPB order slashing retail gasoline sales on east coast and in northwest Pacific states went into effect.

19 **Japanese armies opened land drive** across New Guinea jungles in push toward Port Moresby.

Richard G. Casey, Australian minister to U.S., was made minister of state in British war cabinet to represent Britain in middle east.

U.S. announced establishment of air bases in Guatemala for defense of Panama canal zone.

20 **Gen. MacArthur told cheering thousands in Melbourne** that Pres. Roosevelt had ordered him to take offensive; Dr. Herbert V. Evatt, Australian minister for external affairs, asked full partnership for Australia and New Zealand in war councils of United Nations.

U.S.S.R. and Japan renewed fisheries agreement for one year.

21 **Pres. Roosevelt** ordered Office of Defense Transportation to seize Toledo, Peoria & Western R.R. after road's president rejected appeal to arbitrate wage dispute.

22 **Gen. Wainwright rejected Japanese ultimatum** to surrender his armies on Bataan peninsula.

23 **Japanese occupied Andaman islands** in Bay of Bengal.

British submarines in Mediterranean sank 2 Italian submarines, 1 motorship, 6 schooners and 2 supply ships, British admiralty announced.

OPA set maximum retail prices on refrigerators, vacuum cleaners, stoves and ranges, washing and ironing machines, radios, phonographs and typewriters.

24 **American Volunteer Group pilots** destroyed 40 Japanese planes in surprise raid on Chiengmai, Thailand airport; U.S. navy dep't said destroyers "Edsall" and "Pillsbury" had been lost near Java.

25 **U.S. forced Standard Oil Co. group** and I. G. Farbenindustrie, German chemical trust, to release patents, royalty-free, for manufacture of synthetic rubber and other vital chemicals.

26 **"We shall win or we shall die,"** Gen. MacArthur pledged in speech before Australian parliament.

Brazilian authorities smashed huge axis spy ring, arresting more than 100 suspects in nationwide roundup.

27 **Chinese armies in Burma** recaptured Toungoo airfield.

Sir Stafford Cripps conferred with Mohandas K. Gandhi on proposals for Indian independence.

Russian naval forces landed Red army units behind nazi lines in Murmansk area in move to thwart German drive on that Arctic seaport.

U.S. Senate rejected committee ruling calling for ouster of Sen. William Langer (Rep., N.D.) on charges of political corruption.

Joe Louis knocked out Abe Simon in 6th round of scheduled 15-round bout for world's heavyweight boxing championship.

28 **British commandos** raided nazi submarine base at St. Nazaire, France, and exploded old destroyer that had been rammed into dock gates.

Japanese troops battled way into Toungoo after bitter hand-to-hand fighting with Chinese forces in Burma.

29 **Sir Stafford Cripps** revealed British plan to offer India complete dominion status after war in return for Indian cooperation in fight against axis.

30 **Creation of Pacific war council** announced by Pres. Roosevelt to plan joint war policy; member nations included U.S., Australia, New Zealand, China, Netherlands, Canada and Great Britain.

31 **British armies in Prome area** of Burma were cut off by Japanese force advancing up Irrawaddy valley.

WPB order required all purchasers of toothpaste or shaving cream in tubes to turn in old tubes before making new purchases.

Gen. Sir Thomas Blamey was named commander of Australia's armies.

APRIL

1 **Japanese forces in Bataan** captured U.S.-Filipino outposts after slashing bayonet battle.

Chinese units evacuated Toungoo in Burma as British armies withdrew 15 mi. in Prome area.

2 **British forces abandoned Prome** in Burma after violent battle.

WPB froze sale of adults' bicycles to preserve existing stocks for defense workers.

Three soldiers were slain and 5 others were wounded in gun battle between Negro and white troopers at Fort Dix, N.J.

Rear Adm. Philippe-Marie Auboyneau was named commander of Free French naval forces, succeeding Adm. Emile Muselier, who resigned.

3 **Big U.S. bombers** under personal command of Maj. Gen. Lewis H. Brereton, chief of U.S. air forces in India, attacked Japanese warships at Port Blair in Andaman islands, setting cruiser and troopship afire and probably damaging 2 transports.

OPA froze retail prices on 44 common electrical household articles to prevent increasing cost.

Carlton J. H. Hayes, history professor at Columbia university, was named U.S. ambassador to Spain, succeeding Alexander W. Weddell.

4 **Navy dep't said U.S. submarines** had sunk one Japanese cruiser and probably sunk another in southwest Pacific.

U.S. recognized Free French control over Cameroons and French Equatorial Africa.

F.B.I. agents arrested William Dudley Pelley, pro-fascist leader and chief of "Silver Shirts," on charge of making seditious statements.

All Netherlands forces in Curaçao and Aruba were placed under command of Rear Adm. J. B. Oldendorf of U.S. navy.

5 **British fighter planes** and anti-aircraft guns shot down 27 of 75 Japanese planes that attacked Colombo and Trincomalee in their first raid on Ceylon.

Japanese armies pierced Gen. Wainwright's lines on Bataan peninsula.

U.S. planes bombed Rangoon in night attack, setting huge fires in Japanese-occupied city.

A Norwegian official in London confirmed reports that 1,100 Norse clerics had resigned en masse to protest Quisling rule.

6 **India suffered first air raid** when Japanese planes bombed Vizagapatam and Cocanada on Bay of Bengal; Premier Tojo of Japan warned India in broadcast of "great calamities" unless British were ousted from India.

Japanese drive in Bataan gained momentum and seriously threatened U.S. forces.

Louis Johnson, President Roosevelt's personal emissary in India, conferred with Pandit Jawaharlal Nehru and Maulana Abul Kalam Azad, India congress leaders, on independence issue.

7 **British armies in Burma** fell back to new line 40 mi. above Prome.

Pres. William Green of A.F. of L. and Pres. Philip Murray of C.I.O. pledged labour's undivided support of war effort at joint union meeting in Pittsburgh.

Russians succeeded in reopening a rail line to beleaguered Leningrad, soviet dispatches said.

8 **Gen. George C. Marshall,** U.S. army chief of staff, and Harry Hopkins arrived in London to discuss United Nations war problems with British officials.

Gen. Yamashita hurled waves of Japanese troops against American lines on Bataan, compelling

APRIL—*Continued*

new withdrawal of U.S. and Filipino forces.

Japanese forces occupied Lorengai, capital of Manus island in Admiralty group.

Egyptian gov't arrested Aly Maher Pasha, former premier, "for reasons relating to safety and security of state."

9 **Japanese armies overran Bataan,** encircling exhausted American and Filipino army numbering 36,853 men; 25,000 civilians were also believed captured; U.S. forces continued to hold Corregidor fortress and other island forts in Manila bay; Gen. Wainwright evacuated 3,500 U.S. sailors and marines to Corregidor fortress.

Japanese planes bombed and sank two British cruisers, "Cornwall" and "Dorsetshire," in Indian ocean, British admiralty announced.

British admiralty said a 10,000-ton Italian cruiser was sunk by British submarine in Mediterranean.

WPB again ordered reduction of gasoline deliveries to 17 eastern states and Oregon and Washington; WPB announced manufacture of golf clubs would be halted May 31 to save 3,000,000 lb. of metal for defense purposes.

10 **12,000 Japanese troops** landed on island of Cebu in Philippines.

Japanese dive bombers sank 10,850-ton British aircraft carrier "Hermes" in Bay of Bengal; U.S. submarine sank large Japanese warship, "either an auxiliary cruiser or a tender," in southwest Pacific, U.S. navy announced.

All-India Congress party and Moslem league rejected British proposals for Indian independence; Sir Stafford Cripps, British negotiator, charged attitude of India's leaders was "critical and unconstructive."

11 **Bulgarian Premier Bogdan Philoff** reshuffled his cabinet after majority of ministers refused to approve his pro-nazi policy.

12 **United Nations airmen** bombed many Japanese bases in southwest Pacific area and scored direct hit on Japanese aircraft carrier; Japanese fliers bombed Corregidor fortress 12 times in 24 hours.

Pandit Nehru said India would not participate in Britain's war effort, but would attempt to organize own war effort on free and independent basis.

13 **U.S. guns on Corregidor island** shelled Japanese ships in Manila bay and motor columns on Bataan peninsula.

Pravda, official Communist party organ in U.S.S.R., warned Japan to adhere rigidly to neutrality pact and stop sabre-rattling.

U.S. rejected Vichy's protest over Washington's recognition of Free French rule in French Equatorial Africa and Cameroun.

Prime Minister Churchill revealed that Lord Louis Mountbatten had been appointed chief of commando raiders of British army, navy and air forces.

Premier Vidkun Quisling took over personal control of Norway's churches after 1,100 rebellious clergymen ignored his ultimatum to return to their pulpits, Berne dispatches said.

14 **Pierre Laval returned to power** in Vichy gov't amid worsening relations between U.S. and Vichy; Pétain gov't branded as "insulting" terms of U.S. note on recognition of Free French rule in French Equatorial Africa.

R.A.F. bombers raided coast of France for 9½ consecutive hours.

British 1942-43 budget called for £4,500,000,000 in revenues and £5,286,000,000 in expenditures.

U.S. and Filipino armies in Cebu put up stiff resistance to invading Japanese troops; Nipponese armies occupied Migyaungye in drive to capture rich Yenangyaung oil fields in Burma.

U.S. post office banned *Social Justice*, weekly founded by Father Coughlin, from mails after Atty. Gen. Biddle charged magazine violated Espionage act of 1917.

Iran severed diplomatic relations with Japan.

15 **13 U.S. bombers** under command of Brig. Gen. Ralph Royce, swept across Philippines, sank or damaged 8 Japanese ships and returned with évacuées to Australian base with loss of 1 plane.

House naval affairs committee said "gross carelessness" on part of officials was responsible for "Normandie" (U.S.S. "Lafayette") fire.

16 **Japanese troops** landed on island of Panay in Philippines.

All inhabitants of Malta, civilian and military, were decorated en masse with the George cross for heroism and bravery during daily axis air raids.

Field Marshal von Rundstedt, German general, was put in charge of defenses along entire Atlantic coast.

17 **U.S. expressed disapproval of Laval regime** in Vichy by recalling Ambassador William D. Leahy to Washington "for consultations."

Armada of 600 British planes bombed nazi targets in northern France and Netherlands and raided big factory in Augsburg.

British forces destroyed rich Yenangyaung oil fields before evacuating city of Magwe.

U.S. war dep't disclosed that 35,000 U.S. and Filipino troops and 25,000 civilians were captured by Japanese in Bataan.

18 **Japanese mainland was bombed for first time** when planes, identified in a Tokyo broadcast as U.S. bombers, attacked Tokyo, Yokohama, Kobe and Nagoya; U.S. withheld announcement of raid, led by Maj. James H. Doolittle (promoted to brigadier general April 23) until May 10.

Pierre Laval formed new Vichy cabinet, assumed title of chief of government and took over foreign affairs, information and interior posts.

War Manpower commission established by Pres. Roosevelt to assure mobilization and effective use of nation's manpower; Paul V. McNutt was named chairman.

Japanese captured city of Cebu on Cebu island, Philippines, U.S. war dep't announced.

"Surcouf," world's largest submarine, under De Gaullist colours, was listed as lost by Free French headquarters in London.

19 **Sec'y of Treasury Morgenthau** asked American people to invest voluntarily 10% of income in war bonds.

In appeal to French to rally behind new Laval gov't, Marshal Pétain declared that his authority as chief of state remained intact.

Announcements by U.S. headquarters in Australia and by Premier John Curtin confirmed the status of Gen. MacArthur as commander in chief of southwest Pacific command.

20 **Pres. Roosevelt ordered navy** to seize and operate four plants of Brewster Aeronautical corporation in New York city on grounds that plants were poorly managed.

Pierre Laval, chief of gov't in Vichy, told Frenchmen their only hope of salvation lay in reconciliation with Germany.

21 **Immediate seizure of all patents** owned or controlled by enemies was ordered by Pres. Roosevelt.

Nazi authorities executed 20 hostages in St. Nazaire in reprisal for alleged aid townsmen gave British commandos in raid.

22 **British commandos raided Boulogne,** withdrawing after 2-hour foray; German authorities executed 15 hostages in Paris in retaliation for sabotage and attacks on nazi soldiers.

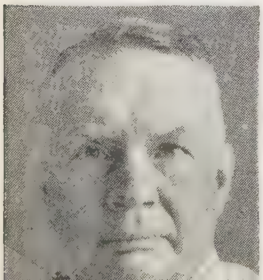
OPA announced gasoline rationing in 17 eastern states and District of Columbia to start May 15, and also said weekly sugar rations of about ½ pound per person would start May 5.

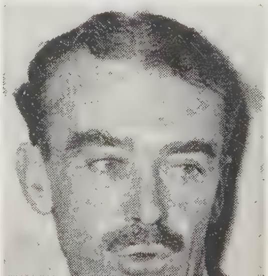
Vice Adm. Robert L. Ghormley of U.S. navy was ordered to Auckland to set up joint U.S.-New Zealand naval command.

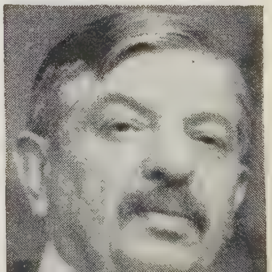
23 **Union of South Africa** broke off diplomatic relations with Vichy.

The pictures on this page are, left to right:

POORTEN	Mar. 2
KING	Mar. 9
CASEY	Mar. 19
MOUNTBATTEN	April 13
LAVAL	April 14







APRIL—*Continued*

WPB placed strict controls over installations and extensions of new telephones for civilian use.

24 **R.A.F. bombers** delivered one of war's heaviest aerial attacks to date on Rostock, Germany, smashing Heinkel plane plants and Neptune submarine shipyards.

Soviet authorities at Khabarovsk, Siberia, interned 5-man crew of U.S. bomber forced down after American raid on Japan.

Chinese armies in Burma recaptured rail terminus of Taunggyi; British and Chinese positions in Burma were perilled by 80-mi. Japanese advance toward both Mandalay and Lashio.

Registration of all U.S. men between ages of 45 and 64 inclusive was started.

25 **U.S. troops, with Free French consent,** had landed on New Caledonia in move to aid in defense of strategic Pacific island, war dep't announced.

Gen. Henri Honoré Giraud, commander of eighth French army in May 1940, escaped from nazi prison camp; nazis put up 100,000-mark reward for his capture.

26 **Hitler renewed his pledge** to German people to destroy "bolshevist colossus" but did not say when.

British air force extended night raids to Skoda arms works in Pilsen.

Lt. Gen. Hugh A. Drum ordered immediate dimming of shore lights and control over enemy aliens in eastern military area.

27 **Pres. Roosevelt presented to congress** sweeping program designed to check inflation, including proposals for $25,000 individual income limit, stabilized wages, price ceilings, rationing of scarce commodities, reduction of farm prices to even parity and credit curtailment.

The pictures on this page are, left to right:

ROYCE	April 15
RUNDSTEDT	April 16
MC NUTT	April 18
GLASGOW	May 4
QUEZON	May 14

R.A.F. bombers attacked Rostock for fourth night in row.

Canadian gov't's request to use conscription if necessary was approved in national plebiscite.

U.S. destroyer "Sturtevant" was sunk off Florida coast by underwater explosion, navy dep't said.

WPB ordered 25% cut in coffee deliveries to wholesalers and roasters in order to conserve stocks.

Gandhi expressed alarm over arrival of U.S. troops in India and urged India to train its own soldiers rather than rely on foreign troops.

Maj. Gen. Charles H. Bonesteel of U.S. army took command of all Allied forces in Iceland, U.S. war dep't announced.

28 **OPA froze prices of all major items** affecting living costs in drastic move to check inflation; stabilized rent limits were ordered in 301 areas designated as defense rental regions; Pres. Roosevelt called on American people to win war with sacrifices on home front.

29 **Arrival of more U.S. troops in Australia** announced by Prime Minister John Curtin.

Lashio, Burmese terminus of Burma road, fell to Japanese troops.

Times square in New York city was virtually blacked out as army ordered dimming of advertising signs and blackout of top stories of skyscrapers to eliminate night sky glow.

R.A.F. bombers raided German naval bases at Kiel and Trondhjem; German fliers retaliated by bombing cathedral town of York.

30 **Joseph Stalin** asserted soviet union had no territorial ambitions in foreign countries, declaring sole Russian aim was to liberate its lands from "German fascist blackguards."

Germans slew 18 Norwegian hostages in reprisal for assassination of two gestapo agents.

War Production board penalized General Motors corporation for violation of priority regulations by drastically cutting corporation's auto parts manufacture for 3-month period.

Hitler and Mussolini conferred for seventh time near Salzburg and reached "unity of views and decisions"; conference took place Apr. 29 and 30.

MAY

1 **R.A.F. resumed large scale raids** over Germany and German-controlled areas, bombing railways and ports on nazi-held coast of continent.

Mandalay fell to Japanese army in Burma.

Moscow broadcast asserted 58,000 Germans had been killed or wounded on Leningrad front in month of April.

2 **Working committee of All-India Congress party** adopted resolution urging Indians to meet invasion only through "nonviolent noncooperation."

Japanese bombers and big guns subjected Corregidor fortress to terrific attack.

Extension of lend-lease aid to Iran and Iraq was announced by Pres. Roosevelt.

U.S. navy, marine corps and coast guard casualties numbered 2,991 dead, 2,495 missing and 907 wounded from Dec. 7, 1941 to April 15, 1942.

3 **Japanese armies in New Guinea** launched new drive up dense Markham valley jungles.

Germans sent fresh troops into Serbia to quell guerrilla warfare.

55 French hostages were executed at Lille as new outbreak of anti-nazi terrorism spread throughout occupied France.

4 **German radio said 72 Netherlanders** had been executed for espionage, sabotage and for "violations of officers' code."

Between 7,000 and 8,000 persons had been killed in R.A.F. bombings of Rostock, Germany and more than 30,000 were left homeless, according to Stockholm dispatches.

WPB forbade use of steel and iron in 400 common civilian products.

Among Pulitzer prize winners announced for 1941 were: Ellen Glasgow for her novel *In This Our Life*, Margaret Leech for history *Reveille in Washington*, Forrest Wilson for biography *Crusader in Crinoline* and Larry Allen for foreign news reporting; no drama award was made.

5 **British landed on Madagascar** to seize French naval base of Diégo Suarez; U.S. state dep't advised Gaston Henry-Haye, Vichy's ambassador to Washington, that U.S. approved British action; Pierre Laval, Vichy chief of gov't, denounced British move as "act of aggression."

Japanese forces landed on Corregidor in powerful drive to crush defenders of Manila bay fortress.

Japanese armies in Burma entered Yunnan province, China, in fast northward push.

R.A.F. bombed Stuttgart for third successive night.

Federal reserve board placed new curbs on instalment purchases and limited charge accounts to 40 days.

6 **Corregidor's starving garrison** of 7,000 Filipino and U.S. troops and 3,000 civilians surrendered; Gen. Wainwright notified war dep't he was arranging capitulation terms.

Bomb-battered U.S. cruiser "Marblehead," crippled by Japanese planes in Java sea action, had safely reached east coast port, Navy announced.

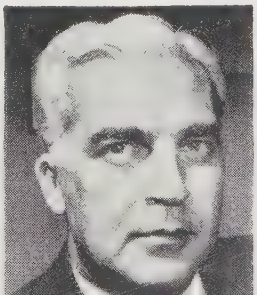
German firing squads shot 30 French hostages in Caen, and 10 at Romorantin.

7 **Diégo Suarez,** Madagascar, surrendered to British forces.

British cruiser "Edinburgh" and 4 merchant ships were sunk on convoy lane to U.S.S.R. in naval battle with German warships April 30–May 2, the Admiralty announced.

Chinese guerrilla forces penetrated city of Canton and killed 500 Japanese troops in series of raids, Chungking said.

8 **U.S. warships** smashed Japanese fleet in big naval battle



MAY—*Continued*

in Coral sea that started May 4; official accounts released June 12 said 15 Japanese warships, including one aircraft carrier and 4 cruisers, were sunk; U.S. losses were aircraft carrier "Lexington," destroyer "Sims" and a tanker.

London admitted Japanese forces had occupied Burma port of Akyab on Bay of Bengal; Japanese armies in Yunnan province made new gains, occupying Lungling, 50 mi. inside Chinese border.

Cardinal von Faulhaber of Munich accused reich of "war against Christianity" in 11-point document forwarded to Vatican, Berne dispatches said.

10 **Prime Minister Churchill warned Germans** that Britons would retaliate with gas warfare on reich if German soldiers used poison gas on Russian front.

11 **German forces launched long-heralded offensive in U.S.S.R.** with strong drive against soviet forces in Kerch peninsula.

German bombers in eastern Mediterranean sank 3 British destroyers, "Lively," "Jackal" and "Kipling," Admiralty announced.

British fighter planes and anti-aircraft guns destroyed or damaged 101 axis planes in 72 hours of furious air battles over Malta.

U.S. submarines in far east sank Japanese destroyer and 2 cargo ships, navy dep't revealed.

Nazi submarine penetrated mouth of St. Lawrence river and sank 2 freighters.

12 **German armies pierced Russian lines** in Kerch peninsula in drive toward southwestern shores of Sea of Azov.

German U-boat sank large U.S. cargo ship near mouth of Mississippi river and killed 27 of crew.

U.S. set aside $150,000,000 fund for purchase of new and used tires owned by U.S. motorists in new move to meet rubber shortage.

13 **Russian armies in Donets basin** launched offensive against Kharkov in move to relieve German pressure on Kerch peninsula; soviet high command admitted Red army troops had fallen back to new positions in Kerch fighting.

Pope Pius appealed to world statesmen not to pass up opportunities for "an honest peace of justice and moderation."

14 **Marshal Timoshenko's forces** broke through strongly fortified German positions in Kharkov area; Moscow admitted further withdrawals in Kerch sector.

Adm. Georges Robert, French high commissioner for Martinique, agreed to co-operate with U.S. officials and disarm French warships there.

U.S. war dep't announced plan to curb drastically all air travel and air mail facilities in move to control operations of commercial aviation lines.

Gas rationing along eastern seaboard went into effect; purchases were reduced to about 3 gallons per week for ordinary motorist.

Pres. Manuel Quezon established Washington headquarters for provisional Philippine commonwealth government-in-exile.

15 **Remnants of British armies** that survived gruelling Burma campaign eluded Japanese trap in Burma and reached Indian frontier.

16 **German armies** captured town and harbour of Kerch.

U.S. foreign correspondents interned in Germany and Italy since Dec. 11, 1941, told in dispatches from Lisbon of widespread discontent in axis countries.

Pres. Roosevelt ordered release of Earl Browder, U.S. communist leader imprisoned for passport fraud, from Atlanta penitentiary to promote "national unity."

Mrs. Oveta Culp Hobby was sworn in as director of the Women's Army Auxiliary corps, first women's army corps ever established in U.S.

17 **Sir Stafford Cripps** hinted in speech at Bristol that United Nations would soon open second front in Europe.

18 **New thousands of U.S. troops** reached Northern Ireland and began "invasion" training.

Nazi troops, led by tanks and parachutists, launched heavy counter-attacks in Kharkov sector.

Rear Adm. Sir Henry Harwood succeeded Adm. Sir Andrew Browne Cunningham as commander of the British Mediterranean fleet; Sir Andrew was named to head British naval delegation in Washington.

Heinrich Himmler, nazi gestapo chief, was dispatched to the Netherlands to quell anti-German revolt, according to London dispatches.

19 **German forces launched offensive** in Izyum-Barvenkova sector below Kharkov in effort to divert Russian attack on latter city.

Brig. Gen. James H. Doolittle was awarded congressional medal of honor by Pres. Roosevelt for leading U.S. bomber squadron in attack on Tokyo April 18.

20 **Ex-President Herbert Hoover** urged that Pres. Roosevelt be given dictatorial economic powers to win war.

U.S. navy dep't announced it would start to recruit Negroes in the navy and marine corps on June 1, for the first time in history.

21 **Russian armies halted Hitler's drive** in Izyum-Barvenkova sector south of Kharkov and made new gains north of Ukraine industrial city.

Chungking sources reported that Japanese had landed 25,000 troops at Foochow for big drive in Fukien province.

22 **United Nations warships** sank Japanese cruiser and two supply ships in southwest Pacific, United Nations headquarters in Australia announced.

Gen. Henri Giraud rejected nazi offer to free 70,000 French prisoners if he would return to Reich prison from which he escaped.

27 U.S. merchant ships totalling 270,000 tons were launched amid nationwide celebration of National Maritime day.

23 **A Moscow communiqué** announced Russian troops had evacuated Kerch peninsula after savage fighting.

25 **Pres. Roosevelt slashed $185,000,000** from WPA budget for the 1943 fiscal year.

Gen. Joseph W. Stilwell said United Nations took "hell of a beating" in Burma, and declared Allies must retake Burma from Japanese.

26 **Britain and U.S.S.R. signed 20-year mutual assistance treaty** banning a separate peace with Germany; both countries pledged co-operation to preserve peace in future and agreed not to seek territorial aggrandizement.

Nazi armies under Lt. Gen. Viktor von Schwedler regained offensive in Izyum-Barvenkova sector in sharp battles south of Kharkov.

Gen. Erwin Rommel hurled his Afrika Korps against British forces in Libya in new offensive against Allied desert armies.

27 **Reinhard Heydrich,** nazi protector for Bohemia and Moravia, was critically wounded by bomb hurled at his car on road from Prague to Berlin; he died June 4.

War Manpower commission, in move to stop labour pirating by employers, decided to prevent workers in war plants from changing from one factory to another.

28 **Rommel's Libyan armies** stabbed sharply toward Tobruk in widening drive to flank British.

Chinese forces abandoned Kinhwa, provisional capital of Chekiang province.

Deportation of Harry Bridges ordered by Attorney General Biddle.

29 **Gen. George C. Marshall,** U.S. army chief of staff, declared in speech to West Point graduating class that U.S. soldiers would land in France.

30 **More than 1,000 British bombers** dumped 3,000 tons of high explosives over Rhineland city of Cologne in one of war's heaviest single raids; nazi high command admitted damage was great.

Gen. Neil Methuen Ritchie's tank forces counter-attacked Rommel's Afrika Korps as fierce see-saw battle raged in Acroma and Knightsbridge salients of Libyan battlefield.

31 **German planes raided Canterbury,** England, in reprisal raid for British aerial attack on Cologne.

JUNE

1 **Monster air fleet of 1,036 British planes** bombed Rhineland cities, dropping 3,000 tons of bombs on Essen.

Gen. Rommel's nazi panzers beat strategic retreat through two gaps in British minefields between El Gazala and Bir Hacheim.

Mexico formally declared war on Germany, Italy and Japan.

2 **Prime Minister Churchill** told House of Commons that Rommel's plan for offensive in Libya had "gone completely awry"; optimistic British dispatches from Cairo said British counterattacks had shattered Rommel's main offensive in Libya.

Pres. Roosevelt asked congress to recognize existence of

JUNE—*Continued*

state of war with Rumania, Bulgaria and Hungary.

3 Dutch Harbor, Alaska, was raided twice by Japanese planes.

House of Representatives unanimously passed 3 resolutions declaring war on Rumania, Hungary and Bulgaria.

4 Four Japanese ships were sunk by United Nations submarine cruising in Japanese sea lanes, MacArthur's headquarters announced.

British commandos raided French coast between Le Touquet and Boulogne.

U.S. senate unanimously voted to declare war on Rumania, Bulgaria and Hungary.

Adolf Hitler arrived in Finland to present Baron Carl Gustav Mannerheim his personal congratulations on latter's 75th birthday.

5 Pres. Roosevelt warned Japan that U.S. would retaliate in kind if Nipponese persisted in employing poison gas against China or any other United Nations ally.

6 U.S. warships and planes sank 4 Japanese aircraft carriers, 3 cruisers and 3 destroyers in Battle of Midway, June 4 to 6; 275 Japanese planes were destroyed and about 4,800 Japanese were killed or drowned; American losses were 307 casualties, destroyer "Hammann" and aircraft carrier "Yorktown," sinking of which was not announced until later.

Sec'y of State Hull called Hitler's visit to Baron Mannerheim a desperate attempt to win closer Finnish co-operation.

7 Japanese submarines shelled waterfront of Sydney but caused only light damage; Japanese forces seized big airfield at Chuhsien.

8 Base pay of $50 monthly for ordinary soldiers and seamen in army, navy, marine corps and coast guard was approved in U.S. senate; Pres. Roosevelt asked congress for appropriation of $39,417,827,337 for war dep't for 1943.

9 Pres. Roosevelt and Prime Minister Churchill announced creation of combined production and resources board and combined food board to coordinate United Nations war production and food stocks.

Pres. Roosevelt called on motorists in unrationed areas to cut nonessential driving in half and to drive slowly in order to conserve rubber.

Admiralty announced that British submarine had sunk an Italian destroyer, 3 supply ships and merchant vessel in Mediterranean.

10 Strong U.S. navy task force joined British home fleet in enforcing naval blockade around Germany.

Russian communiqué announced nazis had launched new offensive in Kharkov sector.

Gestapo completely wiped out Czech village of Lidice, killing all men, sending all women to concentration camps and placing all children in "educational institutions"; this action was taken, Berlin said, because local population gave asylum to assassins of Reinhard Heydrich.

11 Pres. Roosevelt and Soviet Foreign Commissar Molotov signed lend-lease agreement providing reciprocal defense aid and reached full understanding on "urgent tasks of creating second front in Europe in 1942," Washington revealed.

Japanese naval expert in radio broadcast admitted two Nipponese aircraft carriers were lost in Midway sea battle.

German forces advanced in Kharkov area after series of fierce battles with defending Russian troops.

Free French garrison withdrew from Bir Hacheim, key position in Libya, after 16-day siege.

12 Japanese landings on Attu and Kiska islands in western tip of Aleutian chain announced by U.S. navy dep't.

Pres. Roosevelt appealed to Americans to turn in all scrap rubber to local gasoline stations during scrap campaign between June 15 and 30.

13 Turkish authorities neutralized six of fleet of big U.S. bombers that raided Rumania's oil fields and were forced down on Turkish soil on return trip to secret bases.

Office of War Information established by President Roosevelt to exercise complete control over dissemination of official news and propaganda within U.S. and in other countries, except Latin America; Elmer Davis was named head of OWI.

14 Mexico and Philippine commonwealth formally joined United Nations in ceremonies at White House as Pres. Roosevelt appealed to nationals in axis countries to revolt against tyranny.

15 U.S. fliers damaged 3 cruisers, a destroyer and 2 smaller ships in heavy bombing attacks on Japanese forces in Aleutian islands.

A Rome communiqué asserted 2 British cruisers, a destroyer and 4 merchantmen had been sunk in huge sea and air battle in Mediterranean.

16 Russians fought off nazi counterattacks and launched offensive on Kharkov front.

R.A.F. and U.S. planes sank Italian cruiser and 2 destroyers attempting to attack United Nations convoys in Mediterranean, Admiralty revealed.

Cruisers, destroyers and aircraft carriers were given preference over battleships when house naval affairs committee approved $8,550,000,000 appropriation for U.S. fleet.

18 Prime Minister Churchill arrived in Washington for new conferences with Pres. Roosevelt on conduct of war and second front issue.

Gestapo agents captured and killed assassins of Reinhard Heydrich in Prague church, German communiqué said.

Chungking announced U.S. bomber bases would be set up on Chinese soil under command of Col. Caleb V. Haynes.

19 Russian forces repulsed new attacks on Sevastopol as battle for Crimean fortress neared crisis.

20 Gen. Rommel's panzer units captured Bardia, Libyan fortress.

Axis submarine shelled Estevan Point on Vancouver island but caused little damage.

21 In swift surprise manoeuvre, Gen. Rommel's Afrika Korps seized Tobruk, captured 25,000 prisoners and chased tired British armies back toward Egyptian frontier.

Axis submarine shelled area about Fort Stevens on northern Oregon coast, but all projectiles missed target.

Archbishop of Canterbury warned U.S. and Britain against exploiting their economic power in postwar period, should they win the war.

22 Second-front issue was high-lighted as Pres. Roosevelt and Prime Minister Churchill announced jointly that their objective was "earliest maximum concentration of Allied war power upon enemy"; Maxim Litvinov, soviet envoy to U.S., asked for immediate opening of second front.

Germans had suffered 10,000-000 casualties in killed, wounded and prisoners in first year of Russian war against Russ losses of 4,500,000, according to soviet information bureau.

Pierre Laval urged French labourers to work in German factories to help the reich "crush bolshevism" and thus obtain release of French war prisoners.

Cache of $10,000,000 in securities and cash secreted by Henry M. Blackmer, teapot dome witness who fled to Paris in 1924, was found by treasury's Foreign Funds control.

23 Heavy German assaults compelled Russian retreat on Kharkov front.

Maj. Clement Attlee, British deputy prime minister, told commons that British fleet had lost 1 cruiser, 4 destroyers and 2 escort vessels while Italians lost 1 cruiser, 2 destroyers and 1 submarine, in Mediterranean convoy battle.

25 More than 1,000 R.A.F. bombers hammered German port of Bremen in 75-minute raid.

Rommel's panzer divisions thrust 60 mi. into Egypt to engage British forces between Sidi Barrani and Mersa Matruh; Gen. Sir Claude J. E. Auchinleck succeeded Lt. Gen. Neil Methuen Ritchie as commander of British 8th army in Egypt.

Russian armies abandoned Kupiansk as Germans developed major offensive southeast of Kharkov.

U.S. established headquarters in England for European theatre of operations under command of Maj. Gen. Dwight D. Eisenhower.

Gen. George E. Stratemeyer was made chief of staff of U.S. army air force.

26 U.S. evacuated 550 natives from the Pribilof islands in the Bering sea and from Atka island in the Aleutian chain.

U.S. war plants produced about 4,000 planes, more than 1,500 tanks, nearly 2,000 field and antitank guns and more than 100,000 machine guns and submachine guns in month of May, Pres. Roosevelt revealed.

27 F.B.I. announced arrest of saboteurs who had been landed from submarines on Long island with explosives and $150,000 in cash.

Pres. Roosevelt and Prime Minister Churchill asserted in

JUNE—*Continued*

joint statement that Allied military forces would initiate operations "to divert German strength from attack on Russia."

U.S. army bombers based in Hawaii again bombed Japanese installations on Wake island.

28 Germans opened new offensive from Kursk, 280 mi. south of Moscow, in attempted drive on Voronezh.

29 British troops evacuated Mersa Matruh on Egyptian coast in headlong retreat before Rommel's drive; nazi high command said 6,000 British were taken prisoner at Matruh.

30 About 3,000,000 youths between ages of 18 and 20 registered in U.S. for military service in fifth U.S. draft.

JULY

1 Sevastopol fell to nazis after 25 days of siege.

British desert armies retreated to El Alamein, 70 mi. from Alexandria.

F.B.I. agents in Altoona, Pa., seized 250 enemy aliens linked to plot to blow up horseshoe curve of Pennsylvania railroad.

Tokyo dispatches said Japanese armies had occupied all of Hangchow-Nanchang railway.

2 British counterattacks halted nazis in El Alamein sector; Prime Minister Churchill revealed Britain had lost 50,000 men and vast stores of supplies in Libya-Egypt battlefields, but house of commons approved his war policy by 475-to-25 vote of confidence.

Special military commission of 7 generals appointed by Pres. Roosevelt to try 8 nazi saboteurs; U.S. Caribbean defense command announced arrest of 20 persons suspected of subversive activities in Panama canal zone.

German casualties for first year of Russian war totalled 337,342 men dead and missing, nazi high command asserted; no mention was made of wounded.

3 Russians admitted loss of Sevastopol but declared its capture cost nazis 300,000 soldiers in dead and wounded.

Balkan guerrilla armies slew 4,000 Italian soldiers in battles on Albanian-Yugoslav frontier, according to private dispatches received in London.

U-boat sneaked into harbour of Port Limón, Costa Rica, and sank U.S. freighter.

U.S. army relaxed draft standards to enable induction of selectees with physical deformities for limited military service.

4 U.S. army and navy bombers hammered Japanese invasion forces in outer Aleutian islands; U.S. submarines sank 3 Japanese destroyers and set fire to fourth in 4th of July raids on enemy craft in Aleutian bases. U.S. army air forces stationed in Britain bombed nazi military objectives in Netherlands in first U.S. air attacks on axis in Europe.

Gen. Auchinleck's British armies captured 600 prisoners in heavy counterattacks against Gen. Rommel's Afrika Korps near El Alamein, Egypt.

Gen. Gonzalo Queipo de Llano, rebel "radio" general of Spanish Civil War, was confined to his residence by Generalissimo Francisco Franco; no reasons were given.

5 German armies made new gains in Kursk-Belgorod sector as Adolf Hitler's long-promised summer offensive surged into full swing.

7 German armies claimed capture of Voronezh on Don river as nazi offensive swept toward Caucasus oil area.

Maj. Gen. Carl A. Spaatz was named commander of U.S. air force in Europe; Maj. Gen. Dwight D. Eisenhower was named for promotion to rank of lieutenant general.

8 British planes dumped huge "block-busters"—2-ton bombs—on shipyards in Wilhelmshaven, German naval base.

9 British forces seized Mayotte, French island near Madagascar.

Foreign Minister Shukru Saracoglu was appointed prime minister of Turkey, succeeding late Dr. Refik Saydam.

10 Russian armies evacuated Rossosh as Hitler's tank forces rolled closer to the Don river.

British 8th Army advanced 5 miles along Egyptian coast railway and captured 1,500 axis prisoners.

11 Chetnik army of 250,000 men opened widespread guerrilla offensive against axis forces in Serbian mountains and at Italian-Croat frontier.

Brig. Gen. Ira C. Eaker was named chief of U.S. bomber forces in European theatre.

12 Giant R.A.F. bombers staged daring daylight raids against Danzig and Flensburg, blasting submarine slipways and shipyards.

All-India Congress party's working committee adopted Gandhi's plans for mass campaign to compel Britain to give India full independence.

13 F.B.I. agents arrested 8 men and 6 women suspected of having helped 8 arrested nazi suspects on trial for sabotage.

Free French movement was renamed "Fighting French."

14 Maj. Gen. Mark W. Clark was named commander of U.S. ground forces in England and Maj. Gen. John C. H. Lee was named commander of army's supply services in England.

15 Russians lost Boguchar in Don river bend but hurled back German assault at Voronezh.

War Labor board, in 8-to-4 vote, ordered four "little steel" companies to award 44-cents-a-day wage increase to their 157,000 employees.

16 Washington asked Finland to shut all Finnish consulates in U.S. by Aug. 1.

Vichy rejected Pres. Roosevelt's proposal to remove interned French warships from British naval base at Alexandria.

House naval affairs committee heard Horace Ward, sales engineer, tell how he earned $431,463 in commissions, mainly through "social contacts," for obtaining war contracts in 18 months.

Lauchlin Currie, administrative assistant to Pres. Roosevelt, arrived in China to confer with Chiang Kai-shek.

17 Yugoslav guerrillas staged 3 daring raids against fascist garrisons near Trieste and battled Italian forces only 6 miles from Fiume.

18 Maj. Gen. Lewis H. Brereton was named commander of U.S. air forces in middle east; U.S. pilots pounded axis shipping at Tobruk and Gulf of Bomba.

U.S. army banned flights "unnecessary to war effort" along wide strip of eastern seaboard extending from Canada to Carolina capes.

U.S. Maritime commission cancelled contracts with Higgins corporation in New Orleans for construction of 200 cargo ships, asserting Higgins yards lacked facilities for full scale production.

19 Evacuation of Voroshilovgrad admitted by Russians.

20 House of representatives adopted tax bill providing for 45% normal and surtax rate on corporations and 87½% tax on excess profits.

William Phillips, former ambassador to Rome, was named chief of U.S. Office of Strategic Services in London.

21 American submarines sank 3 Japanese destroyers in Aleutian waters, U.S. navy announced.

U.S. war casualties since Dec. 7, 1941, totalled 44,143, including 4,801 dead; 3,218 wounded and 36,124 missing.

23 Powerful "hammer and wedge" tactics by German and Rumanian forces compelled new Russian withdrawals toward Rostov.

Sec'y of State Hull called for international agency to keep peace by force if necessary and for Allied surveillance over aggressor nations after war.

Special federal grand jury indicted 28 persons, including Mrs. Elizabeth Dilling, George Sylvester Viereck, William Dudley

The pictures on this page are, left to right:

HIMMLER	May 18
STILWELL	May 25
CANTERBURY	June 21
CHURCHILL	July 2
CLARK	July 14

JULY—*Continued*

Pelley, Gerald B. Winrod and William Griffin on charges of plotting to "cause mutiny" in nation's armed forces.

24 **Italian bombers razed 4 Yugoslav towns** because villagers assertedly helped Serb patriots ambush an Italian military column.

25 **Russians admitted** that nazis had established two bridgeheads over Don river near Tsimlyansk, 120 mi. from Rostov.

Navy dep't said U.S. submarines in Japanese waters had sunk 5 enemy ships, including destroyer.

26 **British "block-buster" bombs** again destroyed whole sections of Duisburg in Ruhr.

27 **Russian armies evacuated Rostov** and Novocherkassk before swift German drive into Caucasus oil region.

600 R.A.F. bombers splattered Hamburg with 2-ton bombs in 50-minute attack that caused widespread damage and destruction in reich's largest port city.

U.S. airmen routed 50 Japanese planes attempting to raid Chungking.

U.S. Supreme court decided on special session to weigh plea of 8 nazi saboteurs to file habeas corpus writs.

28 **Allied patrols hurled back Japanese** in mountain battle along Kokoda road on northeast coast of New Guinea.

29 **National war service bill** urged by Pres. Roosevelt to mobilize total man and woman power of nation for war work.

Command of all armed forces in Aleutians had been unified under naval officer, navy communiqué in Washington said.

Axis ship losses up to June 30, 1942, including vessels damaged or sunk, totalled 6,178,681 tons, British admiralty announced.

30 **Sir Stafford Cripps's statement** to commons that Britain had "intentions" to open second front coincided with arrival in England of U.S. air chiefs.

Henry J. Kaiser, shipbuilder, assured senate committee that he could build 70-ton cargo plane in 10 months and 200-ton transport craft in 14 months.

Lauchlin Currie, personal representative of Pres. Roosevelt, assured Chinese that war operations in Europe would not prevent U.S. from increasing material aid for China.

31 **German panzer units captured Kushchevskaya** in new drive south to Maikop oil fields in Caucasus; Russians admitted new retreat below Bataisk.

R.A.F. armada of 600 planes razed industrial plants and set huge fires in 50-minute raid on Duesseldorf.

Japanese force of about 10,000 was on westernmost islands of Aleutian chain, U.S. navy spokesman declared.

U.S. supreme court upheld Pres. Roosevelt's power to order trial of 8 nazi saboteurs before military tribunal instead of civil court.

Mildred H. McAfee was named commanding officer of U.S. navy's women reserves (WAVES) with rank of lieutenant commander.

AUGUST

1 **Waldo Frank, U.S. novelist,** was expelled from Argentina because he criticized nation's isolationist stand during lecture tour.

German forces captured Salsk on rail line linking Stalingrad and Krasnodar.

2 **C.I.O. president Philip Murray,** proposed reopening of negotiations with A.F. of L. for establishment of unity between organizations.

6 men broke into apartment of Waldo Frank in Buenos Aires and severely beat him.

Warning that India's people might welcome Japanese invasion unless nation was granted full independence was sounded by Mohandas K. Gandhi.

3 **U.S. department of justice** filed suit against James C. Petrillo, president of American Federation of Musicians, charging union's ban on "canned music" over radio networks was violation of anti-trust act.

4 **William Green, A.F. of L. president,** agreed to proposals made by Philip Murray, C.I.O. leader, to seek basis for merging organizations.

House of commons passed bill transferring criminal jurisdiction over members of U.S. armed forces in England from British courts to U.S. military tribunals.

Swiss sources reported that papal nuncio had protested to Chief of State Pétain against "inhuman" arrests and deportations of Jews from occupied France to Silesia and occupied U.S.S.R.

Citing documents seized in raid at All-India Congress party offices in Allahabad, British gov't charged that Mohandas K. Gandhi and majority of congress working committee favoured "appeasement" with Japan.

German armies took Voroshilovsk in drive south of Don river and reached banks of Kuban.

5 **All-India Congress working committee** adopted resolution declaring that India would become full partner of United Nations if it were granted freedom.

British *White Paper* announced London's repudiation of Munich agreement and British recognition of Czechoslovak gov't's claims to pre-1938 frontiers.

William Dudley Pelley, leader of disbanded fascist "Silver Shirts," was convicted on 11 counts of sedition by federal jury in Indianapolis; he was sentenced to 15 years in prison Aug. 12.

6 **Max Stephan, Detroit restaurant owner,** was condemned to death for aiding nazi prisoner who escaped from Canada, in first U.S. treason conviction and sentence of execution since whisky rebellion in 1794.

Pres. Roosevelt vetoed synthetic rubber bill and established own fact-finding committee headed by Bernard M. Baruch to probe rubber situation.

Germans captured Tikhoretsk, important rail junction 90 mi. below Don river and cut Baku-Black sea railway south of Voroshilovsk.

7 **U.S. naval and marine forces** launched heavy offensive against Japanese positions around Tulagi area in Solomon islands.

Mohandas K. Gandhi called on nationalist followers in India to rise in mass campaign of civil disobedience.

WPB Chief Donald Nelson told shipbuilder Henry J. Kaiser to start immediate construction of 500 flying cargo boats of 70 tons each.

8 **Six of 8 nazi saboteurs** were executed in District of Columbia jail; other two received sentences of life and 30 years respectively.

Vichy report quoted Pierre Laval as declaring that Vichy would maintain strict neutrality if Allied troops opened second front on occupied French soil.

9 **British government arrested Gandhi** and 200 nationalist leaders after All-India Congress party approved resolution authorizing civil disobedience campaign; British authorities outlawed Congress party; rioting flared throughout India.

10 **Civil disobedience rioting** in India took 48-hour toll of 18 persons killed and 209 wounded.

12 **U.S. marines consolidated their positions** on three islands in Solomons group under protecting barrage of naval guns and bombs, U.S. navy communiqué said.

Prime Minister Churchill reached Moscow for conferences with Premier Joseph Stalin on conduct of war.

13 **Pres. Roosevelt** ordered navy to seize cable plant in Bayonne, N.J., after 1,000 employees rejected gov't appeal to return to work.

U.S. bombers crippled 3 of 4 Italian warships anchored in Greek harbour of Pylos.

U.S. marines slashed through jungles of Solomons and tightened grip on Tulagi, Florida and Guadalcanal islands.

15 **Germans launched offensive** against Stalingrad with

The pictures on this page are, left to right:

CRIPPS	July 30
GANDHI	Aug. 7
STALIN	Aug. 12
JINNAH	Aug. 16
MONTGOMERY	Aug. 18

AUGUST—*Continued*

all-out attacks against Russian lines on Kletskaya and Kotelnikovski fronts.

German firing squads executed 5 prominent Dutch hostages in reprisal for wrecking of train near Rotterdam in which scores of German soldiers were killed.

16 **Russian armies completely destroyed Maikop** before evacuating this Caucasus oil city.

Mohammed Ali Jinnah, president of All-India Moslem league, cautioned Britain he would end "co-operation" if Moslem interests were sacrificed in any compromise with All-India Congress party.

17 **U.S. marine force** raided Makin island in Gilbert group, killed 80 Japanese, destroyed all installations and retired with only "moderate losses."

Brig. Gen. Ira C. Eaker, chief of U.S. army bomber command, led Flying Fortress raid on occupied France in first all-U.S. aerial attack against nazi-held territory.

Prime Minister Churchill and Premier Stalin completed 4-day parley in "atmosphere of cordiality and complete sincerity," soviet communiqué announced.

Brazilian gov't charged Germany had disregarded "most elemental concepts of human rights" after axis U-boats sank 5 Brazilian ships along Bahia province coastline.

18 **Gen. Sir Harold R. L. G. Alexander** supplanted Gen. Sir Claude J. E. Auchinleck as commander of British imperial forces in middle east; Lt. Gen. B. L. Montgomery was named commander of the British 8th army in Egypt.

19 **Canadian and British commandos,** assisted by several units of U.S. "Rangers," staged 9-hour raid on French coast at Dieppe, under protective canopy of more than 1,000 planes; 182 nazi planes and 95 British craft were shot down in ensuing aerial battle; U.S. Flying Fortresses blasted German fighter plane airdrome at Abbeville during Dieppe raid.

German forces captured Krasnodar in drive toward Black sea port of Novorossiysk.

British lost aircraft carrier "Eagle," cruiser "Manchester," anti-aircraft cruiser "Cairo" and destroyer "Foresight" as axis planes and ships hammered convoy en route to Malta.

U.S. submarine sank Japanese cruiser or destroyer in western Aleutians, U.S. navy communiqué announced.

Chinese armies recaptured walled port of Wenchow while Japanese forces retreated toward Tsingtien after suffering heavy losses.

Selective service officials dropped Class 1-B draft rating in move to reconsider deferred registrants for full or limited military service.

20 **500 U.S. and R.A.F. planes** staged daylight raid over northern France, with U.S. Flying Fortresses bombing Amiens railway yards.

U.S. "leathernecks" smashed Japanese counterattack in Solomon islands, slaughtering all but 30 of Japanese landing party of 700.

21 **United Nations would avenge execution** of hostages and other "barbaric crimes" committed by axis in occupied Europe, Pres. Roosevelt declared.

Gerhard Wilhelm Kunze, former head of German-American bund, received 15-year sentence for conspiracy against the U.S.

22 **Brazil declared war** against Germany and Italy but not against Japan.

23 **British established independent army command** in Iraq and Iran under Gen. Sir Henry Maitland Wilson.

24 **Siege of Stalingrad** began; German tank forces paced a 50-mi. nazi advance to gates of Groznyi oil fields in Caucasus.

Herbert K. F. Bahr, German-born engineer, was convicted in Newark, N.J., on charges of being a nazi spy.

25 **Rev. Kurt Molzahn,** Philadelphia pastor, was sentenced to 10 years in federal prison for conspiracy to violate peace-time espionage act.

26 **Japanese landed troops** in Milne bay, 240 mi. east of Port Moresby.

Russian armies cut 30-mi. swath in German lines on Rzhev front after 16-day offensive that was launched on August 11; soviet bombers raided Berlin, Danzig and Koenigsberg.

27 **Gen. Georgi Zhukov** was appointed Russian first vice commissar for defense.

Army raised enlistment age from 45 to 50 for skilled men.

U.S.S. "Iowa," 45,000-ton battleship, launched at Brooklyn navy yard.

OPA suit charged that Henry J. Kaiser's west coast shipyard purchased steel at profiteer prices on "black market."

28 **Russians fought back savagely** and blunted nazi tank wedge at Stalingrad.

Pres. Roosevelt hinted in press interview that U.S. would rehabilitate cultural monuments of Spain and spur tourist trade to that country if it remained neutral during war.

U.S. gov't filed suit against Associated Press, charging it with violation of Sherman and Clayton anti-trust acts.

29 **"Round-the-clock" aerial offensive** against reich was maintained at steady pace as 500 British raiders showered Nuremberg with tons of explosives; Red army bombers raided Berlin, Koenigsberg, Danzig and Stettin.

U.S. navy announced land-based planes sank one Japanese destroyer and damaged two others near Solomon islands; American Red Cross revealed that Japan had refused safe conduct for passage of mercy ship with supplies for U.S. war prisoners.

Chinese forces recaptured Chuhsien, stormed into Lishui and seized two greatest airports in eastern China.

30 **Japanese troops in Milne bay area** of New Guinea were hurled back into sea by Australian forces, United Nations' communiqué declared.

Chinese stormed suburbs of Nanchang, major Japanese base in Kiangsi province, and recaptured Lungyu in Chekiang province.

SEPTEMBER

1 **Resignation of Foreign Minister Shigenori Togo** from Japanese cabinet was linked to reports of Nipponese preparations for attack on Siberia.

Japanese jungle troops battled way over towering Owen Stanley mountains to engage Australian forces at Kokoda.

2 **Herbert Karl Friedrich Bahr,** convicted nazi spy, was given 30-year sentence by federal court in Newark, N.J.

F.B.I. investigation resulted in sweeping exoneration of 2,049 of 2,095 federal employees who were charged by Dies committee of association with subversive and "un-American" activities.

More than 500,000 Americans in armed forces were serving overseas, declared John J. McCloy, assistant sec'y of war.

3 **Gen. Francisco Franco** ousted Ramón Serrano Suñer as Spanish foreign minister in sweeping cabinet shakeup; Gen. Francisco Gomez de Jordana succeeded him.

4 **Stalingrad became "Red Verdun"** as Russian forces slowed great onslaught of German war machine to virtual snail's pace.

Russian planes bombed Budapest, subjecting Hungarian capital to its first air raid of World War II.

5 **U.S., British and Russian planes** swept over nazi-held industrial centres from east and west, pounding Le Havre, Budapest, Koenigsberg and Bremen.

Loss of destroyer "Blue" and auxiliary transport "Colhoun" in south Pacific announced by U.S. navy.

7 **Pres. Roosevelt told congress** to enact curbs on wages and prices, declaring that he would put program into effect himself if congress failed to do so by Oct. 1.

174 warships and cargo craft were launched on Labor day; keels for 49 others were laid.

8 **Prime Minister Churchill** assured commons that Britain and U.S. had promised U.S.S.R. to come to its aid as quickly as possible and revealed that Britain lost 80,000 men in African desert defeat in summer of 1942.

Washington rejected Vichy's protest against raids of U.S. planes in German-held France.

9 **Smashing German frontal assault** compelled Russians to withdraw from two more villages west of Stalingrad.

Edouard Herriot and Jules Jeanneney, former leaders of French parliament, warned Marshal Pétain and Chief of Gov't Laval that Frenchmen would not follow them in war against Allies.

Japanese forces established new lines only 44 mi. from Allied base at Port Moresby in New Guinea.

10 **Nationwide gasoline curbs** and other motoring restrictions to avert "both civilian and military collapse resulting from rubber shortage" were recommended by Baruch rubber investigating committee.

Compromise on Indian freedom demands barred by Winston Churchill, who declared that

SEPTEMBER—*Continued*

Cripps plan represented "settled policy" of Britain.

British resumed offensive in Madagascar with warships and planes protecting landing operations against island's ports on west coast.

11 **Soviets admitted loss of Novorossiysk,** Black sea naval base.

R.A.F. bombers attacked Duesseldorf for 50th time.

Sir Stafford Cripps told commons that Gandhi prevented acceptance of his postwar freedom plan for India after other Indian leaders had accepted it.

12 **New Japanese landings in Solomons** reported by U.S. navy communiqué.

14 **Russian bombers attacked Bucharest,** the Ploesti oil fields and Koenigsberg; British bombers raided Bremen.

15 **U.S. marines** repulsed violent attempts by Japanese troops to land on Guadalcanal island.

WPB ordered coupon rationing for fuel oil as of Oct. 1 for 17 Atlantic seaboard and 13 midwestern states in effort to cut fuel oil consumption by 25%.

William M. Jeffers, railway president, was named U.S. rubber administrator, with complete charge of entire rubber program.

16 **Russian civilians** fought side by side with Red army to save Stalingrad as nazi shock troops battered northwest outskirts of city.

Two British destroyers, "Sikh" and "Zulu," were sunk during operations off nazi-held Tobruk, Admiralty announced.

17 **Charles E. Wilson,** president of General Electric Company, was named vice chairman of WPB.

18 **Fresh Red army troops from Siberia** helped Russians beat back three nazi shock forces that had penetrated into streets of Stalingrad.

Canadian forces suffered 3,350 casualties in Dieppe raid, or 67% of entire Canadian attacking force, Ottawa disclosed.

Nazis in Paris executed 116 Frenchmen who were described as "communist terrorists," a London report said.

20 **German high command** claimed 38 of 45 ships in Russia-bound Allied convoy, and 6 escorting warships, were sunk in raging Arctic battle.

21 **Nazis had executed 207,373 Europeans,** of whom 200,000 were Poles, since beginning of war, according to report of Inter-Allied Information committee in London.

23 **Henry Kaiser's Oregon yards** launched 10,500-ton Liberty ship 10 days after keel was laid, setting new shipbuilding record.

Tananarive, capital of Madagascar, captured by British after 2-week drive.

Joseph Stalin received Wendell L. Willkie, Pres. Roosevelt's emissary, for two-hour conference in Kremlin.

24 **"Jarvis," U.S. destroyer,** and auxiliary transport "Little" were sunk off Guadalcanal island in Solomons group, with probable loss of 275 lives, U.S. navy disclosed.

25 **More than 1,500 German dead** littered Stalingrad streets after Russian troops regained important position within embattled city.

Allied patrols, sloughing through rain-drenched trails, drove back Japanese forces from outposts in Owen Stanley mountains.

Nationwide gasoline rationing was ordered by William M. Jeffers, rubber director, in move to conserve tires.

26 **Wendell L. Willkie urged second front** in Europe at earliest possible moment, in speech in Moscow, warning that "next summer may be too late."

Pierre Laval ousted Jacques Benoist-Mechin, secretary of state, on charge that he was involved in nazi intrigues.

27 **Russians lost ground** to Germans in one sector of Stalingrad, but drove Germans from buildings in house-to-house battles in another.

Several hundred Americans in Occupied France were rounded up by French police and turned over to German authorities for internment in monkey house of Paris zoo.

28 **U.S. planes downed 42 Japanese aircraft** in 4 days of fighting in Solomons battle area, without single loss, U.S. navy announced.

29 **Australian forces** slashed through Japanese lines in Owen Stanley Mountains in first major drive against foe since Japanese landings in Buna, N. G.

24 British schoolboys and 2 teachers were killed when German raider dropped bombs over school in southern coastal area of England.

30 **Adolf Hitler assured reich** his armies would capture Stalingrad, said nazi armies were prepared to meet second front and expressed confidence that Germany would emerge victorious.

Nearly half of Allied force was lost in costly Dieppe raid, Churchill admitted to house of commons.

OCTOBER

1 **Pres. Roosevelt** returned from secret 2-week tour of country's war production centres and revealed war output had reached 95% of his objectives.

Office of Defense Transportation froze railway passenger schedules, thus banning custom of having special trains and extra sections for football and baseball games and other sport events.

Gov. Gen. Pierre Boisson ordered evacuation of "surplus" European women and children from overcrowded Dakar as reports from nazi-controlled Paris press hinted U.S. forces were planning to attack African port.

Nazi army of 300,000 made new advances into northwest outskirts of Stalingrad but lost ground in populated locality south of besieged Russian city.

2 **Anti-inflation bill,** providing stabilization of farm prices and industrial wages, signed by Pres. Roosevelt three hours after congress put finishing touches on program.

Five Japanese ships sunk by U.S. submarines in far eastern waters, navy communiqué said.

U.S. Flying Fortresses bombed aircraft factories at Meaulte, airfield at St. Omer, docks in Le Havre and foundries and steel mills near Liége, Belgium.

Edouard Herriot was put under house arrest at his home near Lyon for failure to sign pledge that he would not flee France, Swiss dispatch said.

Vichy authorities decided to conscript French labourers to meet insistent nazi demands for 150,000 skilled workers in reich war plants.

3 **Associate Justice James F. Byrnes** of U.S. supreme court was named director of economic stabilization with sweeping authority to control U.S. civilian purchasing power.

U.S. army forces, supported by naval units, occupied Andreanof islands, only 125 mi. from Japanese-held Kiska base.

Premier Stalin, in letter to American newsman in Moscow, declared Allied aid to Russia was inadequate and not commensurate with soviet contribution in war.

4 **Marshal Goering** told Berlin audience that German people would be fed during forthcoming winter at expense, if necessary, of German-occupied nations.

5 **Japanese landed "small reinforcements"** on Guadalcanal under cover of darkness, U.S. navy disclosed.

Australian troops occupied village of Kagi in New Guinea mountains and cleaned up Japanese troops in region.

Britain's new wood frame Mosquito bombers raided factory and power plant deep in Netherlands.

OPA announced overall rent ceiling, covering whole nation, would go into effect Dec. 5.

St. Louis Cardinals baseball team defeated New York Yankees, 4 games to 1, in 1942 world series.

6 **U.S. and Britain agreed** to increase material aid to soviet union in new protocols extending earlier tripartite agreement.

Pres. Roosevelt obliquely criticized Wendell Willkie's second front statements, in press conference.

Germans proclaimed state of emergency in Trondhjem area of Norway and executed 10 Norwegian hostages for "sabotage attempts."

7 **Attu and Agattu** islands in Aleutian chain apparently abandoned by Japanese, said U.S. Navy communiqué.

In Chungking, Willkie urged all-out "global" offensive and greater aid for U.S.S.R. and China.

U.S. would insist upon postwar trials of axis leaders responsible for sabotage and barbarism before United Nations tribunals, Pres. Roosevelt declared.

James F. Byrnes, economic stabilization director, fixed loan rates of 1942 wheat and corn crops at 85% of parity.

United Mine Workers of America voted to withdraw from C.I.O.

OCTOBER—*Continued*

8 **Nazi high command** abandoned attempt to storm Stalingrad and announced plan to batter city with heavy artillery.

WPB ordered gold mines to close in order to release manpower for mining tasks of more importance to war effort.

Yugoslav guerrillas opposing rule of Gen. Draja Mikhailovitch had been killed in "spontaneous" uprising of people, according to Washington reports.

9 **U.S. and Britain** announced they were planning to relinquish their respective territorial rights in China.

Armada of 115 big U.S. bombers and escort of 500 Allied fighter planes raided heavy industries in Lille and shot down 53 nazi planes.

Chile protested against Under-sec'y of State Welles's statement that secret axis radio station in Chile was responsible for sinking of many United Nations ships.

Victory tax of 5% on all annual incomes of more than $624 was voted in U.S. senate.

Ethiopia joined United Nations; Emp. Haile Selassie promised help in war against axis.

10 **U.S. navy and marine corps aviators** sank Japanese destroyer and damaged 2 other enemy warships in fighting off shores of Solomon islands.

Soviet decree abolished political commissars in Russian army, returning full military control to Red army officers.

12 **Three Japanese cruisers** and 3 destroyers were sunk by U.S. task force in sea battle during night of Oct. 11–12 off Cape Esperance in Solomons; U.S. lost 1 destroyer.

Draft of 18- and 19-year-old youths for military service asked by Pres. Roosevelt.

Three U.S. cruisers—"Quincy," "Vincennes" and "Astoria"—had been sunk Aug. 9 during sea battle off Solomons, U.S. navy announced.

Atty. Gen. Francis Biddle announced that more than 600,000 Italian citizens living in U.S. would no longer be regarded as enemy aliens.

Chicago court dismissed gov't's suit against Petrillo ban on recorded music for radio and juke boxes.

William M. Jeffers, rubber administrator, defied senators who assailed plan to use rayon in rubber production and declared he would not be influenced by anyone.

13 **Motorists would be limited to 5 tires** each under scheduled nationwide gas rationing, an OPA order announced.

U.S. submarines in far eastern waters sank Japanese cruiser and 4 merchant ships, U.S. navy communiqué said.

15 **U.S.S.R. bluntly demanded immediate trial** and punishment of captured axis leaders and specifically cited Rudolf Hess.

R.A.F. squadrons at Malta shot down 94 axis planes in 5 days of violent air duels.

16 **Japanese landed large numbers** of troops and shelled U.S. positions on Guadalcanal island, navy revealed.

17 **Arrival of U.S. troops in Liberia** was reported in dispatch from Monrovia.

20 **Pres. Roosevelt** indicated many soldiers over 35 would be furloughed to return to farm and factory jobs as soon as 18- and 19-year-olds were available for draft.

Huge $9,000,000,000 tax bill was sent by congress to Pres. Roosevelt for signature.

British and U.S. warships had sunk more than 530 axis submarines since beginning of war, First Lord of Admiralty A. V. Alexander revealed.

Chilean cabinet resigned following crisis caused by U.S. Under-sec'y of State Welles's assertion that axis spies were operating in Chile.

21 **Loss of destroyers "Meredith" and "O'Brien"** in Solomons was announced by navy dept. in Washington.

Yugoslav patriots repelled axis forces in big Balkan battle, killing 1,200 enemy troops and losing between 600 to 900 men in 3 days of fighting.

Mitchell F. Hepburn resigned as premier of Ontario and was succeeded by Atty. Gen. Gordon Conant.

22 **OPA placed new ceilings** on consumers' prices of bread, flour and pork.

R.A.F. planes unloaded giant bombs on Genoa, blasting city's port area and naval base.

23 **Huge offensive against axis forces in Egypt** was launched by British 8th army under Lt. Gen. B. L. Montgomery; at same time big British bombers lashed Genoa, main axis port for supplies shipped to Egypt.

Mrs. Eleanor Roosevelt reached London and was greeted by King George VI and Queen Elizabeth.

24 **Milan was raided** by British bombers as R.A.F. synchronized attacks on Italian ports and industrial centres with British offensive in Egypt.

Vice Adm. William F. Halsey, Jr. replaced Vice Adm. Robert Lee Ghormley as commander of naval operations in Solomon islands area.

Eight American fliers were listed as missing in Gen. Doolittle's raid on Tokyo April 18, war dep't revealed following Japanese publication of names of U.S. pilots captured in raid.

25 **British submarines sank 5 Italian supply ships,** damaged 5 others and probably sank a destroyer and armed merchant cruiser in Mediterranean, Admiralty declared.

26 **U.S. aircraft carrier "Wasp"** had been sunk by Japanese submarine, navy disclosed; communiqué also announced that another aircraft carrier, name of which was not revealed, and destroyer "Porter" were lost in sea battle near Santa Cruz islands in south Pacific; in latter action on the night of Oct. 25–26, U.S. fleet sank 2 destroyers and damaged 2 carriers, 2 battleships, 4 cruisers and destroyers.

Wendell L. Willkie again urged second front in Europe to relieve pressure on U.S.S.R. and all-out attack on Burma to aid China, in nationwide broadcast from New York city.

British 8th army moved forward on El Alamein front in Egypt and captured 1,450 prisoners.

OPA ordered civilian coffee rationing on basis of 1 pound every 5 weeks per individual, to start Nov. 29.

27 **Associated Press filed answer** to gov't's anti-trust action and charged federal suit constituted attack on freedom of press.

Stringent regulations to hold all salaries to $25,000 limit, excluding income taxes, charity donations, life insurance premiums and fixed obligations, were issued by James F. Byrnes, economic stabilization director.

28 **Germans launched flank drive** against Russians at Nalchik, in move against oil city of Ordzhonikidze in Caucasus foothills.

Gen. MacArthur lauded Australians for their "unanimous support" of his command and declared he had no political ambitions whatsoever.

30 **Japanese fleet withdrew from Solomons,** leaving Americans in full possession of their lines, Sec'y of Navy Knox revealed, but warned that only "first round" had been fought.

31 **American Flying Fortresses,** in third attack on Buin, Solomon island port, sank Japanese destroyer and damaged another, Allied headquarters in Australia announced.

50 planes bombed shopping centre of Canterbury in first big German daylight raid on England in 2 years.

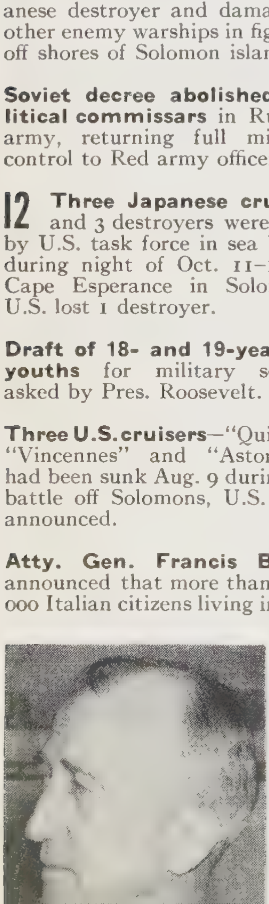
NOVEMBER

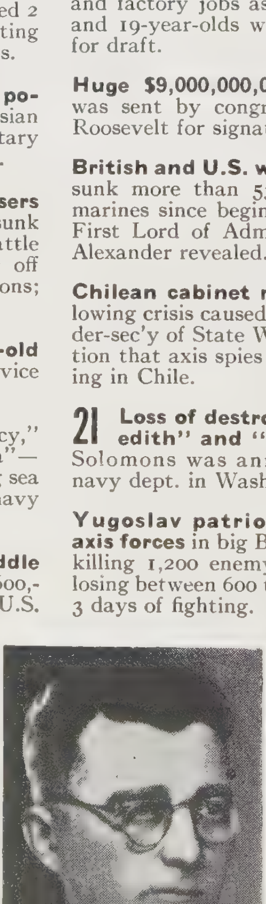
1 **War was coming closer to Turkey's shores,** Pres. Ismet Inonu warned nation in address to national assembly.

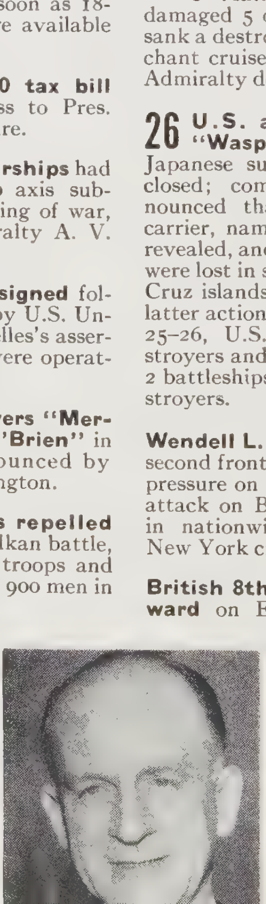
2 **Allied ground forces** recaptured Kokoda and pursued retreating Japanese along New Guinea mountain trail leading to Buna; Japanese reinforcements were landed on east side of U.S. positions in Guadalcanal.

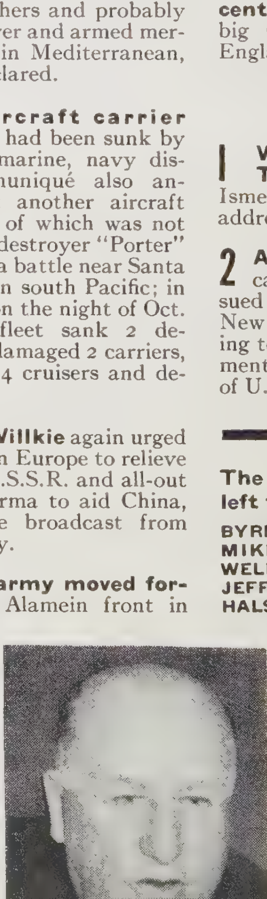
The pictures on this page are, left to right:

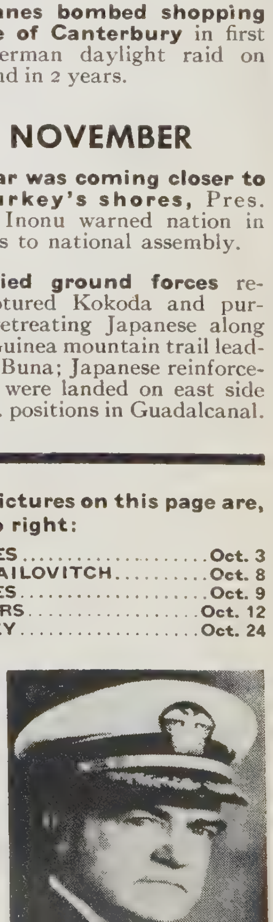
BYRNES	Oct. 3
MIKHAILOVITCH	Oct. 8
WELLES	Oct. 9
JEFFERS	Oct. 12
HALSEY	Oct. 24











NOVEMBER—*Continued*

Russians admitted nazi forces had pushed beyond Caucasus town of Nalchik.

3 Republicans won decisive gains throughout nation in congressional, gubernatorial, state and municipal elections.

5 Lt. Gen. B. L. Montgomery announced that British had won complete and absolute victory in Egypt and that Rommel's armies were in full retreat; Gen. Ritter von Thoma, second in command to Rommel, was captured by British armies in Egypt.

Madagascar surrendered to British after 6 months of hostilities.

6 Joseph Stalin expressed confidence that Allies would open second front "sooner or later" and asserted that 8,000,000 nazi officers and men had been put out of action in Russian campaign.

Dispatches received in Madrid revealed that big Allied convoys, escorted by powerful naval force, were moving eastward from Gibraltar.

Treasury amended its $25,000 salary limit to exempt salaries payable under 1942 contracts.

7 British 8th army chased Rommel's troops 240 mi. westward to Libyan frontier, capturing 20,000 prisoners.

Joseph W. Martin, Jr. announced he would resign as chairman of Republican national committee to devote more time to congressional duties.

8 Large U.S. armies led by Lt. Gen. Dwight D. Eisenhower landed on Mediterranean and Atlantic coasts of French North Africa; Algiers surrendered with little resistance; Allied bombers scored hits on French battleship "Jean Bart" and four submarines in Casablanca harbour.

Pres. Roosevelt, who announced landings in North Africa as they were beginning (Dec. 7 in the U.S.A.) said they were made to forestall axis invasion of Africa; he assured French, Portuguese and Spanish that Allies had no desire for their territories.

Adolf Hitler, addressing nazis in Munich, said reich would strike counterblow against Americans in Africa in due time.

Marshal Pétain protested bitterly against U.S. landings in French North Africa and severed diplomatic relations with U.S.

R.A.F. planes rocked waterfront of Genoa with 2-ton bombs, inflicting severe damage on city's war plants and port.

9 U.S. forces surrounded Oran and captured 3 of 4 airfields in vicinity; France and U.S. formally severed diplomatic relations; Roosevelt asked Sidi Moncef Pasha, bey of Tunis, to permit passage of U.S. troops across Tunisia.

10 Allied headquarters in London revealed that Adm. Darlan was in U.S. custody in Algiers and was being "entertained" by an American general "with respect and dignity due an officer of his rank."

Oran fell to U.S. forces while other troops entered outskirts of Casablanca.

Churchill said African landings were prelude to new front against Hitler and said Roosevelt had devised this strategy.

11 Adolf Hitler declared the Franco-German armistice of June 1940 at an end as nazi troops marched into unoccupied zone while Italian forces advanced west of Nice and landed in Corsica; Marshal Pétain protested against German move as breach of armistice terms.

Casablanca surrendered to U.S. troops; Adm. Darlan ordered all French forces in north Africa to cease firing; Allied headquarters in Africa announced German air-borne troops were landing in Tunisia.

12 British 1st army headed by Lt. Gen. K. A. N. Anderson joined U.S. troops in eastern Algeria and started drive toward Tunisian border.

Maj. Gen. Mark W. Clark was revealed as head of secret U.S. mission to French Africa three weeks before U.S. invasion to sound out sympathies of French officers and lay groundwork for military operations.

U.S. senate approved bill for drafting 18- and 19-year-old youths in army and sent measure to White House for signature.

13 British 8th army occupied Tobruk and continued advance into Cyrenaica.

Adm. Darlan announced that he had assumed full responsibility for French interests in North Africa with approval of U.S. authorities.

Joseph Stalin, in letter to U.S. newsman, asserted that Anglo-American operations in Africa had turned tide of war in Europe and opened way for early collapse of axis.

14 Marshal Pétain rebuked Adm. Darlan for joining Allied cause and told his former assistant to order French troops in Africa not to resist axis forces.

Eddie Rickenbacker and 5 occupants of army bomber, missing in Pacific since Oct. 21 were rescued by U.S. flying boat, navy announcement revealed.

15 Major naval victory off Guadalcanal scored by U.S. fleet over Japs, who lost 28 ships sunk—including battleship, 8 cruisers, 6 destroyers, 12 transports—and 10 ships damaged, against U.S. losses of 2 cruisers and 7 destroyers; battle was fought Nov. 13–15.

Adm. Darlan proclaimed protectorate over all French North Africa and named Gen. Giraud commander in chief of all French land, sea and air forces there.

16 Fighting French in London criticized U.S. deal with Adm. Darlan, declaring that they could not accept establishment of a "Vichy regime in Africa."

Gen. MacArthur and staff went to New Guinea jungles to direct Allied operations against Japanese bases at Buna and Gona.

Casualties for all U.S. armed forces as of Nov. 12, 1942, excluding operations in Africa and Solomons, totalled 48,956, OWI revealed.

17 U.S. political arrangements with Adm. Darlan in French North Africa were only "temporary" expedients, justified by military considerations, said Pres. Roosevelt.

British 8th army occupied port of Derna in Libya and pressed westward toward Bengasi.

18 British and U.S. parachute troops landed deep in Tunisia in daring manoeuvre to seize axis airfields; London reports said that Fighting French column of 10,000 men based in Lake Chad area was moving northward toward Libya.

Marshal Pétain gave Pierre Laval dictatorial powers, authorizing the Vichy chief of gov't to make laws and decrees.

All U.S. youths who had become 18 years old since July 1, 1942, were ordered to register between Dec. 11 and 31.

20 Allied fliers sank Japanese cruiser and destroyer in New Guinea area, United Nations high command revealed.

Laval violently attacked Britain and U.S. in broadcast, proclaimed confidence in eventual axis victory.

21 Abandoned equipment littered streets of Bengasi as British marched into Libyan port city.

Adm. Robert withdrew French West Indies and French Guiana from Vichy influence and reached an agreement with U.S. state dep't.

1,600-mile Alaska international highway, linking U.S., Canada and Alaska, was officially opened.

22 Russians opened offensive in Stalingrad area, capturing Kalach on Don river, advancing 40 mi. around Stalingrad's flanks and slaying more than 15,000 nazis.

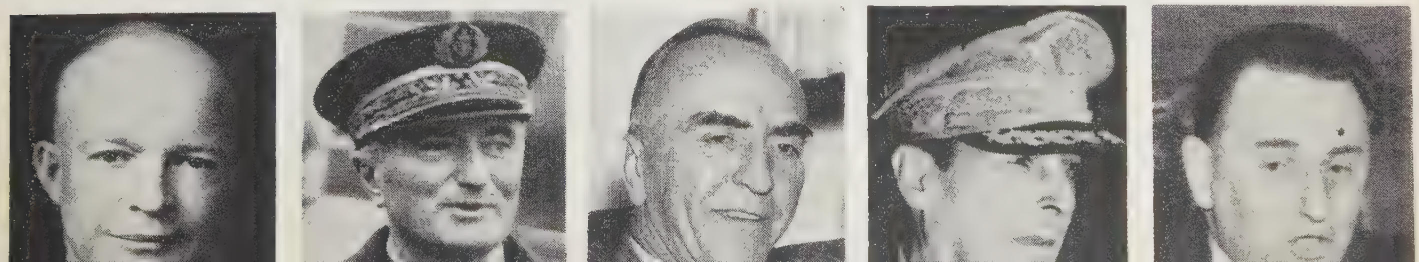
Sir Stafford Cripps left British war cabinet post as lord privy seal to become minister of aircraft production.

23 Dakar came under Allied control as Gov. Gen. Pierre Boisson of French West Africa decided to submit to leadership of Adm. Darlan.

Russian troops occupied Serafimovich and Chernyshevsk in Don river bend.

The pictures on this page are, left to right:

EISENHOWER	Nov. 8
DARLAN	Nov. 13
RICKENBACKER	Nov. 14
MAC ARTHUR	Nov. 16
HENDERSON	Dec. 17



NOVEMBER—*Continued*

24 **Australian forces entered Gona** while U.S. columns advanced to positions a mile from Buna, N.G., Allied communiqué said.

Three German-Americans who helped Herbert Hans Haupt, executed nazi saboteur, were sentenced to death for treason by federal court in Chicago.

Jan Valtin, author and former secret agent for Germany and U.S.S.R., was arrested by U.S. immigration authorities, and held for possible deportation to Germany.

25 **WLB authorized employers** to put women workers on parity with men and give them equal pay for equal work.

Wendell Willkie, speaking at Toronto, criticized by inference U.S.-Darlan arrangement, warning that “moral losses of expediency” always outweigh temporary gains.

26 **Allied bombers sank two Japanese destroyers** guarding convoy that attempted to land fresh troops in Buna area of New Guinea.

27 **French scuttled most of their fleet** in Toulon harbour as Germans moved into naval base city, Vichy dispatches said; Hitler, in letter to Marshal Pétain, said seizure of Toulon was forced upon him by “treachery” of high French officers.

28 **Russians routed 5 divisions,** captured more than 500 populated places and killed 10,000 Germans in surprise offensive in Velikie Luki zone near Latvian frontier, Moscow dispatches said.

29 **Prime Minister Churchill warned Italian people,** in radio broadcast, to oust their leaders or suffer prolonged air attack on their cities.

Coffee rationing went into effect throughout U.S. on basis of 1 pound every 5 weeks for persons over 15.

DECEMBER

1 **U.S. naval squadrons** repulsed new Japanese attempt to land on Guadalcanal, sinking 6 warships and 3 merchantmen and killing estimated 5,000 Japanese troops; 1 U.S. cruiser was lost and “other vessels” damaged.

British warships sank 3 axis destroyers and 4 cargo vessels bound for Tunisia, British admiralty revealed.

Nationwide gasoline rationing, affecting 27,000,000 U.S. motor cars and 5,000,000 motorbuses and trucks, went into effect.

2 **Mussolini assured his people** that axis victory was certain, but urged civilian noncombatants to evacuate industrial cities.

3 **Loss of 16 Allied vessels** in North African landing operations announced, including 5 U.S. transports; British lost 10 ships, including aircraft carrier, 2 destroyers; 1 Netherland’s destroyer was sunk.

4 **In first blow against Italian mainland,** U.S. bombers attacked harbour of Naples, sinking cruiser and damaging battleship and another cruiser.

Tébourba, Tunisia, recaptured by axis armies, which also penetrated Djedeida.

WPA was ordered abolished by Pres. Roosevelt.

5 **In sweeping move** to solve manpower problem, Pres. Roosevelt (1) suspended army induction of all men over 38, (2) halted voluntary enlistments of all men between 18 and 38, (3) made Paul V. McNutt virtual dictator over U.S. manpower, (4) put selective service under McNutt’s control, (5) gave him exclusive charge of training workers for war industries.

Real facts of Pearl Harbor attack Dec. 7, 1941, were disclosed by navy; 5 battleships, 3 destroyers, 1 minelayer and 1 target ship were sunk or severely damaged; 3 battleships, 3 cruisers, 1 seaplane tender and 1 repair ship were damaged but quickly repaired; 2,343 in the three armed services were killed and 960 missing.

6 **Sec’y of Agriculture Wickard** was named food administrator by Pres. Roosevelt.

Fliers of 8 Allied nations razed military objectives in nazi-occupied France and Holland in what was described as greatest daylight bombing offensive of war to date.

Creation of postwar Netherlands “commonwealth,” in which Netherlands, Netherlands Indies, Curaçao and Surinam would have internal autonomy, was forecast by Queen Wilhelmina in radio broadcast.

7 **Harrison E. Spangler** was unanimously elected chairman of Republican National committee.

Casualties of U.S. armed forces in first full year of war totalled 58,307, including 8,192 dead and 6,335 wounded, OWI reported.

8 **15 French warships** apparently were still afloat in Toulon harbour, although 195,000 tons of naval craft had been scuttled, Sec’y of Navy Knox revealed.

Gen. Franco told Spain world’s choice was between communism or fascism and indicated he favoured latter.

10 **Nazi broadcast** revealed that Hitler had revamped German high command and made Gen. Kurt Zeitzler chief of German general staff.

11 **Allied capture of Gona** on northeast shores of New Guinea was announced by United Nations headquarters in Australia.

12 **Only 4** of 4,000 U.S. soldiers were lost when 21,936-ton “President Coolidge,” converted troopship, struck mine and sank in south Pacific, navy revealed.

13 **Anton Mussert, Dutch nazi chief,** was made “leader of the Netherlands people” by Adolf Hitler.

14 **Pierre Laval vowed to crush** ruthlessly everything in his path that would prevent him from “saving France.”

Madagascar was formally handed over to Fighting French administration by British government.

15 **Capture of Buna village,** New Guinea, by Australian and U.S. troops was announced by Allied headquarters.

16 **Adm. Darlan denied personal ambitions** in assuming leadership in North Africa, declaring he hoped only to free France and then retire.

17 **Leon Henderson submitted his resignation** as OPA administrator.

Plans to mobilize several hundred U.S. universities and colleges for training men in armed forces were disclosed by Sec’y Knox and Sec’y Stimson.

Adm. Darlan announced that French warships at Alexandria, Dakar and at North African ports would join Allies.

18 **OPA temporarily suspended gasoline sales** to holders of A, B and C ration books in 17 eastern states because of sudden gas shortage.

19 **British offensive in Burma** had gained 40 mi. in first few days of drive, New Delhi communiqué revealed.

Hitler held two-day conference with Count Ciano and Pierre Laval on axis strategy.

Rommel’s Afrika Korps retreated to positions 135 mi. west of El Agheila.

20 **44 nazi planes were shot down** in aerial battle with U.S. bombers that raided airport at Romilly-sur-Seine, France; 6 U.S. planes were lost.

Sumatra was attacked by British aircraft carrier force; R.A.F. naval planes set large fires in Sabang.

21 **Nevada divorces** were ruled valid in all states by U.S. supreme court decision.

23 **Arrival of U.S. troops in Dakar** was disclosed.

24 **Adm. Darlan was assassinated** in Algiers; his slayer, young unidentified Frenchman, was executed Dec. 26; act was termed “first-degree murder” by Pres. Roosevelt.

Pope Pius XII denounced Marxian socialism and “godless” totalitarianism and appealed for new world with freedom of race, religion and political opinion.

Fourth major offensive was opened in Caucasus, where Russians reconquered positions in Nalchik area.

25 **Ten U.S. Flying Fortresses** raided Wake island, Tokyo communiqué said.

27 **Gen. Henri Honoré Giraud** was selected to succeed Darlan as high commissioner of French Africa.

Rationing of virtually all canned vegetables, fruits and soups under “point” system, beginning in Feb. 1943, was announced by Food Administrator Wickard.

28 **Vice Pres. Wallace** in broadcast called for postwar world federation of nations to keep peace and maintain economic and social justice.

29 **Kotelnikovski was captured** by Russian armies, soviet communiqué said.

French Somaliland joined United Nations under aegis of De Gaulle’s Fighting French.

30 **Gen. Giraud announced that 12 persons** had been arrested for plotting death of himself and Robert D. Murphy, U.S. minister in North Africa.

31 **Chinese mission in Washington** prepared to return home; recall was laid to Chiang Kai-shek’s dissatisfaction with the quantity of U.S. aid sent to China.

BOOK OF THE YEAR

Abrasives.

For many years the development of the automotive industry was the major factor in the demand for most of the commercial abrasives, but this shifted to the war program. The accompanying table lists as much of the data on production in the United States as was made available for publication. Sharp increases will be noted in almost every item in the list.

United States Production of Abrasives
(In short tons, or as indicated)

	1938	1939	1940	1941
Aluminous Abrasives				
Corundum*	2,131	2,029	2,989	4,021‡
Emery	..	765	1,046	4,876
Carbon Abrasives				
Industrial diamonds, carats*	1,397,398	3,590,111	3,809,856	2,911,117‡
Silica Abrasives				
Quartz	18,611	34,959	31,865	41,685
Sand (abrasive)	?	668,027	856,309	1,001,814
Sand and sandstone (ground)	237,167	310,512	342,218	487,665
Tripoli	22,188	33,474	30,212	29,301
Silica Stone Abrasives				
Grindstones	4,653	7,917	8,790	13,573
Millstones (value)	$3,743	$11,084	$6,558	$15,579
Pulpstones	1,553	2,517	4,533	1,963
Sharpening stones	511	620	?	?
Silicate Abrasives				
Garnet	2,669	4,056	4,716	5,501
Pumice	65,742	89,159	82,407	117,310
Artificial Abrasives				
Silicon carbide†	25,346	24,206	33,042	44,962
Aluminum oxide†	53,220	50,468	98,531	147,759
Metallic abrasives†	25,771	42,015	50,016	86,309

*Imports; no domestic production. †Includes Canada also. ‡Jan.–Sept. only.

Corundum.—There is no domestic output of corundum in the United States, imports forming the entire supply, mostly from South Africa, where production more than doubled in 1941.

Diamonds.—The demand for industrial diamonds continued, and imports in 1941 were maintained at the same high level that had prevailed in 1939 and 1940. The bulk of the imports are used in machine tools or some type of abrasive work. (*See* also DIAMONDS.)

Emery.—Besides the domestic production the United States normally imports large amounts from Turkey and Greece, but this source of supply was cut off, and there were no imports in 1941, which accounted for the exceptionally heavy increase in the domestic output.

Flint.—Former imports of silex for mill liners and of flint pebbles for use as a grinding medium in tube and ball mills, mainly from Denmark, Belgium and France, were entirely cut off, with the result that imports dropped to one-tenth of their former volume. Domestic substitutes were developed, and in 1941 production increased to 13,561 short tons of pebbles and 3,411 tons of liners.

Garnet.—While the bulk of the United States output of garnet has formerly come from the Adirondack regions of New York, New Hampshire and Vermont, there is a small by-product output in North Carolina, and in 1941 production was started in two localities in Idaho.

Grindstones, Millstones and Pulpstones.—Domestic production is usually supplemented by a small amount of imports.

Pumice.—Italy was cut off as a source of imports, which practically ceased.

Rottenstone.—Having only a limited production, and being closely related to it, the output of Pennsylvania rottenstone is included with that of tripoli.

Sharpening Stones.—Because of the limited number of producers no data were published on oilstones, whetstones, scythestones, rubbing stones and hones. Imports usually amount to about 10% of the domestic output.

Sand and Sandstone.—Included in the outputs reported in the article SAND AND GRAVEL and under sandstone in the STONE article are considerable outputs of abrasive sand and of ground sand and sandstone used for abrasive work. These have been isolated and included in the table on page 17.

Tripoli.—Imports of tripoli have always been small, but have increased somewhat, being 364 short tons in the first nine months of 1941, against 227 tons in 1940.

Artificial Abrasives.—Since they have replaced natural abrasives in many uses, the output of the chief types of artificial abrasives is presented for comparison. (G. A. Ro.)

Abyssinia: *see* ETHIOPIA.
Academic Freedom: *see* EDUCATION.
Academy of Arts and Letters, American: *see* AMERICAN ACADEMY OF ARTS AND LETTERS.
Academy of Arts and Sciences, American: *see* AMERICAN ACADEMY OF ARTS AND SCIENCES.
Academy of Political and Social Science, American: *see* AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE.
Accident Insurance: *see* INSURANCE.

Accidents.

In 1942 the accident experience of the United States was drastically affected by the war. Fatalities from all causes showed a decrease of 8% from 1941 experience, 93,000 people being killed in 1942.

Industrial fatalities in 1942 increased 6% over the first ten months of 1941 to a total of 15,700, with proportionate increase in the number of permanent and partial disabilities. Several factors contributed to the increase in the industrial accident rate. More than a million women entered war production work during the year, and there was a tremendous influx of men and boys, many of whom had no previous industrial experience. Physically handicapped and over-age workers were taken into jobs for which there were in many cases inadequate training facilities and few special precautions against accident to such groups. Sub-contracting brought into production many thousands of small plants with little or no engineering for safety in their machines, buildings and processes, and comparatively little safety supervision over their operations.

The ten-month accident frequency rate (number of accidents per million man hours worked) of industrial units reporting in the inter-plant contests of community safety councils was 12.96, a 6% increase over the comparable period of 1941. The average rate of National Safety council members in six of its sectional contests was 9.01, an 8% increase over the year before.

Farm deaths, on which accident data are difficult to obtain, increased slightly during 1942. The drain on the younger and more vigorous farm workers for the armed services required the employment of many persons less accustomed to the tasks of the farm.

Deaths from Accidents in the U.S.A., 1942 and 1941

	1942	1941	Change
All accidents*	93,000	101,513	— 8%
Motor vehicle	27,800	39,969	—30%
Public (not motor vehicle)	15,500	15,000	+ 3%
Home	30,500	30,500	0%
Occupational	18,500	18,000	+ 3%

*The all-accident totals include deaths of military personnel, not shown separately. Motor vehicle deaths include some deaths which are also shown in other categories, such as occupational and home. The 1941 all-accident and motor vehicle totals are U. S. Census Bureau figures. All others are National Safety Council estimates.

WORKER DEMONSTRATING a principle of safety—use of a belt to prevent falls from ladders and other high places. The National Safety council and other agencies intensified the campaign against industrial accidents in 1942 as employment in war plants rose to new high figures

Fatal home accidents during 1942 occurred with approximately the same frequency as in 1941, totalling approximately 30,500 in each year. Public deaths (non-motor vehicle, drowning, sports, firearms, etc.) increased 3% over the previous year.

The number of fatal accidents to men in military and naval service increased in 1942. Whether this increase was in proportion to the larger number of men involved was not subject to estimate. The term "accident" here excludes injury due to enemy action.

The greatest single disaster to the civilian population was the Boston night club fire of November 28, in which some 500 persons were fatally injured. In the south central states spring tornadoes took 250 lives.

Coal mining fatalities to Nov. 1, 1942, rose 12% to a total of 1,166. Steam railroad deaths in the same period rose 6% to a total of 4,405. Two-thirds of this latter increase was suffered by employees of the roads. Increasing employment in these industries was of course responsible, at least in part, for the accident increases.

The serious nature of U.S. manpower loss through accidents was fully understood by accident prevention agencies. Local safety councils, insurance companies, state and federal agencies, and the National Safety council intensified accident prevention efforts during 1942 in order to prevent this loss to U.S. productive power.

The United States Office of Education, in collaboration with the United States department of labor, instituted nation-wide programs of safety education intended to reach foremen, supervisors and all men and women employed in war production who might profit by such instruction. This training was in the form of a 96-hour course given through nearly 100 colleges and technical schools throughout the country. Some 26,000 men and women had completed or were enrolled in these courses at the end of 1942.

Following President Roosevelt's request of Aug. 1941 for greater effort to stop the loss of productive manpower through accidents, the National Safety council launched a nation-wide campaign, attempting through radio programs, pamphlet materials to industry, field service, school organizations, local safety councils and other agencies to reduce accidents to war workers, whether on or off the job. Substantial support of this effort was received from industrial leaders, government agencies and the general public.

The national accident situation in 1942 produced a more general realization that accident losses are a serious drain on the nation's resources, both in peace and in war, and that greatly increased safety efforts are needed, from the economic, as well as the humanitarian viewpoint. (*See* also Death Statistics; Disasters.) (R. L. Fo.)

Traffic Accidents.—The total of 27,800 deaths in 1942 was 12,200 less than in 1941, when an all-time high mark of 40,000 deaths was reached. This represented a reduction of 30%. The traffic toll was the lowest since 1927. Of the 27,800 persons killed, approximately 18,500 were workers. This represents a heavy drain on vitally needed manpower.

Wartime restrictions on speed and travel and the adoption by many cities and states of more modern traffic control techniques were the chief factors contributing to the reduction in the number of deaths.

In addition to the fatalities, 1942 traffic accidents resulted in approximately 1,000,000 non-fatal injuries, 80,000 of which left some permanent impairment.

An outstanding U.S. achievement in 1942 was the development of the "Wartime Highway Traffic program" and its sponsorship by 30 national organizations interested in traffic safety and conservation. A major objective of this program was the conservation of manpower and man hours through traffic accident prevention. The program, which was published in full in the *Congressional Record* on Dec. 15, 1942, set forth specific recommendations under the general headings of police control, engineering, legislative action, training, motor vehicle administration and public participation.

Regulatory laws or ordinances for traffic control under such wartime emergencies as blackouts and air raids were enacted by the various states and by local governing bodies. Following establishment of the nation-wide 40-mile-an-hour speed limit (and the later reduction of this speed limit to 35 mi. an hour) supplemental legislation to effectuate this conservation measure was adopted in many localities.

The American Association of Motor Vehicle Administrators instituted a campaign for strict enforcement of the 35-mile speed limit by suspension of motor vehicle registration privileges and by suspension and revocation of drivers' licences.

A "War Traffic Control" program was developed for the Office of Civilian Defense by the International Association of Chiefs of Police, and enforcement officials devoted considerable thought to the control of traffic during possible wartime disasters. Attention was given also to alleviating traffic congestion and conserving man power by reducing the number of accidents in certain key military and industrial areas designated by the U.S. Army Transportation corps as being in greatest need of traffic control assistance.

New training techniques, including use of films and the holding of summer training camps, were developed for 325,000 boy and girl members of school safety patrols in 3,500 communities. The patrols received greater recognition during 1942, as many police officials found it impossible to continue to assign men to school crossing duty. A national program of school bus driver training was inaugurated by the American Automobile association in co-operation with the Office of Defense Transportation and the United States Office of Education. Another development was the inauguration of an Office of Civilian Defense instructor training program in emergency driving.

The training of traffic enforcement personnel and of traffic safety educators continued on a stepped-up basis in 1942. The Northwestern University Traffic institute, principal training agency for traffic police, substituted two four-month courses for its customary nine-month course in order to double its output of trained traffic administrators. Traffic control training was offered also to military police. The New York University Center for Safety Education, principal training agency for traffic safety educators, co-operated closely with the United States Army Quartermaster corps. The Yale University Bureau for Street Traffic Research discontinued its training of graduate students in traffic engineering for the duration, but continued to devote its resources to consulting and research activities in traffic control and transportation matters closely allied with national defense and the war effort. (*See* also Industrial Health.) (R. E. Rh.)

Aden. Aden is a British colony, seaport and territory in Arabia, situated in 12° 45′ N. and 45° 4′ E., including Perim island, etc., in the strait of Bab-el-Mandeb between Africa and Arabia; area 80 sq.mi.; pop. (est. 1939) 48,338. Aden protectorate, including Sokotra on the Red sea coast, 112,000 sq.mi.; pop. (est.) 600,000. Governor: Sir J. Hathorn Hall. Language: English and Arabic; religion: Mohammedan.

History.—During 1942 Aden's many activities as an important port of call for allied ships engaged in war service continued unmolested by enemy attack. The revenue remained buoyant, but the index figure for the cost of living rose from 195 in Dec. 1941 to 229 in July 1942. By Oct. 1942, Aden's total gifts for the war effort, including an interest-free loan of £95,000, had risen to £165,100.

Two important visitors during the year were the duke of Gloucester, in the course of his six months' tour of war areas, and Dr. Smart, medical adviser to the colonial office, on a tour of inspection of the medical services.

In the spring, W. H. Ingrams ceased to be chief secretary of Aden and went to Makalla as resident adviser to the Hadhramaut states, and as British agent for the eastern protectorate. He was succeeded as chief secretary by R. S. Campion, who in the absence on leave of the governor, Sir John Hathorn Hall, became acting governor. Relations with the Yemen remained friendly throughout the year.

In Britain the British council set up a Muslim centre for the considerable Adenese community settled in Cardiff, Wales.

Bibliography.—Harold Ingrams, *Arabia and the Isles* (1942).
(L. E. Be.)

Finance.—Revenue (1939–40) Rs.27,22,901; expenditure (1939–40) Rs.19,64,583; currency, legal tender: rupee (Rs.1) = 1*s.*6*d.*, or approximately 30 cents U.S. in 1942.

Trade and Communication.—External trade, 1939 (merchandise and treasure on private account): imports, by sea Rs.5,78,56,697; by land Rs.22,76,258; exports, by sea Rs.3,37,72,025;

ANTI-GOSSIP POSTER distributed to taverns throughout the United States in 1942 by a distilling company

by land Rs.22,11,555; (treasure) imports Rs.37,00,871; exports Rs.20,22,690. Communications: shipping (1939) 2,004 merchant vessels (1,300 British) entered, total tonnage 8,005,763 net tons; motor vehicles registered (Sept. 30, 1939) 733 cars and taxis, 207 commercial vehicles.

Production.—In 1938–39, tobacco (approx. value of crop) Rs.500,000; salt 282,994 tons; (export) 248,784 tons; coffee (export) 4,900 metric tons.

Adjusted Compensation: *see* VETERANS ADMINISTRATION.
Adult Education: *see* EDUCATION.

Advertising.

United States.—Practically all significant changes in advertising in 1942 resulted from the war. Perhaps the most outstanding change was the shift to helping the war effort. Early in the year there was confusion as to the precise part advertising should play in business, government and the war.

The government recognized the usefulness of advertising in furthering its war aims. It used paid advertising extensively to promote recruiting of army and navy personnel, to sell war bonds and stamps, and to publicize various drives. Individual companies also co-operated generously in paying for advertisements in connection with salvage drives, grease and fat conservation, and similar campaigns. Retail promotion became an important channel of wartime information as typified by the campaigns on ceiling price compliance, conservation, Red Cross and war bonds and stamps. Another change was the growing tone of social responsibility, as expressed in the trend toward informative copy.

In the spring of 1942 the Advertising Council, Inc., was organized by advertisers, advertising agencies, magazines, newspapers, radio, direct mail, mechanical craftsmen, and other branches of advertising. The council was designed to offer to the government the volunteer services of every type of talent and experience relative to the creative or the administrative phases of advertising, merchandising and marketing. In its first year the council handled more than 40 campaigns for the numerous government departments having informational problems.

Many newspapers and magazines increased subscription rates to offset higher costs and shrinkage in advertising revenue without a retarding effect on circulation. Some mechanical changes in printing publications were made, due to anticipated shortage of paper, chlorine and metals, and to fewer ink colours. Some papers printed fewer pages and a number of magazines cut down page sizes.

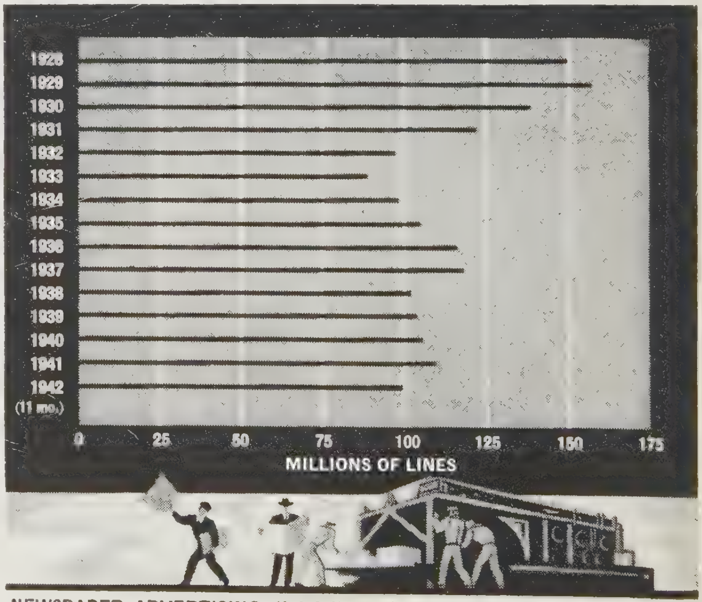
Protection of advertising agency credit through re-establishment of cash discount by Curtis Publishing company and McGraw-Hill Publishing company, and by the radio networks, had a far-reaching effect and obviated a larger capital provision by agencies than hitherto had been needed.

Advertising volume held up remarkably well in 1942. During the first few months after the United States' entry into the war, there was a considerable decrease in volume as compared with 1941. Then a swing upward brought it almost abreast of previous years. In the United States, advertising expenditures were $1,800,000,000 in 1942, a decline of 6.3%. Newspaper linage decreased 5.4%. Dollar volume of magazine advertising decreased 1.5%; radio increased 8.7%; farm paper advertising declined 2.2%; outdoor decreased 19.4%; direct mail decreased 7.9%.

Copy and Layout.—Advertisers faced wholly changed conditions. Some advertisers, confronted by a shortage of their product, used advertising to explain the shortage or to instruct present owners or users of the product in its conservation. Others whose plants were totally converted to war work, hoping to keep alive their product's name, turned to reporting their part in the battle of production. All advertising took on a patriotic fervour, illustrated with pictures, tanks, planes and military men.

The year 1942 opened with a rush of advertisements designed to prove that America's salvation depended on the production of a given product. Copy floundered in a hopeless effort to be patriotic and yet tell the story of the company signing the advertisement. Then a sense of balance returned and advertisements began to tell, in factual statements, what American industry was manufacturing and the job that America as a nation had to do. The cartoon-continuity technique, popular in prewar years, fell off considerably as it did not lend itself to the dignity which advertisers felt was now necessary.

Magazines.—In 30 magazines, 48% of nonfiction content and



NEWSPAPER ADVERTISING (total linage in 52 cities of the United States): average per month. Compiled by Media Records, Inc.

65% of the editorial matter were devoted to war themes. Both editors and advertisers furnished information highly important to readers and co-operated in promoting conservation and building morale. They co-operated directly with the government in distributing messages with regard to the purchase of war bonds and stamps. Various periodicals sponsored nutrition programs and urged consumers to do their part in making home, community and country ready, efficient and strong; to buy carefully, to take care of articles in use and to waste nothing.

Magazine readers continued to increase. Net paid circulation of 78 leading magazines increased 4,285,513, or 7.2%, during the first six months of 1942 over the corresponding period in 1941. Many magazines reached an all-time high during the year in both circulation and revenue; others reported substantial gains. In spite of priorities causing heavy restrictions in the manufacture and sale of consumer goods, the year as a whole showed a volume approximating 1941 levels. (*See* also NEWSPAPERS AND MAGAZINES.)

Newspapers.—Newspaper advertising declined slightly from the "good" level of 1941. In 52 cities it decreased 6.1% for the first 10 months of 1942 from the comparable 1941 period. The bulk of this decrease was in automobile linage. Department store linage was down 2.3%. Profits also decreased because of higher costs and taxes and a decline in local as well as national linage. (*See* also NEWSPAPERS AND MAGAZINES.)

Radio.—See RADIO.

Direct Mail.—A reduction of about 8% occurred in this field. Advertisers and printers weighed the services of printed promotion in the war effort and in saving time and money. This resulted in the elimination of frills and unessentials. The government made no restrictions on the essential and helpful uses of direct mail promotion.

Early in 1942, rumours of a paper shortage threatened the use of direct mail. These rumours, however, were shown to be groundless. The Graphic Arts Victory Campaigns committee was organized to assist advertisers in their effort to tie in with government themes.

Car Cards.—Revenues showed a steady upward trend during the year due to reduction in automobile travel and the advent of millions of factory workers. Passengers in the United States reached an estimated total of 20,000,000,000 in 1942, an increase of about 25% over 1941. The volume of transportation advertising was up about 33%. Advertising rates were raised 10% to 15% in 1942 but many large systems made no increases.

In March the National Association of Transportation Advertising, Inc., was formed to co-ordinate the work of the industry, to maintain standards of practice, and to engage in research and promotion work.

Outdoor.—This medium suffered more than others because of abrupt changes in circulation due to population shifts to war production centres and military camps, as well as dimouts by night, which considerably altered the traffic flow on city streets in both volume and direction.

Auditing of outdoor circulation was interrupted for the duration because of lack of manpower to make the count and obsolescence of the audits on account of population shifts. However, checks indicated that the total street travel was greater than ever before. Lessened motor travel was offset by increased travel on foot and in mass vehicles.

Point of Purchase.—Volume of display material was generally down during the year due to restrictions on products and lack of manpower.

Screen Advertising.—This new medium was curtailed by a War Production board order forbidding the use of film for advertising because of the necessity to save chemicals needed for war materials.

Retail.—In 52 cities retail advertising for 10 months of 1942 was off only 2.6% from the previous year. Due to government wartime regulations affecting delivery and passenger car trade, direct mail as a medium gained considerably during the latter part of the year.

Retail copy became more informative and emphasized usefulness and quality. Many stores discontinued their traditional store-wide sales events. As part of their sales promotion and advertising efforts, many stores set up centres of information to aid consumers in solving wartime problems by providing nutrition courses, first-aid courses and sewing schools.

Consumers.—An answer to consumer complaints was the growth of informative labelling and advertising. The latter part of 1942 saw the beginning of experiments in self-selection of merchandise by the consumer in practically all types of department and specialty stores, with open displays accompanied by printed information.

Through organized educational work by the Committee on Consumer Relations in Advertising, sponsored jointly by leading media and the American Association of Advertising Agencies, a marked improvement in consumer relations with advertising resulted. The committee dealt with consumer leaders, women's clubs, church groups and educators, giving facts scientifically obtained and impartially presented, and encouraged training in choice-making, market selection and use and care of products.

Research.—Advertising research, as such, took rapid strides during 1942 and the use of syndicated services grew considerably. People studied advertising themes more than ever before. Many studies were made during the year to determine policies with regard to government regulations and related subjects.

Great Britain.—After the reduction of newspapers from 24 and 36 pages to 4-page sizes in 1941, there was discussion of rationing advertising space. Practically all colour printing was discontinued, except for government posters, as well as catalogues, direct-mail leaflets and similar pieces. More than 170 publications disappeared from the newsstands by the end of 1942. On the other hand, 30 new periodicals were started and the total circulation of periodicals was up about 25%.

Copy tended to stress the recognition of Great Britain in a "total war." Service advertisements were run both by government and private industry. Advertising was still telling a sales story as changes and cheaper materials became necessary in products. However, in spite of all the curtailments, advertising in England was doing a wartime job in finding new ideas to build morale and help protect the people. As stated by Sir Gerald Campbell of the British embassy at Washington: "Advertising as a moulder of public opinion and an influence in public attitudes can be a powerful weapon in total war."

Canada.—Government-paid advertising helped to offset linage losses during 1942 in both the newspaper and magazine field. These media were used extensively to publicize Victory Loan campaigns and educational campaigns for housewives, consumers and business firms.

Government advertising in Canadian magazines was increased from a few thousand lines in 1940 to 114,600 lines during the first 11 months of 1942.

South America.—In South America, Central America and the West Indies, advertising volume for 1942 was off approximately 40% as compared with 1941. Priorities, scarcity of shipping space, inability to pack in tin containers made it practically impossible for many firms to get their goods to export markets. Therefore, a number of manufacturers used purely institutional copy to keep their products and names before the public. A significant change was the increased number of advertisers who used general Latin-American media, such as the Spanish edition of *Reader's Digest,* instead of media in each country.

In Argentina, newspaper advertising dropped 9% under 1941 while magazine advertising decreased 2%. Circulations declined due to the shortage and high cost of paper, most of which must be imported. Radio advertising increased. The Argentine government eliminated all advertising on national highways and prohibited advertising involving special offers or prize contests based on chance.

In Brazil, newspaper and magazine volume generally remained about the same. Decline in advertising by automobile and oil companies was made up by other products whose sale had increased during the preceding two years.

BIBLIOGRAPHY.—Mark Wiseman, *The Anatomy of Advertising* (2 vol.), and Neil H. Borden, *The Economic Effects of Advertising.* (D. ST.)

Afghanistan. A Muslim kingdom lying between India and Iran; area 250,000 sq.mi.; pop. (est. 1940) 10,000,000; chief towns: Kabul (cap., 80,000), Kandahar (60,000), Herat (50,000), Mazar-i-Sharif (30,000). Ruler: Muhammad Zahir Shah; languages: Persian, Pushtu, and some Turki in the north; religion: Mohammedan.

History:—Little news of moment was available during 1942. The country continued in the path of strict neutrality. After the king, Zahir Shah, had formally opened the Loe Jirga (Grand Council) in Nov. 1941, the foreign minister took the opportunity to reiterate the government's determination to maintain neutrality and to follow a peaceful policy. In July 1942 the king again reaffirmed his country's policy of neutrality "provided Afghanistan is left unmolested." In June diplomatic relations with the United States were opened.

Education.—Elementary schools exist throughout the country, but secondary schools exist only in Kabul and provincial capitals; both are free. There were, in 1940, 130 primary schools and 1 normal school for teachers in Kabul. In addition, there were 4 secondary schools and 13 military schools. Kabul university was established in 1932; only a medical faculty existed in 1940.

Defense.—Army, compulsory service; peace strength 60,000.

Finance.—Revenue and expenditure about rupees (Afghan) 150,000,000; currency; Rs. 3.95 (Afghan) = Rs. 1 (Indian). Rs. 1 (Afghan) in 1942 = 5*d.* or 8.4 cents U.S. approximately.

Trade and Communication.—(1939–40) Exports to India: Afghan merchandise Rs. 3,97,06,681; treasure Rs. 16,655; non-Afghan merchandise Rs. 2,008. Imports: Indian produce Rs. 72,79,399; other produce (imported through India and in transit) Rs. 1,96,25,197. Exports are Persian lambskin, carpets, fruit, wool and cotton. Roads: trade routes, Kabul to Peshawar (India), 210 mi., and Kandahar to Chaman, 70 mi.; there are about 2,265 mi. of unmetalled roads connecting the chief towns. At the beginning of 1941 there were five wireless stations in the country.

Agriculture.—Wheat, rice, millet, maize, sheep, Persian lambskin, wool (1938) 6,800 metric tons.

A. F. of L.: *see* AMERICAN FEDERATION OF LABOR.

Africa, British East: *see* BRITISH EAST AFRICA.

Africa, British South: *see* BRITISH SOUTH AFRICAN PROTECTORATES.

Africa, British West: *see* BRITISH WEST AFRICA.

Africa, French Equatorial: *see* FRENCH COLONIAL EMPIRE.

Africa, French West: *see* FRENCH COLONIAL EMPIRE.

Africa, Italian East: *see* ITALIAN COLONIAL EMPIRE.

Africa, Portuguese East and West: *see* PORTUGUESE COLONIAL EMPIRE.

Africa, Spanish West: *see* SPANISH COLONIAL EMPIRE.

Africa, Union of South: *see* SOUTH AFRICA, THE UNION OF.

Agattu: *see* ALASKA; WORLD WAR II.

Agricultural Chemistry and Engineering, U.S. Bureau of: *see* CHEMISTRY AND ENGINEERING, AGRICULTURAL, U.S. BUREAU OF.

Agriculture. **Crops.**—For 33 crops of the United States, record-breaking production was the rule in 1942. Since the acreage of crops was not changed much, the huge production was the result of high yields per acre (Table I). Crop yields in 1942 were 36% above the 10-year average and almost 15% above the three previous record yields in 1937, 1940 and 1941. Never before had a record production been followed by another record that was 15% more than the previous one.

This huge output of food was due primarily to the weather. There was a combination of favourable weather conditions in 1942 for every crop in every important agricultural area of the United States. In addition, there had been five unusually good preceding crop years, 1937 to 1941. These favourable years had a cumulative effect on U.S. production of livestock products and the building up of livestock inventories on farms.

The uniformly good weather conditions that prevailed throughout the United States is shown by the farmers' estimates of yields of all crops in percentage of normal. Except for a few cotton and intermountain states, relative crop yields per acre in 1942 were excellent. Even in these areas, crop yields were good. Texas was the only state reporting substantial areas of average yields. There were no areas that reported poor crops or crop failures.

Exceptional crop production occurred in the Great Plains area, where there were good moisture conditions from Montana and the Dakotas to Texas. Wheat yields were very high; in some areas the wheat crop of 1942 was worth more than the land upon which it was produced.

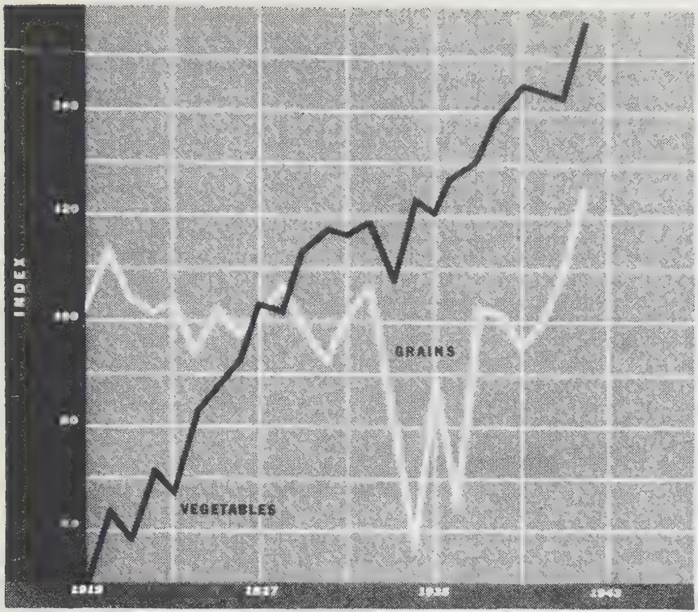
The yields of 1942 may be better understood by comparison with another year. The crop yields of 1939, the first year of World War II, were 14% above the 10-year average for the United States. In that year the only large areas with excellent crops were those east of the Missouri river, north of the Ohio, and on the Pacific coast. The south had a considerable area of good and average crops. The Great Plains from North Dakota to Texas had large areas with crop failures, poor crops and average crops.

The production of oil-seed and vegetable crops made large percentage gains in 1942. Since the '20s, the production of vegetables and of oil-seeds had approximately doubled.

There were not any restrictions on any of these crops except cotton-seed. However, the expansion of soybeans far more than compensated for the government's restriction of cotton-seed. During the '20s, cotton-seed supplied 85% of U.S. home-grown vegetable oils, and in 1942, 40%.

Livestock Products.—The 1942 production of milk, meat, eggs, poultry and wool was likewise unparalleled in U.S. agricultural history. Lard was the only exception, and its production was only 1% less than the largest in history. Low OPA ceiling prices for lard retarded its production. The corn-hog ratio was favourable, calling for more and fatter hogs, but the lard-hog ratio was unfavourable, calling for more hogs, not more lard.

The production of dairy products steadily increased; but the rate of increase for 1942—about 4%—was less than that for 1941—about 5%. Butter production increased steadily with the expansion in milk production until 1942, when it decreased about 5%, in spite of the fact that milk production continued to expand. This decline was due to the rising consumption of whole milk and the increasing production of other dairy products. Since these advances were greater than the increase in milk production, milk and cream were drawn from the nation's greatest reservoir



INDEX NUMBERS of the U.S. production of market vegetables and grains, 1919–42 (1923–32=100)

of dairy products—milk for butter.

The production of cheese in the United States in 1941 and 1942 was the largest on record. The 1941 production was about 20% larger than 1940; and in 1942, production exceeded 1941 by about 25%. This expansion was due to a favourable butter-cheese price differential. Prices of cheese were considerably higher in relation to prices of butter than had usually been the case.

The 1941 production of evaporated milk was more than twice the 10-year average and 50% above that of 1939, primarily because of the stimulating effect of government purchases for lend-lease. The 1942 production was greater than that of 1941, but the rate of increase fell off when government purchases declined. There was a rapid expansion in the production of dry skim milk for human consumption in 1942. Conversely, the production of dry skim milk for animal feed was considerably less than in 1941. The farm sales of chickens during 1942 were almost one-fifth higher than those for 1941, the previous record. The increases were largest in the west north central and south central states, where feed was abundant in 1941 and 1942 and egg prices were favourable. The farmers not only produced more chickens but fed them to heavier weights. The year 1942 was a record year in egg production, exceeding 1941 by approximately 15%.

The amount of meat produced in 1942 was probably about 15% more than in 1941. The largest increase occurred for pork, about 20%. The production of beef increased about 10%; veal and lamb about 5%.

In addition to the huge production of livestock products, U.S. farmers added to their livestock inventories in 1942. The number of hogs and chickens increased about 25% and 10% respectively, and cattle about 2%. The number of livestock on farms Jan. 1, 1943, was the largest in history for all classes except horses and mules—an aggregate increase of about 11% over Jan. 1942.

Table II.—*Consumption of All Food and Stocks of Food, Exclusive of Wheat in the United States, Expressed in Terms of Pounds of Dry Matter*

Years	Consumption,* 000,000 lb.	Stocks† at End of Crop Year		
		Exclusive of Wheat, 000,000 lb.	In % of Consumption	Days' Supply
1925–29	87,204	2,903	3.3	12
1930–34	86,636	3,534	4.1	15
1935–39	90,048	4,425	4.9	18
1939	92,609	5,504	5.9	22

*Based on "Consumption of Agricultural Products," United States department of agriculture, bureau of agricultural economics, mimeographed report, March 1941.

†The stocks of food are those reported by the United States department of agriculture. The pounds of food consumed and held as stocks were converted to pounds of dry matter based on data in C. Chatfield and G. Adams, "Proximate Composition of American Food Materials," United States department of agriculture, circular No. 549, June 1940.

During World War I, the largest food export from the U.S. was wheat. During World War II, most of the shipments through 1942 were meat and other livestock products. Livestock production is merely a reflection of feed supplies, and the abundant crops of 1937–42 enabled farmers to produce large amounts of livestock products without seriously reducing U.S. civilian consumption.

Unrestricted and without government assistance, financial or otherwise, U.S. farmers stored most of their surplus crops in the most efficient and cheapest ever-normal granary, animals on the hoof.

Commercial Carry-over of Food.—During the decade 1932–42 there had been widespread conviction that the United States was in the possession of large surpluses of food. The conclusion was based on the popular misconception that all available stocks are surpluses. Because of inevitable fluctuations in the weather and, consequently, in food production, it is always desirable to have more food available than is consumed.

There was also much misunderstanding of the size of these stocks and their relation to the total annual supply. In 1939 the consumption of food in the United States aggregated 92,609,000,000 lb. of dry matter (Table II). The stocks of food exclusive of wheat at the end of the 1939 season were only 5,504,000,000 lb. only 5.9% of the annual consumption, representing only about 22 days' supply. During 1925–29, the United States

Table I.—*Estimated U.S. Production and Yield per Acre for 1942 Crops* with Historical Comparisons*

Crop	1942 Yield per Acre	1942 Production	Historical Comparisons	
			Yield per Acre	Production
Field crops				
Corn, bu.	35.5	3,200,000,000	highest	largest
Wheat, bu.	19.8	981,000,000	highest	largest except 1915
Oats, bu.	35.9	1,360,000,000	third highest	largest since 1925
Barley, bu.	25.4	426,000,000	high	largest
Rye, bu.	14.9	57,000,000	highest	largest since 1924
Flaxseed, bu.	9.2	41,000,000	high	largest
Rice, bu.	44.9	66,000,000	below normal	largest
Hay, all tame, tons	1.53	92,000,000	highest	largest
Beans, dry edible, bags	9.95	20,000,000	highest	largest
Soybeans, bu.	19.5	210,000,000	third highest	largest
Peanuts, lb.	679	2,500,000,000	below normal	largest
Potatoes, bu.	136.9	370,000,000	highest	above normal
Sweet potatoes, bu.	92.4	65,000,000	highest since 1929	below normal
Tobacco, lb.	1,027	1,400,000,000	highest except 1940	normal
Sugar-beets, tons	12.2	12,000,000	third highest	second largest
Cotton, bales	275†	13,000,000	highest	normal
Fruit crops				
Apples, bu.	.	128,000,000	.	above normal
Peaches, bu.	.	65,000,000	.	above normal
Pears, bu.	.	31,000,000	.	fourth largest
Grapes, tons	.	2,500,000	.	above normal
Vegetable crops				
Beets, manufacture, tons	6.54	110,000	third highest	second largest
Cabbage, tons	7.7	1,500,000	normal	largest
Carrots, bu.	366	19,000,000	above normal	largest
Cauliflower, crates	289	10,000,000	above normal	second largest
Celery, crates	322	14,000,000	highest	largest
Cucumbers, market, bu.	108	5,000,000	above normal	above normal
Green peas, process, tons	0.98	428,000	above normal	largest
Lettuce, market, crates	157	24,000,000	high	largest
Onions, market, sacks	138	18,000,000	high	largest
Snap beans, manufacture, tons	1.79	186,000	high	largest
Snap beans, market, bu.	90	16,000,000	high	second largest
Sweet corn, manufacture, tons	2.67	1,300,000	highest	largest
Tomatoes, manufacture, tons	4.97	3,000,000	high	largest

*Based on latest available crop reports. †Pounds.

normally had 12 days' supply of food, exclusive of wheat, remaining at the end of the season.

In 1939, the nation consumed 4,224,000,000 lb. of fats and oils. Stocks were sufficient for about 90 days. The same year, the nation consumed 11,359,000,000 lb. of dry matter in the form of eggs and dairy products. Stocks of these products, 183,000,000 lb., were sufficient for only six days' consumption. The stocks of fresh and cured meats and poultry were 204,000,000 lb., equivalent to eight days' consumption. There were 52 days' supply of wheat and only 22 days' supply of all other foods, such as meat, sugar, dairy products, and the like, if they represented the complete diet of the people.

Obviously, such stocks of food represented only a small part of the contemplated lend-lease exports and an even smaller part of domestic consumption. Therefore, the nation had to look to current production for its own food supply or for any that it expected to give away.

Lend-Lease Exports.—Most U.S. lend-lease food exports in 1942 were the highly prized nutritious animal foods. Although these foods represented less than half the tonnage, they represented more than 75% of the total value. U.S. exports of crops represented a small proportion of total crop production—only about 2%. Lend-lease beans represented about 20% of the crop, peas 15%, fruits 13%, cotton 9%, and tobacco and oil-seeds 5%. Lend-lease grain, potatoes and vegetables were an insignificant proportion of these crops.

The quantity of livestock products exported represented about 7% of the total livestock production. Lend-lease milk and meat represented 6 to 7% of their production respectively, eggs 20% and lard 27%. The production of the 5,500,000 tons of lend-lease livestock products from pastures, grain and roughage was probably equivalent to 6% or 7% of the U.S. crop production of 1942.

Thus, total lend-lease exports in terms of crops represented about 8% of production. Since crop production in 1942 was up 15%, the lend-lease exports were more than offset by increased production.

After deducting the exports of the livestock foods from U.S. production, it would appear that consumption of these products by U.S. soldiers and civilians in 1942 was substantially the same as in 1941. But since the soldiers consume more of the highly prized foods per capita than do civilians, the civilian consumption was probably somewhat below the 1941 level. (*See* also *U.S. Food Requirements in World War II,* below.)

Relation of Crops to Livestock Production.—Since a high percentage of both the nation's food consumption and lend-lease exports for 1942 was derived from livestock production, the relation of crops to livestock should be considered. The problem is confused by the widely varying moisture content of these products. Milk contains only 13% dry matter, and lard 100%. Normally, the nation's per capita consumption is about 800 lb. of milk, 140 lb. of meat, 20 lb. of lard and 55 lb. of poultry and eggs. In terms of dry matter, milk consumption—more than 100 lb.— is slightly more than the combined consumption of meat, poultry, eggs and lard.

A severe curtailment in crop production is followed by a decline in production of all livestock products. The first effect is always on products for which the least feed reserves exist, beef cattle. Hog production, of course, is just a reflection of the reduction in the corn crop. The least violent declines occur in the production of dairy products.

As a result of the drought of 1934, the per capita production of food and feed crops declined 24%. Per capita meat production declined 22%, and poultry and eggs 11%. In pounds of dry matter per capita, the production of these foods declined 10%. The production of lard declined 15%.

Table III.—*Estimated Volume of U.S. Crop and Livestock Production and Lend-Lease for 1942*

Commodity	Production* Tons	Lend-Lease* Tons	Approximate % of Production
Crops			
Feed grains	124,000,000	400,000	nothing
Food grains	33,000,000	425,000	1
Beans, dry	1,000,000	200,000	20
Peas, dry	400,000	60,000	15
Potatoes	13,000,000	75,000	1
Vegetables	12,700,000	135,000	1
Fruits	15,000,000	2,000,000	13
Oil-seeds	15,000,000	700,000	5
Sugar crops	21,000,000	3,500,000	.
Seeds	375,000	21,000	6
Cotton	3,500,000	320,000	9
Tobacco	700,000	35,000	5
Hay and roughage	200,000,000	.	nothing
Total	439,675,000	7,871,000	2
Livestock products			
Milk	60,000,000	3,800,000	6
Meat	11,000,000	800,000	7
Eggs	3,000,000	600,000	20
Poultry	1,500,000	500	nothing
Lard	1,300,000	350,000	27
Wool	200,000	.	nothing
Total	77,000,000	5,550,500	7
Grand total	516,675,000	13,421,500	3

*Fresh equivalent.

Some of the effects of the drought were delayed until 1935. Based on whichever year was the lower, 1934 or 1935, milk production declined 5%, poultry and eggs 13% and meat 27%. The aggregate production of these foods declined 13%. Lard production declined 48%. If lard is included in the total, per capita livestock production declined 16%.

During the drought of 1934, production of all livestock products declined 11%, whereas consumption declined only 4%. The drastic decline in production was largely offset by added supplies from inventories, 15 lb. of dry matter per capita. In fact, in 1934 the consumption of meat was about normal.

Following the drought of 1934, inventories declined somewhat less than either crops or livestock production—10%. The full effect of the drought on both production and consumption did not occur until 1935. The liquidation was practically over, and consumption was dependent upon current production. Both current production and consumption were 10% below the 1932–33 level.

From the drought of 1936 through 1942, there was a succession of good crops. From 1936 to 1941, the production of food and feed crops per capita increased 43%. The production of milk increased 14% from 1937 to 1942, poultry and eggs 32%, meat 41% and their total 24%. The production of lard increased 81%, and the grand total, including lard, increased 27%.

Regardless of whether there is a sharp curtailment in crop production or unusually abundant harvests, production of meats moves in the same direction and changes approximately in the same proportion as crop production. The production of eggs and poultry moves in the same direction and changes about three-quarters as much. Milk production moves in the same direction, but the change is relatively small.

Farm Labour.—The farm labour problem received much consideration by the government, the farmers and the press in 1942. The government requested the local draft boards to exempt such labour from military duty and it also froze labour on farms. It planned to move subsistence farmers to better land. It considered the importation of Mexican, Cuban and Puerto Rican labour.

The normal movement of surplus labour from farm to city was accelerated by the disparity between farm and city incomes. As farm incomes and farm wages rise, the disparity between farm and city incomes diminishes and the rate of movement away from farms declines.

The press in 1942 publicized the sharp increase in the number of auctions and of farm sales. The usual explanation was a shortage of labour, and consequently it was commonly believed that such sales meant decreased production. The most frequently publicized sales were those of large farms with many hogs and cattle, employing several hired hands. The liquidation of these large farms made the headlines, but their number was very small, and they played a minor role in U.S. agricultural production. When the operator of such a farm decided to quit farming "because of the shortage of labour" the farm did not go out of production as was commonly assumed. In most cases it was divided and operated by several tenants or owners as family-sized units. The family-sized units were not so spectacular but probably produced in the aggregate about as much food as the large unit.

Less spectacular but frequently cited were the sales of the typical family-sized farms. It was again erroneously concluded that such sales arose because of labour shortages and would result in decreased food production. A certain number of sales always occurred because old men retired and young men started farming. The only aspect of the situation in 1942 that called for explanation was the acceleration in the number of these sales.

Normally, young men go in debt, start farming, and when the farm is cleared of debt the operator retires and moves to town. The rate at which they leave farms depends on the profitableness of agriculture. During the prosperous years, characterized by 1910 and 1920, about 22% to 24% of the farmers on Illinois farms were over 54 years of age. As a result of the agricultural depression, the percentages rose to 31 and 35 respectively in 1930 and 1940. Consequently, in 1942 there was more than a normal number of old men operating farms. With the improvement in prices and the abundant harvests, farm income rose sharply and enabled many of the older operators to liquidate their debts and retire.

The same factors control the rate at which young men start farming. During the prosperous years of 1910 and 1920 more than 25% of the operators were under 35 years of age. In 1930 and 1940, the proportion of young men declined to 18% and 17% respectively. Consequently, during 1942, in Illinois and in many other agricultural areas of the United States, there was a large accumulation of potential farmers.

With the military deferment of farm labour, the typical family farms which produce most of the nation's food supply had practically no labour problem except at the peak of the season's harvest. At that time the extra help needed represented a small proportion of the total labour needed to plant and harvest the crop. This was a problem for the farmers to solve in co-operation with local civic organizations. Many women and school children from neighbouring urban areas helped harvest the U.S. crops of 1942. On several occasions in 1942 the U.S. Employment Service and the Department of Agriculture issued appeals for volunteer farm workers, and in some cases transported workers from one section to another where the crops were in danger for lack of hands to harvest them.

Fertilizers.—The outlook for fertilizer in 1942 was clouded by only one element—nitrogen, the use of which was restricted by the War Production board. Phosphorus and potash were relatively abundant. The coastal area of the United States from Maine to Texas is characterized by light soils that require constant applications of commercial fertilizers, including nitrogen. There was, in 1942, practically no reserve of nitrogen remaining from previous applications of fertilizers; and on these light soils there was little natural reserve. This area produces a goodly proportion of the U.S. supply of potatoes, fresh vegetables, fruit, vegetable oils and cotton. Except for the coastal area, the region around the Great Lakes, and other limited areas with intensive crop production, nitrogen restrictions were not a handicap to food production in 1942. The backbone of the nation's food supply, grain, is produced in areas that require relatively little nitrogen.

Table IV.—*% of the Farm Operators in Illinois under 35 and over 54 Years of Age, 1910 to 1940*

Census Year	% Under 35 Years of Age	% Over 54 Years of Age	Census Year	% Under 35 Years of Age	% Over 54 Years of Age
1910	27	22	1930	18	31
1920	26	24	1940	17	35

Table V.—*Effect of Various Programs on the Number of Additional People Who Could Be Fed and on Civilian Consumption during the War and Rehabilitation Periods*

Program	Approximate Number of People Fed for One Year	Approximate Number of Additional Years This Rate Could Be Maintained	Effect on Civilian Consumption of Highly Prized Food
Increased production	None	None	None
Use of stocks			
Wheat	40,000,000— 50,000,000	None	None
Livestock	Little	None	Decrease
Horse meat	100,000	Several	None
Imports of Surplus Food*			
Wheat, Canada.	30,000,000	None	None
Reducing civilian standard of living with no change in production			
10%	3,000,000	13 years	10% decrease
20%	7,000,000	6 years	20% decrease
30%	10,000,000	3 years	30% decrease
Reducing livestock production			
10%	20,000,000	Indefinitely	10% decrease
20%	40,000,000	Indefinitely	20% decrease
30%	60,000,000	Indefinitely	30% decrease
to Algerian standard . . .	125,000,000	Indefinitely	60% decrease
to Chinese standard. . . .	200,000,000	Indefinitely	95% decrease

*Surplus wheat stocks in Argentina and Australia are not considered because of the uncertainty as to the quantities and difficulties of shipping They would probably feed about 25,000,000 persons for one year.

U.S. Food Requirements in World War II.—The problem of feeding the U.S. military forces had not become particularly burdensome in 1942. The average soldier consumed about 25% more food than the average civilian. But since a youth in his twenties consumes more food than an average civilian, the soldiers, sailors and marines probably consumed only 15% to 20% more than they did as civilians.

The food requirements of a military force of 8,000,000 men are equivalent to those of about 8% of the civilian population. Therefore, it appeared that the military forces would get about one-third of the food allotted to "military forces and lend-lease," and U.S. Allies would get about two-thirds. The latter amount represented a deduction from U.S. civilian consumption, whereas the food allotted to U.S. soldiers did not, except insofar as, transferring from civilian to military life, they consumed more because of greater physical activity. If a soldier consumes 20% more food, the additional burden that the nation has assumed is equivalent to adding approximately 1,500,000 additional mouths to the U.S. population of about 134,000,000 people—an addition of only about 1%. Consequently, practically all the additional U.S. food requirements represented by Secretary Wickard's estimate in 1942—25% to 30% of 1943 food production—was to go for lend-lease and not to the U.S. military forces.

Since a certain amount of dry matter, calories or energy is required for body maintenance, growth and physical effort, none of these new demands could be met by reducing civilians' consumption unless it was to be assumed that in the past they had eaten too much.

The plans for such large exports of food raised many problems. How much food would be exported? For how long a period would these shipments continue? To whom would the food be sent? Was the objective the improvement of diets or the prevention of starvation? What types of food should be exported? What types of food could be exported? What effect would the program have on civilian consumption? What government agencies would be in charge?

Though these and other questions could not all be answered in 1942, indications were that large amounts of U.S. food would be required for an extended period of time. The question thus became one of examining the possible sources of additional food supplies. These were at least five: (1) increased production; (2) existing stocks of grain and animals; (3) imports of surplus wheat; (4) reduction in civilian consumption; (5) curtailment in the production of livestock products. (*See* Table V.)

Increased Production.—There was practically no hope of meeting the increased requirements solely from increased production. The farm plant in 1942 was operating at a level not likely to be exceeded for several years.

Existing Stocks and Imports.—In 1942 there were about 600,000,000 bu. of wheat in excess of normal U.S. stocks. This supply would feed about 40,000,000 to 50,000,000 people for one year at a rate of about 13 bu. per capita.[1] Canada had about 400,000,000 bu. of surplus wheat which might be imported and reshipped. This would feed 30,000,000 people for one year. The stocks of wheat in the United States and Canada together would feed about 75,000,000 people for one year. After these stocks of wheat had been exhausted, there, of course, could be no further contribution from this source.

There were also large stocks of food in the form of cattle on U.S. farms. If these cattle stocks were reduced, they would add to food supplies by that amount. However, reducing inventories of cattle would be accompanied or followed by a reduction in the production of meat and milk. Consequently, the liquidation of livestock would in itself make little net contribution. Excess stocks of U.S. horses might feed 100,000 folks for a few years.

Reduction of Civilian Consumption.—If the American people were to reduce their consumption of the highly prized foods—meat, milk and eggs—by 10% and substitute grain, the nation could feed about 3,000,000 more people each year for about 14 years.[2] With a 20% reduction in the consumption of highly prized foods, the nation could feed approximately 7,000,000 persons for about 7 years. With a 30% reduction, it could feed approximately 10,000,000 for about 4 years.

Reduction in Livestock Production.—If livestock production were decreased 10%, the nation could feed 20,000,000 additional mouths, and this could be continued year after year. Such a stretching of the food supply would be due to the consumption of cereals directly, rather than indirectly in the form of livestock products. A reduction of 20% and 30% in livestock production would enable the U.S. to feed 40,000,000 to 60,000,000 additional mouths per year, for an extended period of time.

A reduction of 10%, 20% or 30% in production of livestock would involve the same sacrifice on the part of American consumers as a reduction of 10%, 20% and 30% in the consumption of these highly prized products with no change in their production. In either case, the American consumer would be called on to reduce his standard of living. However, the number of mouths fed under lend-lease or rehabilitation would be far different. If livestock production were continued and the excess above U.S. restricted consumption were shipped, there would be sufficient food for 3,000,000 to 10,000,000 people. If livestock production were curtailed and cereal grain were shipped, there would be enough food for 20,000,000 to 60,000,000 people.

Another important consideration is the fact that a 20% reduction in the consumption of livestock products, with no change in their production, would enable the United States to feed 7,000,000 people for about 7 years, while a 20% reduction in livestock production would enable the nation to feed 40,000,000 people indefinitely.

If the U.S. civilian population were to decrease its consumption (and its production) of the highly prized foods to the standard of the Algerian, the nation could feed about 100,000,000 additional mouths; and if decreased to the Chinese standard, about 200,000,000. Although these estimates are rough, they indicate clearly that curtailing the consumption of highly prized foods with no change in their production, fills the stomachs of only a few million additional people. This was the method followed largely in 1942. Lend-lease exports of livestock products in 1942 represented about 35% of the total amount of dry matter exported, exclusive of sugar, while these foods represented about 30% of the American diet. Goals and official exhortations, calling for increased production of livestock products and decreased civilian consumption by rationing, indicated that a continuation of the same policy was contemplated in 1942. Such a policy could be continued only so long as feed was available for livestock and surplus wheat was available to compensate for the decline in the civilian consumption of livestock products.

The agricultural policy of the United States in 1942 was to curtail the wheat acreage and expand livestock production. If the nation were to assume that there was an overproduction of grain, that the lend-lease and rehabilitation programs would not expand above their level of 1942, and that the paramount problem was to provide an attractive diet for the few rather than to fill the stomachs of the many, a continuation of the policy was justified. If the problem, on the other hand, was to feed the many rather than the few, the most effective way of so doing would be to reduce livestock production.

The forecasts indicated in 1942 that there were tentative plans to export 15% to 20% of the 1943 food production, enough to feed about 25,000,000 persons.

Only by feeding its cereal grains directly to human beings rather than to animals could the United States provide large amounts of food to distressed peoples over an extended period of time. (F. A. Pe.)

Crop Insurance.—The yield from U.S. cotton crops was, for the first time, insured in 1942 to planters by the Federal Crop Insurance corporation. Previously the corporation had for several years provided crop insurance to wheat growers, policies having been issued to more than 400,000 growers a year. Approximately 171,000 cotton insurance contracts, covering 1,500,000 ac., were issued up to March 31, 1942, the final date for filing application for insurance on the 1942 crop. Cotton crop policies were issued in 18 states, but the larger number was for the nine cotton belt states in the following order: Texas, Georgia, South Carolina, Louisiana, Alabama, Oklahoma, North Carolina, Mississippi, Arkansas. Planters had the privilege of insuring for either 50% or 75% of the average per acre production on individual farms. Where there were divided interests, separate contracts were made. For example, if a landlord and a share cropper were beneficiaries on the same crop, a separate contract was made with each. The insurance covered risks resulting from unavoidable hazards such as drought, excessive moisture, plant disease and insect pests. No premiums were paid on poor farming or theft. Nor did the policies afford protection for quality, since the insurance was for yield only.

Shortage of labour and inability to obtain repairs for machinery resulted in a number of cotton planters harvesting a smaller crop than would have been the case under normal conditions. In such instances the insurance corporation adjusted payment of loss after deducting any savings the farmer might have obtained from his inability to follow the usual practices. Premium rates varied widely and were based on conditions pre-

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[1] Thirteen bushels of wheat contains about the same number of pounds of dry matter as is annually consumed by the average American or the Chinese coolie. The comparisons are based on pounds of dry matter and do not take into consideration balanced rations, vitamin requirements and other nutritional problems. The nearest approach to this diet is that of the Chinese coolie, who consumes about 90% of his food in the form of cereals.

[2] If U.S. civilian consumption of livestock products were reduced 10%, this reduction probably would be offset by an increase in the consumption of wheat, about 44,000,000 bu. per year. At this rate, the 600,000,000 bu. of excess wheat in 1942 would disappear in about 14 years.

U.S. FARMERS worked long after sunset during the spring of 1942 to prepare the soil for a huge wartime crop. Here a farmer of the Red River valley, North Dakota, drags a disk harrow across his field

vailing in particular localities.

Farm Co-operatives.—The 10,600 co-operative marketing and purchasing associations representing 3,000,000 farmer members in the United States concentrated largely on war production in 1942, the Farm Credit administration reported. Co-operative creameries shifted production to the manufacture of spray milk powder when that commodity was demanded because it required less space in shipping. The co-operatives, the FCA reported in 1942, were producing about one-third of the supply of spray milk powder and were furnishing 45% of the milk powder used by the army and navy. Co-operatives were producing about 25% of the dried fruit supply, most of which went to the government. The co-operatives also got behind the movement to produce 750,000 shearling pelts a month from Sept. 1942 to Dec. 1943, as asked by the armed forces. Shearling pelts are skins of lambs having a short wool growth or of sheep shorn a short time before slaughter. They are used as linings of jackets for aviators who fly in subzero temperatures. Co-operatives were also active in operating transportation pools and consolidated truck routes, to conserve gas and rubber. As a further contribution to this effort the usual number of meetings of co-operative members was reduced. The Dairymen's League Co-operative Association of New York was reported to have used wooden tires successfully on the front wheels of trucks in urban milk delivery where speed was not required The wooden tires were made of three sections of wood that fitted into the rim of the wheel and were devised by a veteran wagon maker. The National Machinery Co-operative at Shelbyville, Ind., was manufacturing tractors and various munitions for the army, while 1,400 farmers in New York, New Jersey and Pennsylvania registered their trucks for war emergency service in transporting crops and farm supplies. Owing to the reduced manufacture of farm machinery, co-operatives were active in repair work on old machinery. The Maryland Tobacco Growers association opened three new grading houses equipped with automatic humidifiers and with electrically-driven machinery designed to save labour.

U.S. Farm Income.—At the close of 1942 the department of agriculture estimated the year's United States farm income from marketings as about $15,000,000,000, the highest on record to that date. The increase resulted from a 25% rise in prices of farm products and a 12% increase in sales during the year. This total was an increase of about one-third over that of 1941 and nearly double the average farm income from marketings in the five-year (1935–39) period. It also exceeded the $14,600,000,000 of the high year of 1919, when farmers were still meeting the demand created by World War I. In addition to the cash received from farm products in 1942, farmers received $625,000,000 in government payments. Net income from agriculture per person on farms in 1942 was estimated at about $368, compared to $254 in 1941. The 1942 figure was about 136% of parity (the ratio of per capita farm income to per capita nonfarm income in 1910–14). It was 112% of parity in 1941. Total expenses of farm operations in 1942 were estimated at $8,700,000,000, an increase of 15% over 1941 and about 50% above the average for the 1935–39 period.

With the war program calling for still further increase in farm production in 1943, it was estimated that the income for that year would total $16,000,000,000. Expense of farm operations in 1943 would also be higher—$9,000,000,000 to $9,500,000,000—the department of agriculture forecast.

Farm Machinery.—Manufacture of farm machinery in the United States in 1942 was limited by governmental order to 83% of 1940 production, in order to conserve materials for the manufacture of munitions. Farm equipment output in 1940 amounted to $488,000,000 and was in excess of $700,000,000 in 1941, when there were no restrictions. Production of farm machinery in the

Table VI.—*U.S. Farm Income, 1942 and 1941*

	1942	1941
All crops	$5,748,000,000	$4,312,000,000
Food grains	857,000,000	719,000,000
Feed grains and hay	690,000,000	502,000,000
Cotton and cotton-seed	1,216,000,000	968,000,000
Oil-bearing crops	358,000,000	215,000,000
Tobacco	381,000,000	257,000,000
Vegetables	1,053,000,000	716,000,000
Fruits and nuts	753,000,000	565,000,000
All livestock	8,120,000,000	5,804,000,000
Meat animals	4,399,000,000	2,902,000,000
Dairy products	2,103,000,000	1,743,000,000
Poultry and eggs	1,417,000,000	979,000,000
Government payments	625,000,000	502,000,000

United States for the year ending Oct. 31, 1943, was reduced to 20–23% of 1940 production by Order No. 170, issued Nov. 25, 1942, by the War Production board. Following numerous protests the WPB Jan. 21, 1943, raised the production quota for 1943 to 31%. Implement manufacturers entered 1942 with large inventories of farm machinery owing to the large production of 1941.

The cut of 20–23% in 1942 production was cushioned by this backlog, and it was not until the latter part of 1942, when both the backlog and current production had been practically exhausted, that complaints of a shortage of farm machinery threatening the food supply were heard. Meanwhile farmers were paying mounting prices for used machinery, sometimes more than the price of new machinery, which had been under price control of the Office of Price Administration since May 1942. The OPA later, on Jan. 4, 1943, established maximum price controls on sales of used machinery by dealers and placed price ceilings on used equipment of five major types, whether sold by dealers, auctioneers or farmers. The five types of used equipment included combines, corn pickers, corn binders, motor- or tractor-operated hay balers and tractors, excepting crawler tractors. The OPA ruled that dealers, in selling used equipment, could not add more than 5% or $15, whichever was larger, to their trade-in allowance, purchase price or balance due (if the equipment was repossessed), plus reconditioning cost. On reconditioned machinery the maximum price was 25% or $15 markup, whichever was larger, on the trade-in allowance, purchase price or balance due. Dealers might not in any case charge for used equipment more than 95% of the base price for new machinery. The base price was defined as the manufacturer's list price, f.o.b. factory, currently or last used. Maximum prices by farmers and auctioneers were set at 70% of the base price for machines more than one year old and 85% for those less than a year old. The same ceilings applied to dealers except that machines reconditioned and guaranteed for 30 days might sell up to 95% of the base price.

Members of congress from agricultural states protested that the WPB restrictions threatened to reduce farm production in 1943 and also discriminated against U.S. farmers by establishing export quotas under which various countries might obtain U.S. farm machinery to the amount of 111% to 118% of their 1940 purchases of such machinery. Conversations in implement trade circles asserted that the United States had lost first place as the nation with the most highly mechanized agriculture. This position, it was said, had been taken by Great Britain, which had imported large numbers of tractors and farm machinery.

Farm Mortgages.—The Farm Credit administration emphasized in 1942 a policy of urging farmers, during the period of wartime profits, to liquidate all debts, mortgages and other obligations in order to avoid possible recurrence of the hardships imposed by the slump in farm prices that followed World War I, when many farms were foreclosed. From Jan. 1, 1942, to midsummer, the Farm Credit administration reported, farmers paid $6,000,000 into a special "future payment fund." Previous to 1942 they had paid $2,000,000 into the fund, which, sponsored by the FCA, pays the farmer-depositors the same rate of interest as they pay on loans they have with federal lending agencies and is available to meet future interest and principal payments should farmers lack other funds with which to pay. At the time of reporting this increase in the future payment fund, Aug. 1942, Gov. A. G. Black of the FCA reported that during the preceding year farmers had paid to the Federal Land banks and the Federal Land commissioner $205,000,000 on principal of loans outstanding. Of this amount, $80,000,000 was to pay loans in full. The FCA announced in Aug. 1942 it had sent to the "million or more farmers" with federal loans outstanding copies of a letter from President Roosevelt to Secretary of Agriculture Claude R. Wickard, urging all farmers to pay off debts, "to avoid the unnecessary hardships such as were experienced by farmers during and following the first World War." The letter said further:

> Those who take this advice will be contributing in a real way to the accomplishment of three important objectives. First, by making such payments, they will reduce the farm mortgage debt which might otherwise become burdensome in the readjustment period after the war. Second, use of increased purchasing power to pay debts instead of buying such things as we all can reasonably do without during the war will help keep the prices of such things from rising. Farmers, like all citizens of the nation, fear inflation. Third, repayment to creditors will enable them to buy more war bonds, thereby contributing materially to the war effort.

The peak of the farm mortgage debt was $10,800,000,000 in 1923. It was about $7,000,000,000 in 1940 and declined steadily through 1941 and 1942. (*See* also FEDERAL LAND BANKS.)

Farm Tenancy.—Shortage of farm labour and widespread employment in defense industries, which attracted farm workers to urban jobs, operated to reduce farm tenancy in the United States in 1942. Reports from agricultural communities were that many tenant farmers, particularly share croppers in the cotton areas, preferred to work for owner-operators than to farm on a cropshare or cash rental basis. Not only were the higher farm wages an inducement, but income was more certain, since previous to 1942 it was normal for one-third of the farm tenant families to move every year. The direct cost of this shifting from one farm to another was estimated by the Farm Security administration as $50,000,000 a year. An indirect cost, much higher but undetermined, resulted from such shifting because each tenant took all he could from the land without attempting to build it up. There were 2,800,000 farm tenant families in a total of about 6,100,000 farm families in 1941, the FSA estimated. That figure was a slight decrease from previous years owing to the government's efforts to reduce farm tenancy, which had been growing at the rate of 40,000 families a year. Between 1935 and 1942 the FSA had advanced in loans and grants approximately $520,000,000 to rehabilitate 874,000 farm families by aiding tenants to become farm owners and by aiding inadequately-equipped farms. Of this sum, about $200,000,000 had been paid back, it was reported in 1942. (*See* also ALFALFA; CENSUS, 1940; CHEMURGY; CORN; DROUGHT; FERTILIZERS; HAY; HORSES; IRRIGATION; LAW; LIVESTOCK; OATS; PRICES; RATIONING; SOIL EROSION AND SOIL CONSERVATION; TRUCK FARMING; WHEAT; etc.) (S. O. R.)

Great Britain.—No change took place in 1942 in the form of state control of farming exercised by the ministry of agriculture through county war agricultural committees; but one interesting development was the formation in each county of a technical development committee responsible for advising farmers of improved technique in crop and livestock production.

The main emphasis remained on the production of foods for direct human consumption. First priority continued to be given to milk, and an intensive campaign was organized to maintain and if possible increase production. First, on milk-producing farms the primary call on the arable land was toward self-sufficiency, the balance of the land only to be used for crops for direct human consumption. Second, strenuous endeavours were made to maintain the numbers of dairy cows and, in particular, to encourage the development of winter milk production. Each county was given a "milk target." The third measure adopted was the new milk-testing scheme for the improvement of keeping quality, especially during the summer. The fourth measure was the control by the veterinary profession of the four major diseases affecting dairy cattle. The success of these various measures may be judged from the fact that in the first seven months of 1942 farmers' sales of milk were 15,000,000 gal. above the average of the three years before the war.

After milk, wheat, oats, potatoes, sugar-beet and certain green vegetables continued to be the priority products, but rye was

SORTING CORN on a farm in New York. Women from all walks of life responded to the U.S. Employment Service's appeal for volunteer farm workers in 1942. They were paid at prevailing wage rates

U.S. "FARMERETTE" feeding livestock. The U.S. Employment Service in 1942 asked women between 18 and 50 to devote part of their time to farm work formerly done by men called into service or into war factories

VOLUNTEER GIRL FARM WORKER delivering berries to a farm inspector in 1942

WOMEN WORKERS sorting vegetables for transportation to market in 1942

LEISURE HOUR for volunteer "farmerettes" at an inn in Hudson, N.Y.

added on soils unsuitable for wheat. The wheat acreage was up by a third on the prewar figure, and a flat rate subsidy of £3 per acre was introduced to stimulate its production still further especially on poorer soils. The acreage of oats rose from 2,500,000 to 4,000,000 ac., and the potato acreage by 70%. The sugar-beet crop was expected to yield over 4,000,000 tons which should more than suffice to provide the civilian sugar ration. Production of farm vegetables was stepped up by 1,500,000 tons on the prewar figure. In addition farmers were growing 12,000,000 tons more animal feeding stuffs for their own livestock. By June 1942 the total arable acreage had been increased from 12,000,000 ac. prewar to 18,000,000 ac.

While the area of corn crops harvested in 1942 was the largest in Britain's history intensive efforts were also made to raise the level of production for existing arable land by an increase of 5% in output from every acre. An encouraging feature was the number of "C" farms, the least efficient group, which were upgraded to "B" and the number of "B" farms which became "A." There was again more lime available and sufficient home-produced nitrogen, but phosphates and potash were limited and a rationing scheme for their allocation and a crop priority list was evolved. Alternative methods for supplying potash for the next cropping season, particularly for the appreciable areas where a deficiency exists, were, for some crops, the application of agricultural salt, but the major contribution was expected to come from an increased production of farmyard manure. For this purpose the bulk of the greatly increased 1942 straw harvest, some of which would go into paper manufacture, some to be converted into useful fodder by the soda treatment method, had to be utilized.

Land-improvement schemes on existing tillage areas and upland pasture and large-scale reclamation of marshlands continued.

Seasonal conditions were only fair and many districts suffered through lack of rain during the growing months. The hay crop was good and in general got in under excellent weather conditions. Grain crops were also generally good and although harvest conditions were difficult in many areas, the total weight of threshed grain was expected to be the largest ever produced in Britain. Potatoes and sugar-beets were expected on the whole to produce crops above average. Root crops were variable but the August rain improved them in many areas. Pastures were bare and autumn grass much less plentiful than in 1941.

The supply of labour continued to be a limiting factor, though important steps were taken to adopt substitute labour, especially through the Women's Land Army of some 40,000 strong. In Dec. 1941 a national minimum wage of £3 per week for able-bodied adult male farm workers was introduced.

The further mechanization of farm operations was a major factor in coping with the increased load of work. In 1942, farm tractors numbered over 100,000, while 1,250 combine harvesters were in use on the wheat crops. Early in 1942 an agricultural machinery development board was set up to guide and direct the improvement of existing and new machines.

The ministry of food continued to buy at fixed prices most of the major farm products. In Feb. 1942 (later in the case of milk), a new scale of prices was announced to offset the increased costs resulting from the new legal minimum wage rate. The 1942 budget further limited the privileged position of farmers in respect of income tax, the limit for assessment on rental rather than on profits being further reduced from £300 to £100.

British Empire.—Shipping and transport remained the primary problem of the dominions during 1942. The proximity of Canada placed it in the first rank of food importers to the United Kingdom; to meet British demands Canada made a major shift away from wheat to the production of cheese, processed milk and bacon. The government of the United Kingdom continued to contract for the wool clip of the Union of South Africa, Australia and New Zealand. The need to dispense with semiluxury foods seriously affected the fruit-growing industry in South Africa as well as in New Zealand. War in the Pacific added greatly to the already serious problem of transport to the mother country from Australia and New Zealand, while the calling up of manpower for the forces and for munitions, together with shortages of fertilizers, especially phosphates and nitrates, added considerably to the production problems of these two dominions. (R. Ra.)

Agriculture, U.S. Department of: *see* Government Departments and Bureaus.

Ahmed II, Sidi (1862–1942), bey of Tunis, noted scholar and philanthropist, was nominal ruler under the French protectorate of 2,500,000 Arabs, Bedouins, Frenchmen and Jews. He died in his capital, June 19, and was succeeded by his nephew Sidi Mohamed el Tahar.

Ainsworth, William Newman (1872–1942), U.S. Methodist bishop, was born Feb. 10 in Camilla, Ga. He studied for the ministry at Emory college, Oxford, Ga., but for a time served as president of Wesleyan college, Macon, before he was elected bishop in 1918. He served as head of the church in Japan, China and Chosen and was head of the Southern Church in 1937. Bishop Ainsworth, who aided the movement for unification of the Methodist churches, resigned his post in 1938. He died in Asheville, N.C., July 7.

Air Conditioning. The expansion of World War II in Dec. 1941 and during 1942 to include the United States, Mexico, Cuba and most of the Latin-American countries had a profound influence upon air-conditioning products and applications.

Comfort air-conditioning sales and installations for homes, offices, theatres, retail stores and similar applications were practically nonexistent in 1942. This was due to conversion of industry to war work, limitations imposed by governmental regulations, and the scarcity of materials with its attendant requirement of priority rating and allocation.

Industrial and war applications of air conditioning increased in variety and number. Many new process requirements caused the development of new products and new techniques of application.

Sales of new equipment in 1942 were approximately the same as the peak year of 1941 despite the curtailment of comfort and nonessential applications. This meant a decrease in some types and sizes of equipment such as room coolers and small refrigerating units and an increase in the industrial types of equipment.

Applications of air conditioning which were new or of increased importance in 1942 included: (1) the storage, preservation, treatment and preparation of raw materials which are adversely affected by changes in temperature or humidity; (2) in precision manufacturing, assembling and testing, the control of temperature, humidity and air cleanliness to insure uniformly high quality, interchangeability and accuracy of product and accelerated production with reduction in spoilage and waste; (3) in the storage of vital metals, tools, dies and instruments to prevent corrosion and deterioration; to minimize chemical reactions; and to minimize changes in volume, weight and shape; (4) in research and development to simulate unusual atmospheric conditions to be encountered by the armed services and their equipment all over the world; (5) in the processing of food to precool and quick-freeze prior to shipment; (6) in the production, storage, transportation and distribution of foodstuffs; (7) in blackout plants, air-raid shelters, airport control towers to remove excessive heat and humidity which would otherwise make impractical such spaces for their intended uses; and (8) blast-furnace air conditioning to increase output.

New products resulting from the above applications included new refrigerating condensing units and systems in "stage compression" to attain temperatures down to −100° F. or lower, heat exchangers, special test cabinets, stratosphere chambers and others whose nature cannot be disclosed because of the war. (*See* also PUBLIC HEALTH ENGINEERING.) (F. H. F.)

Air Forces of the World.

U.S. Navy.—During the first eight months of 1942, the activities of the bureau of aeronautics continued under the direction of Rear Admiral John H. Towers, U.S.N. He was detached in September to take over the duties of commander, U.S. naval air forces, Pacific, with the rank of vice-admiral. At that time, Rear Admiral John S. McCain, U.S.N., relieved him as chief of the bureau of aeronautics.

The United States' first offensive action was the raid by U.S. navy carrier-based aeroplanes on the Marshall and Gilbert islands on Feb. 1. This raid was an outstanding success.

Later in February a Japanese force attacked one of the U.S. carriers off Bougainville in the southwestern Pacific. U.S. fighter pilots shot down 16 out of the 18 Japanese bombers that attacked.

The Marshall and Gilbert successes were repeated, first at enemy-held Wake island, then at Marcus island. Damage to enemy shore installations on these raids must have taken months to repair. Then came the action at Salamaua and Lae on New Guinea. Carrier-based dive bombers, fighters and torpedoplanes roared over a mountain pass and dropped down on a large Japanese force. These aeroplanes sank 2 Japanese heavy cruisers, 1 light cruiser, 1 destroyer and 5 transport and cargo ships. Two other destroyers and 4 other enemy vessels were damaged. U.S. losses were 1 dive bomber.

The pattern of this attack was repeated at enemy-held Tulagi on May 4. One light cruiser, 2 destroyers, 1 cargo ship and 4 gunboats were sunk. Five Japanese seaplanes were shot down. It cost the United States 2 fighters and 1 torpedoplane.

In the battle of the Coral sea on May 7 and 8, carrier-based aeroplanes intercepted a Japanese force which was advancing on Port Moresby. A Japanese carrier and cruiser were sunk. Two other carriers were badly damaged and 91 enemy aeroplanes were shot down. The United States lost the "Lexington," but saved many of its aeroplanes. Twenty-seven U.S. planes were lost in combat.

At Midway, in June, another carrier was lost, the "Yorktown." The Japs lost 2 cruisers, 3 destroyers and 4 carriers, the "Kaga," "Akagi," "Soryu" and "Hiryu." Of later actions in the Aleutians and the Solomons, as in the Atlantic, little could be revealed.

It should be emphasized that the successes of naval aviation to date (Jan 1, 1943) were accomplished with types of aeroplanes which were already in active service at the beginning of the war. Principally, these were the Grumman Wildcat fighter, the Douglas Dauntless scout bomber, and the Douglas Devastator torpedo bomber. Great as was the performance of these aeroplanes, highly improved performance was expected from the new types which were going into service. These types represented years of the most painstaking development in airframe design, engines, armour and fire power. They included outstanding aeroplanes in every combat type—dive bombers, fighters, torpedoplanes and long-range patrol bombers. (J. S. M.)

U.S. Army.—The year 1942 brought the first great battle test of the army air forces. From some 200,000 at the first of the year, the total of 1,000,000 officers and men was passed before the end of 1942, with a goal of 2,200,000 for 1943. Congress made funds available for the army air forces as follows:

Fiscal year ended June 30, 1940	$ 243,631,388
Fiscal year ended June 30, 1941	3,892,769,570
Fiscal year ended June 30, 1942	21,952,516,861

A few weeks before the turn of the year, the war department announced that the 54-group program which had been put into effect in June 1941 when the army air forces were given a distinctive status, was to be augmented to an 84-group program and a goal of some 650,000 officers and men. With the entrance of the United States into the global conflict, plans for greatly increasing the training programs for air and ground crews were put into effect, and orders placed for tens of thousands of military aeroplanes of all types. The heavy bomber emerged as the primary long range offensive weapon and the program to turn out large numbers of improved versions of current models, in pooled production, was greatly increased.

In the main theatres of combat, adequate bases for air operations were established, including Great Britain, Africa, Asia and the southwest Pacific. An overseas division of the air service command was established and facilities for maintenance of aircraft and equipment greatly improved. The air corps ferrying command, established in May 1941 for ferrying lend-lease aeroplanes from the factories to delivery points for England, was greatly expanded as the air transport command. Four great air routes were pioneered, and a world-wide air service was in operation which carried aeroplanes, supplies, personnel and mail to all the fighting fronts.

To meet the demands of modern, fast moving, all-out warfare, the war department announced a drastic, streamlining army reorganization in March 1942. The U.S. army was divided into three main parts: The ground forces (including the infantry, artillery, cavalry, armoured force, etc.); the services of supply (which included the organizations for supply, maintenance and administration, such as the quartermaster corps, signal corps, ordnance, etc.); and the air forces. Thus the air forces were, for the first time, placed on an equal basis with all the other combat branches of the army combined.

The U.S. army air forces, as the name implies, are a group of powerful, self-contained, air striking forces. Four of these in 1942 covered the continental United States. Others provided for the defense of such vital areas as the Canal Zone, Alaska and Hawaii. Still others were overseas, operating from bases in England, Africa, the middle east, India, China, New Guinea, the Solomons, Australia and elsewhere. At the close of 1942, the U.S. army air forces were operating on a larger number of fronts than any other organized military force in the world. (H. H. A.)

The World.[1]—During 1942, the first year of an all-out world-wide air war, few new or novel military aircraft came into active use. Although newspapers and magazines were full of talk of "secret" weapons or of super aerial battleships, actually no aircraft appeared over any front during the calendar year 1942 that looked much different from the fighting machines of 1941 or 1940. There was considerable improvement. Designers and builders everywhere were constantly changing details in an effort to satisfy the constantly changing needs of the tactical groups, but so far, no radical departure from the conventional appeared to give its possessor unquestioned superiority in the air.

Germany declared war in 1939 only after she had built up an air fleet large enough (as she thought) to guarantee success by the blitzkrieg method. The tactical squadrons in the field were backed up by a production of standardized types sufficient to take care of the necessary replacements for a supposedly short war. Research and development were not entirely neglected, but became secondary to production. Only after it became evident that the war was not to be won in 1940 or 1941 was great stress put on retooling the German aircraft industry for the production of machines that had been laid down on drafting boards, or tested in laboratories after the war started.

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[1] All assertions or opinions contained in this section of this article are the private ones of the writer and are not to be construed as official or reflecting the views of any organization or government service.

The same situation obtained in Britain. When war came, Britain had far fewer aircraft in the field than she needed. Further, the destructive raids of 1940, together with the terrific attrition of the Dunkirk period, compelled her to concentrate all her efforts on the production of types that had been designed and developed during the years immediately prior to the war. Only after the relief afforded by the rehabilitation of her own factories, and by the operation of lend-lease, was Britain able to divert engineering talent into the development of aircraft designed to outfly the faster and more powerful ships that soon were flowing from Germany's revamped factories.

In wartime, actual figures on production rates are carefully guarded military secrets. Many guesses were current, based on estimated floor space in factories, and the availability of manpower. It was difficult, however, to apply proper discounts for interruptions due to bombings by the enemy, or occasioned by shortages of essential raw materials. It was generally believed, however, that by the end of 1942, the United Nations had succeeded in passing the output of both planes and engines established by the axis powers.

The numerical strength of the combatant forces was also difficult of estimation. It could not be gauged by the simple process of subtracting announced losses from estimated production. The latter figures were sketchy, at best, and the former were generally falsified, whether from enemy or friendly source. Further, the losses reported were only those due to enemy action. It was well known that the major attrition of matériel came about more from operational accidents (either in training, or in the process of leaving for or returning from combat missions) and from losses in bad weather, than from combat.

Trends in enemy aircraft design could only be guessed until actual examples of new types fell into allied hands. Every aeroplane shot down on home territory was immediately examined in great detail by engineers and technicians. Analyses of materials, fuels and oils give valuable clues to the state of the resources of the enemy. The forced landing of an undamaged Focke-Wulf FW-190 in England, and the recovery of an almost intact Japanese Zero in Alaska proved invaluable to the air force people. Also, every combat aeroplane is fitted with automatic cameras which bring back pictures of enemy aeroplanes encountered.

THE AXIS POWERS

Japan.—Before Dec. 7, 1941, little real information on Japanese air strength was available. Over a period of years Germany, France, Italy and the United States had sold the Japanese government or the Japanese airlines a number of military and commercial designs, presumably obsolete. It was known that these basic types had been studied and copied, but there was little outside evidence that they had been greatly improved upon, or that they had been reproduced in any appreciable quantities.

No accurate figures were ever tabulated on the extent of the Japanese aircraft industry, or of its output. Putting together information from German, Italian and American sources, there were at least 17 major aircraft manufacturing plants in Japan proper. It was estimated that the capacity of these factories was between 500 to 1,000 units a month. Largest and best known was the Mitsubishi factory at Nagoya. In 1939 it was reported to be employing some 6,000 people, a figure that was undoubtedly doubled or trebled. Other important manufacturers included the Nakajima factory at Gumma-ken, the Kawasaki and the Kawanishi concerns at Kobe, the Nichii Koku Kogyo K.K. at Kyoto (owned jointly by Japanese and Italian interests), the Aichi factory at Nagoya, the Aiba and the Hitashi companies in Tokyo, the Nippon Hikoki K.K. in Yokohama, and the Nippon Koku Kogyo K.K. at Hiratsuka. Thousands of small shops and individual workers in scattered villages were said to be making aircraft components to feed the principal production lines.

During the four or five years prior to the outbreak of the war, Japan acquired a large number of licenses to manufacture European aircraft and accessories, including Italian Fiat bombers, German Heinkel and Junkers bombers, and the German Messerschmitt Me-109 and Me-110 fighters. Reports indicated that the latest German fighter designs, including the FW-190 and the Me-210 were released to the Japanese. It was known that Japanese concerns took licenses to build the Swiss Oerlikon and the French Hispano aircraft cannons. It may be noted also that many of the Japanese bombers and fighters that were shot down were fitted with propellers built under license from U.S. manufacturers.

Fewer details were available regarding Japanese engine design and construction, but their power plants followed closely trends of design elsewhere in the world. At least ten plants were engaged in the manufacture of engines. There were very few liquid-cooled engines in service in Japanese aeroplanes. Most combat types appeared to be powered with twin-row radial air-cooled engines. One of the few such engines that was captured intact was analyzed carefully by U.S. engineers. Examination disclosed that there was no evidence of shortage of special alloys or materials essential to manufacture engines. An excerpt from their findings is significant, ". . . that the group responsible for the design did a very ingenious job of combining . . . the most desirable features of a number of products of foreign manufacture . . . a highly dependable, even though not highly developed piece of equipment . . . probably produced under time and tooling limitations which we would consider nearly impossible."

The Japanese had a system of designating their aircraft models which tied them directly to the year of manufacture. The two digits which follow the name of any Japanese aeroplane indicate the year in which it was made, not in terms of the Christian calendar, but referred to their own. Thus 00 indicates the year 2600 of the Japanese empire which corresponds to 1940, and 01 and 02 mean 1941 and 1942. There were still a few of the 97, 98, and 99 models in service, but reports indicated a preponderance of equipment built subsequent to 1940.

Best known in 1942 was the Mitsubishi 00, or Zero fighter. It was a single seater of small dimension but of conventional pattern. The Zero had a span of 39 ft. 5 in. It was 30 ft. 3 in. in overall length. It was a low wing monoplane with retractable landing gear. Its wings folded for stowage on board aircraft carriers. Its cockpit, designed for the average Japanese pilot was too small for comfort for the average American fighter pilot. The engine was a 14-cylinder twin-row radial air-cooled type of an estimated 900 to 1,000 h.p. The propeller was a hydraulic constant speed type of American design. In its original concept, everything was sacrificed for structural lightness which resulted in high rate of climb and great manoeuvrability. These characteristics proved troublesome to U.S. pilots in more heavily armed and armoured aircraft. Significantly, the Mitsubishi 01 and 02 are considerably heavier than the original, because some of the things that were left out in the beginning were later added, such as body armour for the pilots, protection for fuel tanks, and increased structural strength. In the long run, the original Zeros proved to be too vulnerable to attack and too frail to stay together in violent combat manoeuvres or under the impact of gunfire.

One of the latest machines was captured, and was in the United States under intensive evaluation. This particular plane weighed approximately 5,200 lb. in fighting condition, including 60 rounds of ammunition each for its two 20-mm. cannon, and 500 rounds total for two 7.7 machine guns. This weight contrasts with the average 7,000 to 9,000 lb. all-up for current U.S. and British fighters. Tests showed that the Zero is an excellent aeroplane, but has no "super" characteristics that cannot be matched by U.S. fighters.

Other recent fighters include the Nakajima S-01 fitted with a Mitsubishi engine of 1,050 h.p. and said to have a top speed of 387 m.p.h. The Kawasaki S-01 is fitted with the same engine, flies at 375 m.p.h. A more recent type that parallels the German Me-110 or the Lockheed P-38, is the Mitsubishi S-02. This aeroplane is a single seater fitted with two 1,000-h.p. engines. Its armament (at least one cannon and several machine guns) is mounted in the nose ahead of the pilot. It is designed with a tricycle type undercarriage. It is reported to have a top speed of 350 m.p.h. and a service ceiling of 31,000 ft.

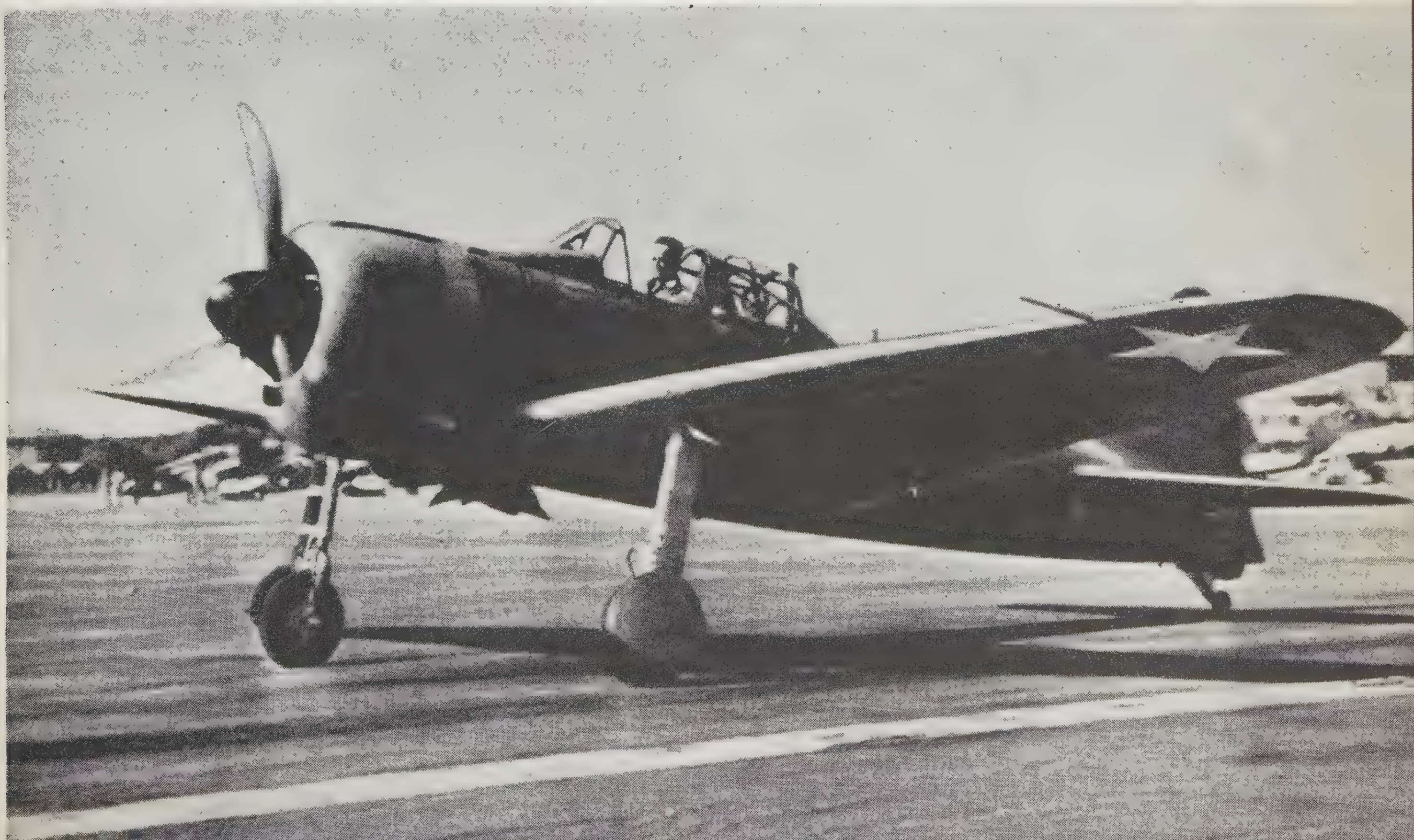
Although few examples were acquired intact, the Japanese forces had several fast and efficient dive bombers and torpedo carriers. It was undoubtedly ships of this type that wrought such havoc at Pearl Harbor and which accounted for the destruction of several U.S. vessels. Photographs taken in action indicated that these ships were generally single-engine low wing monoplanes, most of them two seaters of thoroughly modern design and with performance up to first rate dive bomber standards anywhere. The Nakajima K-01, with a 950-h.p. engine was typical of this class.

Both the Japanese army and navy conducted extensive raids at relatively long ranges (in the Philippines and in the southwest Pacific areas) with twin-engine medium bombers that appeared to be relatively fast, well armed and efficient. These machines showed strong German influence, the older Mitsubishi Soyakaze 96 following closely the Junkers pattern, and the Nakajima Naka 19 showing marked traces of Heinkel. A more recent example appeared to be of strictly Japanese origin—the Mitsubishi OB-01. This heavy navy bomber and torpedoplane was designed to work from aircraft carriers. It was powered by two air-cooled radial engines. It could carry one or two torpedoes or heavy bombs. It was well protected with guns fore and aft.

No evidence was uncovered of the use of four-engine land bombers comparable to U.S. Flying Fortresses or Liberators. The Japanese were in possession of at least one U.S. four-engine prototype, the original Douglas DC-4, and have also taken a license to build the German Focke-Wulf 200. There was no reason to believe they are incapable of designing and building adequate four-engine bombers on their own. The only four-engine type reported is a large flying boat which was obviously used as a long range patrol bomber and transport. This machine bore a strong resemblance to the Sikorsky S-42 or the French Latecoere flying boats.

Germany.—A number of new and improved aeroplanes were introduced into luftwaffe squadrons during 1942, none of particularly startling design. Performance and armament were improved, and changes were introduced to meet certain specific combat conditions, but all aircraft were of a conventional nature.

There was one exception, the Blohm and Voss BV-144, a non-symmetrical observation aeroplane that has a curious appearance in flight but possesses questionable advantages. In an effort to obtain wider-than-average vision and field of fire, the main fuselage has been offset to the left of the centre line of the wing and a short nacelle for pilot and observer-gunner occupies a corresponding position to the right. The fuselage carries a single BMW 801 engine of 1,600 h.p. in the nose. Rudder and stabilizer are in the usual locations, but the stabilizer is extremely offset to the left of the fuselage. The nacelle is covered largely with a transparent plastic material so that both occupants have an al-



THE FAMED "ZERO," Japanese fighting plane with high climbing speed and manoeuvrability but no armour to protect the pilot. The plane pictured with the U.S. star was captured by U.S. forces in the Aleutian islands in June 1942 most unlimited view ahead, above and behind. The fuselage portion is of small cross section so that the obstruction of view to the left is comparatively small. The concept is not entirely new. An American aeroplane designer took out patents on a very similar idea almost 15 years ago, but U.S. military people never saw enough advantage in the design to place any orders for such machines.

In the fighter group, the well tried Me-109 was still in active service. Most of those that appeared in combat during the year were the Model F's, a generally cleaned up version of the original 109. Engine power was increased, and the armament and armour was generally stripped down to make the aeroplane lighter for faster climb and better performance at high altitudes. One 20-mm. cannon fired through the propeller hub and two .310 machine guns were fitted in the fuselage with synchronizer gear to fire through the propeller. Top speed was a little better than 370 m.p.h. at 22,000 ft.

The Me-209 was a development from the 109, but an entirely new aeroplane. It was a single seater fitted with the 1,450-h.p. DB-603 liquid-cooled engine. It carried six or eight machine guns or various combinations of cannon and machine guns. It was reported to have a top speed of 398 m.p.h. at 21,000 ft., and a service ceiling of 42,000 ft.

The twin-engine destroyer fighter type of which the Me-110 was the outstanding example was continued in a further development, the Me-210. This aeroplane was bigger and heavier than its predecessor. Where the Me-110 had two DB-601 engines of 1,150 h.p. each, the 210 had two DB-603's at 1,450 h.p. each. Major armament was carried in the nose and consisted of two cannon and four fixed machine guns. There was one flexible gun aft for the second crew member. Provision was made for the carriage of bombs externally. Speed was said to be 365 m.p.h. at 16,400 ft.

Most widely advertised German fighter of the year was the Focke-Wulf FW-190 introduced in quantity during the summer to combat the high flying American Fortresses. Most interesting feature was the use of the radial air-cooled engine, a marked departure from previous German fighter practice which has relied almost entirely on the liquid-cooled power plant. The BMW-801D 14-cylinder twin-row radial engine was reported to develop 1,600 h.p. for take-off, and 1,750 h.p. at 18,000 ft. A great deal of research evidently went into the cowling of this engine, for it apparently cools properly at all altitudes. An engine-driven fan in the nose provides for cooling at high rates of climb.

The FW-190 might well mark a new trend because a number of high performance fighters both in the United States and elsewhere were swinging over to the radial air-cooled engine (the Republic P-47 is a good example).

The FW-190 was of unusually well integrated design. It was not only an excellent fighting machine, but was carefully studied for simplified quantity production with extensive subcontracting of its components. It was small, 34 ft. 5 in. span, 29 ft. 4 in. long. The installations were simple and accessible. The pilot was well protected by armour, and the armament consisted of four 20-mm. cannon in the wings and two 7.92-mm. machine guns in the fuselage firing through the propeller.

One other type of fighter appeared frequently in 1942, the Focke-Wulf FW-189. This was a twin-engine two-place type somewhat similar to the Lockheed P-38 Lightning with tail surfaces carried on twin fuselages and with the crew housed in a central nacelle, largely glass enclosed. This type was first introduced in Europe by Fokker about 1936.

In the bomber class, medium size dive and level bombers predominated. The old Junkers 87B, the Stuka, still turned up in quantities in tight places where ground targets were to be attacked. This aeroplane was powered with a single 1,000-h.p. Jumo 211 engine. Its top speed was about 240 m.p.h. and it carried one 1,100-lb. bomb and two machine guns.

More modern are the Ju-88A and Ju-88B four-place level bombers. Latest types had two 1,200-h.p. Jumo 211D engines. They were liquid-cooled, mounted in circular nacelles with circular radiators which gave the typical appearance of the air-cooled installation. With a battery of cannon and machine guns in the nose in place of bombs, the Ju-88 became an efficient night fighter. Its top speed was about 320 m.p.h.

The 1942 version of the old Dornier "Flying Pencil" was the Do-217E. It was introduced around the first of the year, powered with two DB-801 radial air-cooled engines. Later models carried two 2,000-h.p. BMW 802 engines. An interesting feature was the installation of auxiliary fan cooling for these larger engines, to permit high rates of climb at high power. The machine also was fitted with exhaust-heated wings for de-icing. It carried one 20-mm., one 15-mm. cannon and seven machine guns. Its reported bomb load was over 6,000 lb. for a range of 1,500 mi. Speed was 310 to 325 m.p.h. at 18,000 ft. Provisions were installed for assisted take-off and for glider towing. A novel feature was a parachute arrangement at the tail to act as a dive brake. Conventional dive brakes are usually fitted as auxiliary flaps on the wings. Aside from structural difficulties which such flaps impose, they sometimes make the aeroplane unstable in a dive and reduce accuracy of the bomber's aim. The new Dornier tail brakes unfold like four petals of a flower from an extended tail cone. The braking load is thus absorbed in the fuselage of the machine. It seemed likely that directional stability in a dive would be improved. This form of brake was one of the few design novelties of the year.

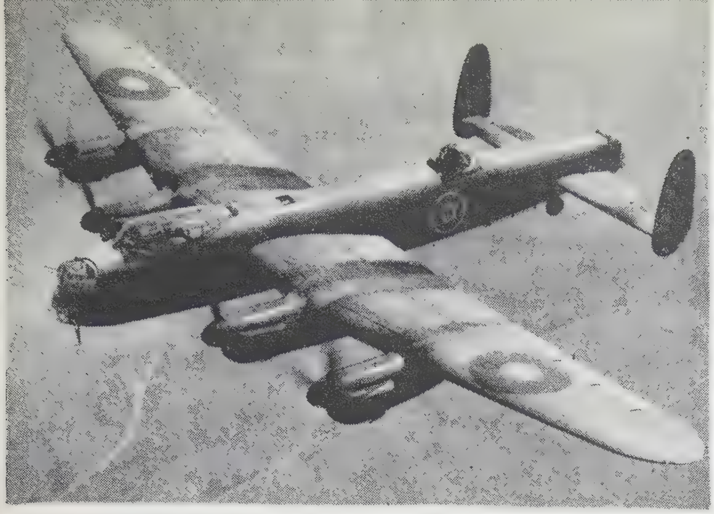
In 1942, the Germans were not nearly as prolific as the British in the matter of four-engine bombers. The Focke-Wulf 200 Kurier continued to patrol the North Atlantic in search of convoys. This machine had an all-up weight of 38,000 lb., carried a crew of six and was powered with four 1,000-h.p. Fafnir radial air-cooled engines.

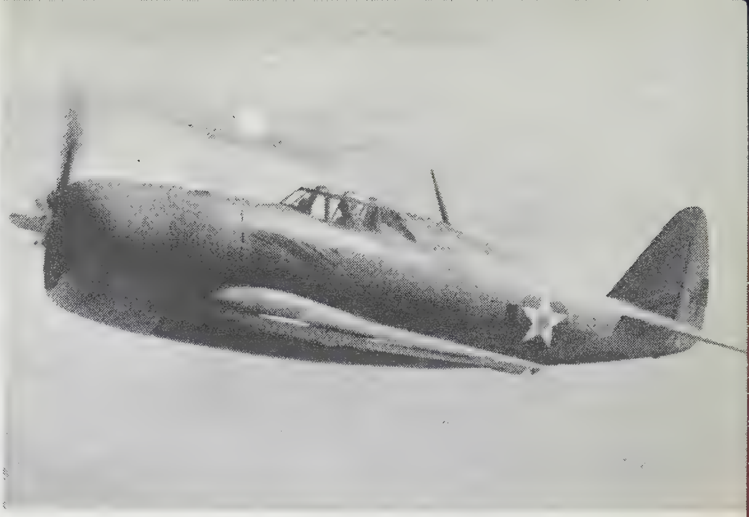
Once or twice, very large bombers were reported over England at extremely high altitudes. There was some reason to believe that these machines might have been powered with newly developed diesel engines and were probably of the pressurized cabin type. It was known that a modernized version of the old Ju-86 fitted with Jumo 207 diesels bombed British towns from above 40,000 ft. altitude.

The only new bomber that was definitely identified and described in any detail was the Heinkel 177. It first appeared in a daylight raid over England toward the end of Aug. 1942. It resembled a twin-engine machine, but it was known to have four engines, each pair driving a single propeller. The engines were presumably liquid-cooled of at least 1,000 h.p. each. This was the first example known of a service type in which two engines were geared to a common propeller. The Heinkel 177 had a wing span of well over 100 ft. It had a top speed of around 280 m.p.h., and a probable cruising range of 7,000 mi. at an average cruising speed of 180 m.p.h. Its actual weight and bomb carrying capacity were not accurately known.

Another large bomber, a military version of a transatlantic prototype that was designed before the war, was the Blohm and Voss 222 with six 1,000-h.p. BMW 132 engines. It was thought to have an all-up weight of around 100,000 lb. with a top speed of about 200 m.p.h. at 10,000 ft. Its cruising range was thought to be 4,400 mi. at a speed of 170 m.p.h. average.

The only actual mention of new diesel-powered aeroplanes in Germany (apart from speculation about high flying bombers) was in the three-engine Blohm and Voss HA-138B. This was a





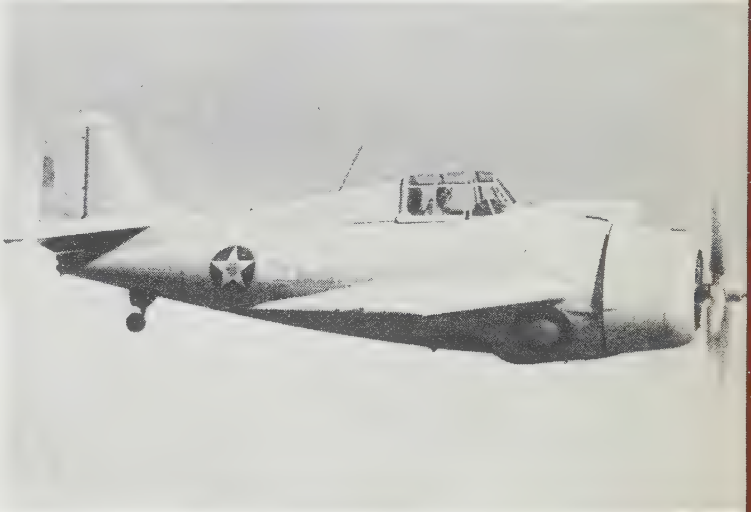
Above, left: THE LANCASTER, a new British heavy bomber of 1942. Used in extensive raids over nazi-occupied Europe, it has a bomb load of eight tons

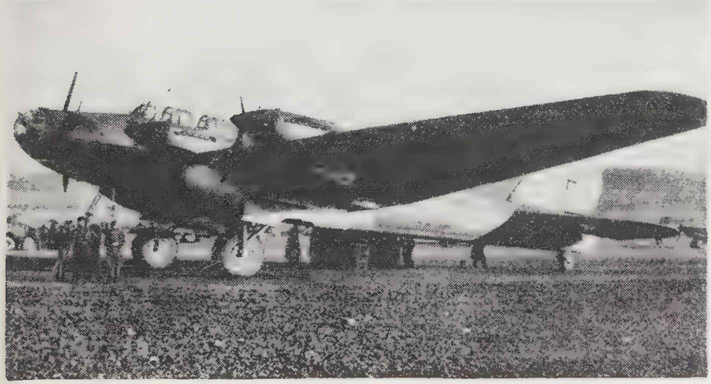
Above, right: THE REPUBLIC P-47 THUNDERBOLT, high-altitude U.S. interceptor with a supercharged 2,000-h.p. motor

Right: BEST U.S. NAVY FIGHTER of 1942 was the Grumman F4F Wildcat

Below, right: THE CURTISS WARHAWK (P-40F) was further improved in 1942. Powered by a Rolls-Royce motor, it increased its fighting altitude to about 25,000 ft.

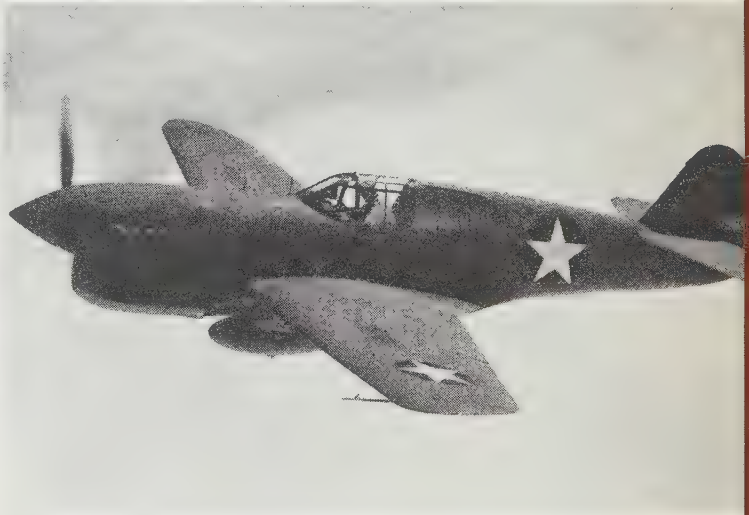
Lower right: A NEW U.S. NAVY FIGHTER of 1942 was the Vought F4U Corsair, first flown in 1940 but not used in combat. It has a 2,000-h.p. air-cooled motor and a speed estimated at more than 400 miles per hour

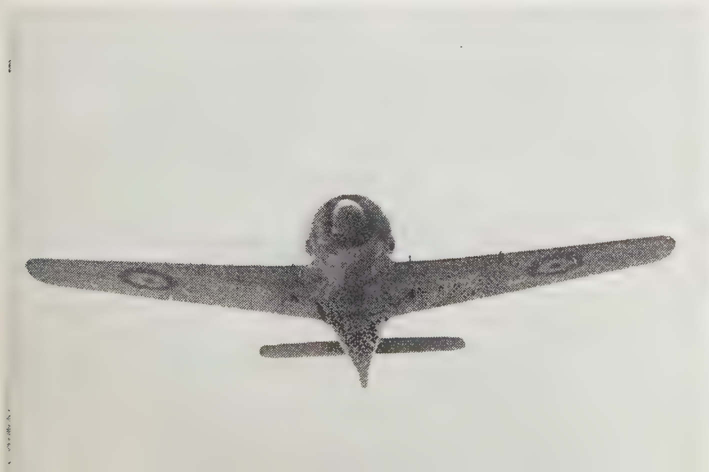


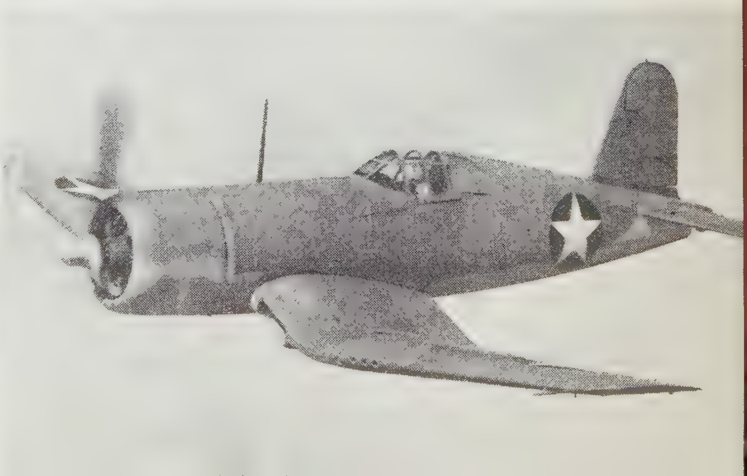


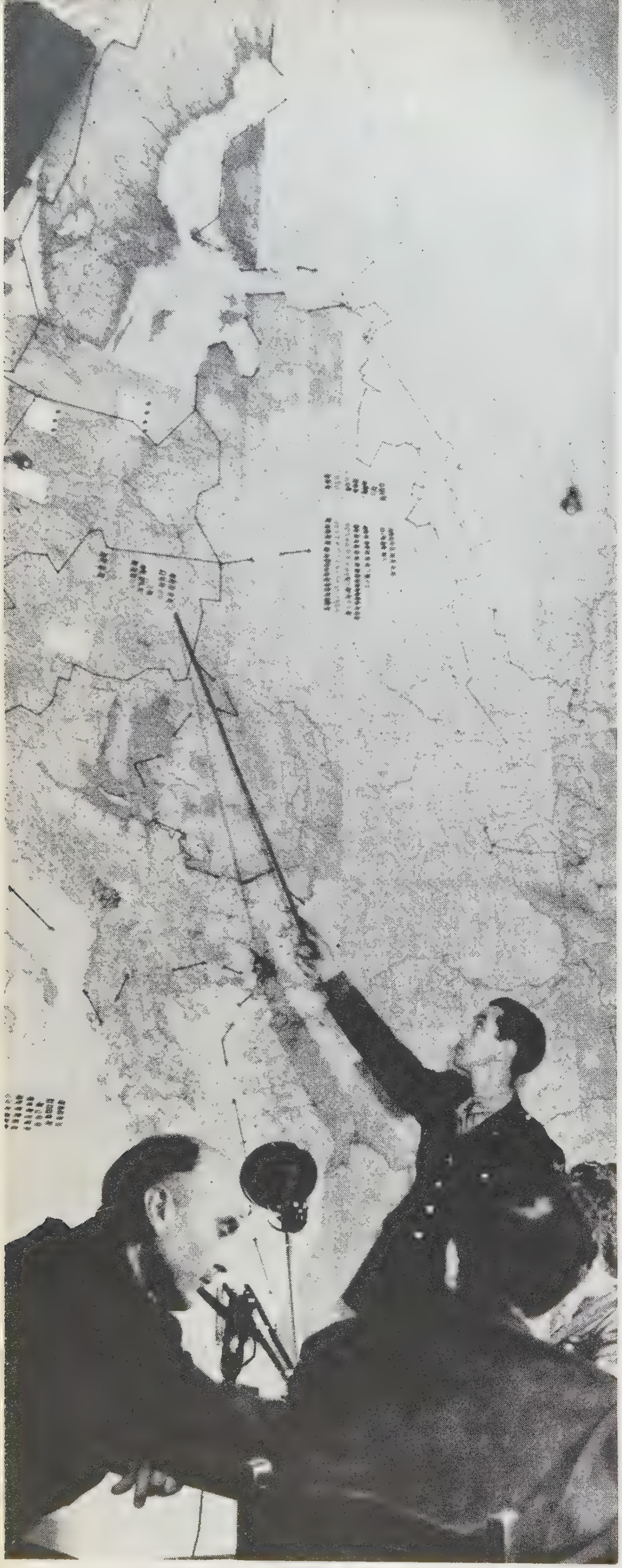
Above: THE TB-7, a powerful four-motor Russian bomber. Exact details of the plane were unknown in 1942, but it can carry huge loads of bombs for great distances

Below: THE GERMAN FOCKE-WULF 190, a fighting plane of revolutionary design, made its first appearance in 1942. The one in the photograph was shot down on the south coast of England









U.S. BOMBER COMMAND HEADQUARTERS in southern England. At the left is Brigadier General Ira C. Eaker, commander in chief, listening to intelligence officers "brief" the strength of German positions

three-engine flying boat presumably being used as a replacement to the Dornier flying boats which were active during the early phases of the war in the bombing of Scapa Flow and in the laying of the so-called magnetic mines in British coastal waters.

During 1942, a number of German troop-carrying gliders were picked up by the British, mainly in the North Africa theatre. The gliders which were first used in the capture of Crete were conventional types, high-wing monoplane, single large fuselage and normal tail surface. In the summer of 1942 an improved type, the Gotha 242's were used. Each could accommodate 20 fully equipped troopers. These machines had a wing span of 79 ft., a length of 52 ft. The tail surfaces were carried on light twin booms and cargo and crew were housed in a large central nacelle. Major advantage, apart from possible structural weight saving, was the ability to load and unload quickly through large hinged covers in both the nose and the stern of the nacelle. It may be noted in passing that the use of gliders was confined mainly to the moving of troops into tactical areas. Contrary to popular notion, there appeared to be very little movement of cargo in glider "trains." The economics of cargo carrying by glider train was still doubtful, and reports indicated that the supplying of Rommel's Afrika Korps across the Mediterranean was carried out almost exclusively by means of the old Ju-52 three-engine transports. One report mentioned a large glider with a wing span of 275 ft. designed to carry a heavy tank. This monster was said to be towed behind three Focke-Wulf four-engined Condors. Confirmation was lacking and the practicability if not the authenticity of such a project might well be questioned.

The exact status of German aircraft production during 1942 was obscure. The production pause that was evident late in 1941, occasioned by the retooling of the German aircraft industry for new and improved types was probably nearing an end late in 1942. Little was known about the conditions of stock piles of essential materials, but there was no indication, from the examination of captured matériel, that acute shortages existed in any of the essential metals. The absorption of French industry and the industrial areas of Central Europe undoubtedly released sufficient stocks of basic raw materials to permit production of aircraft at reasonably high rates for a long time to come. There was no doubt but that Germany put French and Italian factories to work on the production of German types.

Italy.—Of all the axis powers, Italy made the least contribution to the total air strength during 1942. Italian fighter squadrons made a poor showing in the North Africa campaign. One or two relatively new fighters put in an appearance during the year, but most of the aircraft that were brought down or captured were of obsolete type. The Macchi C-202 represented current Italian design. It was a single-seater with the pilot well back toward the tail. It bore a strong resemblance to the later Messerschmitt 109 and was powered with an Italian-built DB 601 engine. The nose treatment was excellent, the propeller being fitted with an unusually large well faired spinner.

In the bomber field, the three-engine type which characterized Italian heavy bombardment practice was still in evidence. The newest Capronis and Savoia-Marchettis were of this type. Typical example was the SM-84 bomber. It was fitted with three 1,000-h.p. Piaggio 14-cylinder radial air-cooled engines. Engines were equipped with elaborate air filter systems to keep out sand in desert operations. Its gross weight was 27,700 lb. Top speed was reported at 295 m.p.h. As with most large Italian machines it was of mixed construction—wooden wings with steel tube, fabric-covered fuselage. For one reason or another, however, Italian bombardment aviation played relatively little part in the major theatres of war. Its main job seemed to have been the maintenance of a continuous bombardment against the British-held island of Malta. For this type of operation bombers mounted on seaplane floats were frequently used. Such machines functioned also as torpedo carriers. One of Italy's newest was the Caproni 312, a fairly fast twin-engine float seaplane.

The one aerodynamic novelty that appeared early in 1942 was of Italian origin, the jet-propelled Caproni-Campini CC-22. This machine had no military significance as it was a purely experimental type, but it forecast a type of propulsion that might be of considerable importance in high-speed high-altitude combat. In place of the usual engine-driven propeller, the aircraft was driven by means of an internal blower which sucked air in at the nose of the fuselage and blew it out through a tube in the stern. The blower action was augmented by the introduction of burning gasoline in a combustion chamber at the rear. The column of hot gases expelled astern propelled the whole machine as a skyrocket is driven by its jet of burning gas.

Italian production during the year appeared to have been at a relatively low level. During the early part of 1942 there were evidences of shortage of manpower and materials. There were indications also that a number of factories were going through a retooling phase. The frequent visitations of British heavy bombers apparently crippled many Italian industries. Most aircraft factories are in the northern portions, mainly in the vicinity of Turin and Milan. These cities were blasted time after time and undoubtedly the aircraft plants suffered heavily.

THE ALLIES

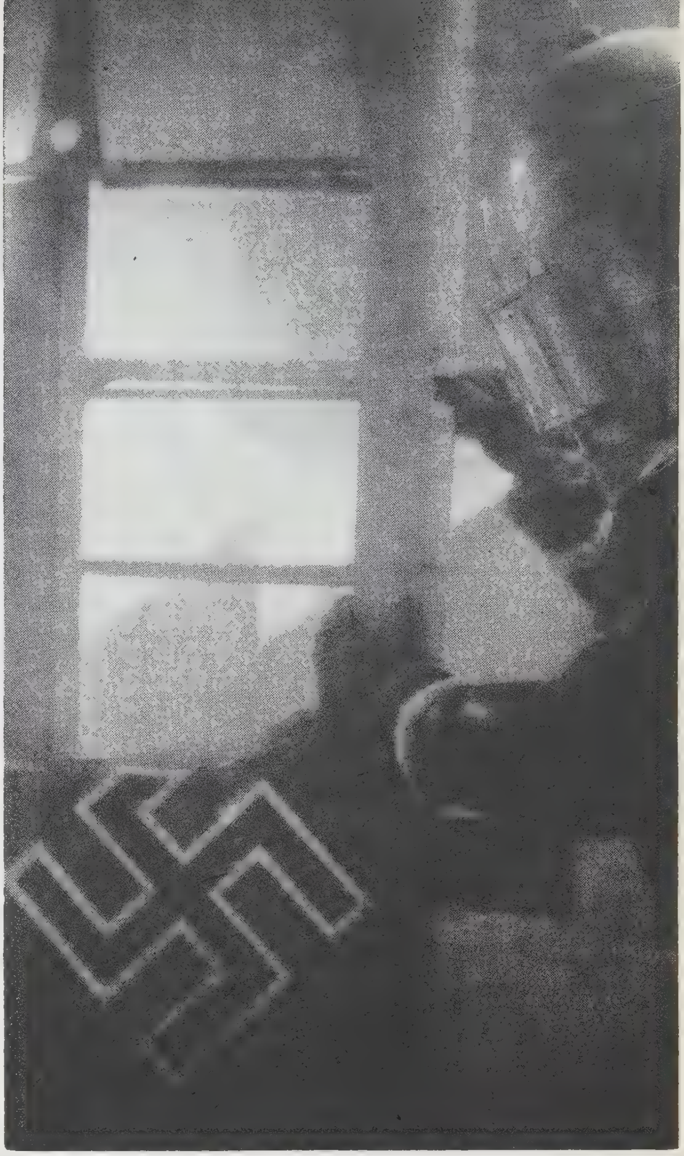
The fighting aircraft of the United Nations went through the same progressive improvement that characterized axis aircraft of 1942. Few new aircraft names appeared in 1942's records. British fighter pilots were still doing their work on Spitfires and Hurricanes, on Tomahawks and Kittyhawks. U.S. pilots in Europe flew Warhawks, Lightnings, Liberators and Flying Fortresses.

Great Britain.—British aircraft manufacturing got back into its stride. Most of the damage to aircraft factories had long since been repaired. Factories were more and more decentralized to minimize bomb damage, and in several cases whole factories were moved underground. One plant, for example, was installed in the galleries of a mine many feet below the surface of the earth. Another occupied a three-mile stretch of a former subway. The production machines were strung out the length of the "tube" and incoming materials and the outflow of product were handled on trucks on the old track.

In 1942 the R.A.F. not only had ample matériel resources to protect the British Isles and to conduct active campaigns in Africa, but also to dispatch large numbers of extremely heavy air raiders over France, Germany and northern Italy. The raids on Cologne, Rostock and the northern Italian cities far and away exceeded the worst that the Germans had done in England.

Outstanding in the R.A.F. in 1942 was the widespread use of the big four-engine bomber. Before the war, many British experts had been openly sceptical of the big four-engine bomber—a distinctly American development. It was argued that its size and lack of manoeuvrability would make it an easy target for interceptors. The British found, however, that the giant bomber, when used at night, could carry tremendous bomb loads at reasonable ranges. The two- and four-ton "block buster" bombs were carried over their targets in four-engine machines. Newest of the type was the Avro Lancaster which could handle a mighty bomb load for 1,000 mi. at close to 300 m.p.h. Its gross weight was 63,000 lb., its wing span, 103 ft. For protection it carried ten heavy machine guns mounted in power turrets. The four Rolls-Royce Merlin XX's are rated at 1,200 h.p. each at 12,000 ft. The Lancaster was engineered for ease of production.

The Short Stirling figured in many of 1942's heavy raids. It grossed 65,000 lb., had a wing spread of 99 ft. The four engines were Bristol 14-cylinder Hercules sleeve valve type. Its performance was much the same as that of the Lancaster. Eight guns were mounted in three turrets.



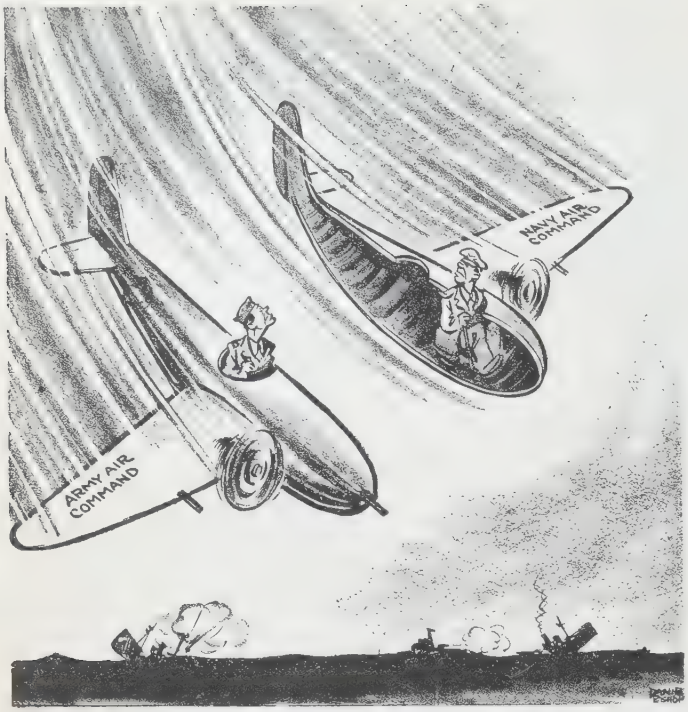
ENGINEER of the Douglas Aircraft company studying the effect of intense cold on the tail section of a German Messerschmitt 110 shot down over England and sent to the U.S. for research in 1942

Older than either Stirling or Lancaster was the Handley Page Halifax with four Rolls-Royce liquid-cooled engines. Squadrons of these three heavy bombers wrought untold destruction to the axis-held cities of Europe during 1942.

Another bomber, almost as big, but with two engines, was the Avro Manchester. It had almost as much power as the four-engined bombers. It was fitted with two X type 24-cylinder Rolls-Royce Vulture engines of 2,000 h.p. each. It was reported as participating in many raids in 1942.

In the medium bomber and night fighter field (twin-engine high speed machines) the Bristol Beaufort, the Bristol Blenheim IV and the Bristol Beaufighter were on active service. Large numbers of American-built Douglas Bostons (A-20's) and Martin Baltimores came into use during 1942. The Boston had a night-fighter counterpart, the Havoc, in which the bomb load was replaced by a heavy gun battery in the nose.

Most interesting of the new British bombers was the De Havilland Mosquito, a machine whose prototype was several years old, but which was kept very much on the secret list until late in 1942. The Mosquito was a twin-engine (two Rolls-Royce Merlins) built almost entirely of plywood and plastic. It had a 54-ft.



"GET TOGETHER, BOYS," warned Bishop of the *St. Louis Star-Times* as he criticized the divided command of U.S. army and navy air forces in 1942

wing span and was 41 ft. long. Little was known of its load carrying capacity or performance except that it was said to be faster than the FW-190 at low altitudes. It was distinctly in the medium class, carrying a heavy load of bombs at high speed. It may be fitted out as a fighter with 20-mm. cannon and .303 machine guns. It was reported first in active service on a raid over Gestapo headquarters in Oslo, a 1,000-mi. round trip from England. It was announced that a large number of this type would be built in Canada.

The Vickers Supermarine Spitfire, in its latest form was still considered the best all-round fighter aeroplane in the world. The type is not new (it was first introduced at the R.A.F. display in the spring of 1936) but it went through a process of continual refinement that kept its performance well up to date. Spitfires were in service with a wide variation of armament with from two to four 20-mm. cannon and up to eight or ten wing-mounted machine guns.

The Hawker Hurricane, slightly older and with somewhat less performance than the Spitfire, was still the Number Two fighter of the R.A.F. Its armament showed the same sort of variation as did the Spitfire. Hurricane fighters stripped of their landing gear were used as catapult-launched protection for merchant ships. A number of these machines were fitted on ships in large convoys, to be catapulted into the air on the appearance of enemy bombers. Once their mission was completed, the pilots had only the choice of trying to reach land (if within range) or landing in the sea alongside the ships. In the latter case, the pilots had a chance of rescue, but the aircraft was not recoverable. The appearance of Hurricane fighters over convoys far out at sea must have been a considerable surprise to German long-range bomber pilots who undoubtedly thought themselves safe from air attack.

A new type of fighter that appeared in 1942 in limited numbers was the Westland Whirlwind, a single-seater powered with two wing-mounted 885-h.p. Rolls-Royce liquid-cooled engines. Its top speed was better than 350 m.p.h. and it carried a battery of four 20-mm. cannon in the nose just ahead of the pilot. This heavy armament made it a formidable adversary for the German Me-110 or the later Me-210 of comparable type.

The British, with an eye to the eventual invasion of nazi-held Europe, also were doing considerable training and experimenting with troop-carrying gliders. Several large machines (Hotspur I and Hotspur II) were in production. They accommodate eight or ten troopers. Wheeled undercarriages were provided for take-off but might be dropped in flight. Belly skids provided for landings. Structure was largely plywood.

A large number of American-built aircraft furnished under lend-lease agreements were on duty with the R.A.F. and the fleet air arm in various parts of the world. The list included:

Fighters:—Bell Airacobra, Curtiss Tomahawk, Curtiss Kittyhawk, Curtiss Mohawk, Grumman Martlet, Lockheed Lightning, North American Mustang, Republic Thunderbolt.
Bombers:—Boeing Fortress, Consolidated Liberator, Douglas Boston, Martin Maryland, Martin Baltimore, Martin Marauder, North American Mitchell.
Dive Bombers:—Brewster Bermuda, Vought-Sikorsky Chesapeake, Vultee Vengeance.
Reconnaissance:—Lockheed Hudson, Lockheed Ventura.
Co-operation:—Fairchild Argus, Vultee Vigilant.
Trainers:—North American Harvard, Vought-Sikorsky Kingfisher.
Patrol:—Consolidated Catalina (flying boat).

Russia.—Although at few times during the campaigns of 1942 could it be said that soviet aviation completely dominated the air over the fighting fronts, Russian aeroplanes and airmen played a highly important part in stemming the German tide before Leningrad and Stalingrad. The combined use of air and ground armies proved extremely effective. It was characteristic of the soviet air arm from its inception that it was considered an integrated weapon of the Red army's arsenal. Co-operation with ground troops was its major mission. It was not without reason that the most intensive development work with paratroops and air-borne infantry was done in the U.S.S.R. during the years prior to the war.

In 1941 comparatively little was known of the trends of Russian design. The best that could be done was to project ahead the basic types that had been in use in Spain in the late 1930s. Thanks partly to German sources, a picture began to emerge of thoroughly modern equipment. Because of the great language and alphabetical difficulties, the Russian type and model designations were frequently confusing to English readers. Most of the letters stand simply for the name of the designers, thus, YAK for Yakovlev, IL for Ilyuskin, etc.

Liquid-cooled power plants seemed to predominate in the newest aircraft of all classes. The M-38 engine, a 12-cylinder Vee-type of about 1,300 h.p., was widely used, singly in the fighters, in pairs or in fours in the bombers.

The Stormovik (IL-2) figured prominently in the news of smashing German tank and mechanized columns. This was a single-engine (liquid-cooled) single-seat dive bomber, fitted with two 20-mm. cannon and four heavy machine guns for low altitude ground attack. It was heavily armoured. Two other larger machines, the YAK-4 and the PE-2, served for similar missions as well as for high-speed level bombing with moderately heavy loads. They varied in detail, but were of basically similar design. Each carried a crew of two. Each was provided with two liquid-cooled engines.

In the medium bomber class, the older SB-3 and DB-3 machines were still in service, although continual improvement was in evidence. Both were three- or four-place bombers of moderately good performance. The SB class was fitted with M-103 engines (a 12-cylinder liquid-cooled Vee-type based on the French Hispano-Suiza). The DB's carried M-88 14-cylinder radial air-cooled engines, a development of the French Gnome-Rhone K-14.

Russians were always fond of huge bombers. The giant ANT's with four, six, or eight engines, frequently reported over Red square on May Days, were not much in evidence over enemy cities. Possibly they were found too vulnerable to attack. One of the few bits of direct evidence of the existence of big four-engine bombers was the appearance in England, and later in the

U.S., of the TB-7 that ferried Commissar of Foreign Affairs Molotov to his conferences with Churchill and Roosevelt. It was a four-engine monoplane with a wing span in the neighbourhood of 120 ft. Its engines were probably the M-38 type. Of interest was the treatment of the two inboard nacelles. They extended far enough below the wing to house radiators for both engines on each side, the retracting landing gear, and a gun turret for rear protection.

Russian fighter designs did not appear to be particularly inspired. The old stub-nosed single seaters of Spanish war vintage (based on the Boeing P-26) long since gave place to a new series of fighters of the Spitfire, Me-109, Curtiss' P-40 pattern. The I-18, for example, resembled the Spitfire. It was provided with a 1,250-h.p. liquid-cooled engine, carried six machine guns and one 20-mm. cannon. Speed was in the 350 to 400 m.p.h. range. A late model, the YAK-1 (I-26) appeared to be in high production. Its U.S. counterpart was the P-40. A newer variation on the fighter theme, the MIG-3 (I-61), was also being turned out in quantity. It was characterized by an inverted gull-wing, somewhat similar to the Vought-Sikorsky F4U shipboard fighter.

One other aeroplane of note was mentioned in German reports —the SU-2 dive bomber and observation type. This was a two-seater, pilot in front with gunner-observer in a turret amidships. The engine was an air-cooled radial with 14 cylinders, probably the M-88. Corresponding U.S. machines were the Curtiss Helldiver and the Brewster Bermuda.

Few data were available on the state of Russian aircraft production. The fact that a considerable number of British and American aircraft (Spitfires, Hurricanes, Airacobras and Tomahawks) were sent into Russia under lend-lease agreements was an indication that the soviet home industry was insufficient to keep pace with the demands of the year. (*See* also AIRPORTS AND FLYING FIELDS; AVIATION, CIVIL; EYE, DISEASES OF; MUNITIONS OF WAR; WORLD WAR II.) (S. P. J.)

Air Mail: *see* POST OFFICE: *United States.*

Airports and Flying Fields.

The defense airport program undertaken by the federal government was not, in most cases, fully understood by the public or even those directly interested in aeronautics, primarily because it involved four separate government agencies —the army, navy, Works Progress administration and the Civil Aeronautics administration. Many pilots interested in airport development did not understand the methods under which the sites included in the program were selected, since frequently sites were included which seemed relatively unimportant from the immediate viewpoint of civil aviation. Nevertheless, as a result of this airport program, the private and commercial pilots of the United States would find with the end of the emergency a greater number of better airports than were ever available before, and the United States would be well on its way to a realization of the 4,000 airports program predicted as needed in the interest of commercial aviation in a CAA survey undertaken in 1938.

This survey which was made possible through the co-operation of state and government officials, airlines and commercial operators formed the basis for the war airport program. It developed information and data with respect to some 4,000 airports throughout the United States, of which approximately 2,000 could be classified only as pastures utilized for the landing and take-off of light aircraft. A handful of the remaining 2,000 could be considered worthy of the designation "airport" with only 5 meeting the Class IV specifications of the CAA and only 31 meeting the standards established for Class III airports. In other words, only 36 airports were then available for all-weather use by all types of aviation.

The army and navy realized the huge expenditure which would be required to provide exclusive military fields for their purposes and hence welcomed CAA sponsorship in the development of commercial airports which could also be used by the army and navy. In this case, airports which were essential in plans for defense could also be utilized for civil aviation both during and after the emergency, and the investment of the federal government for defense would be enhanced by its future value for commercial aviation. Frequently airports which had been or were being developed under this program were occupied by military units under a joint occupancy lease which protected the rights of civil aviation. In a few instances traffic congestion required the removal of private flying and training activities from jointly occupied fields to other airports. In these cases auxiliary airports were made available for the purpose.

The first appropriation for the airport program which became available in Oct. 1940 authorized the construction of 250 airports and appropriated $40,000,000 for the purpose. These funds permitted 200 of the authorized projects to be placed under way. To avoid any loss of time in placing projects under way the service of existing construction agencies was utilized to include the bureau of federal airways, CAA, the corps of engineers, U.S.A., the bureau of yards and docks, U.S. navy and WPA. It was evident that the appropriation would not suffice for the completion of 250 projects and subsequently congress appropriated additional funds in the amount of $33,000,000 for this phase of the program. It also authorized 149 additional airports with an appropriation of $62,000,000 to which $5,000,000 were subsequently added for airports in overseas possessions. Thus the immediate authorization contemplated the development of 399 airports for the appropriations aggregating $140,000,000.

The defense objectives for the additional 149 airports were even more specific than the objectives established for the earlier program. These objectives had in view the provision of 3 Class II or Class IV airports within a radius of 100 mi. of tactical stations to permit a dispersion of activities and varied flight training and similarly a minimum of at least 3 Class III or Class IV airports within a radius of 250 to 400 mi. from the advanced army training schools for training purposes. Specific information showing the location of these airports and their relations to the several strategic areas cannot be given. However, the completion of the program was expected to find the U.S. coastal and southern areas well equipped with modern airports for the first time and hence ready to meet the demands of expanding aviation.

Airport lighting was greatly improved and standardized, more attention was being paid to drainage and the preparation of the sub-grade; and runways were being designed to meet the unit loads developed by the heavy military bombers and civil transport. In this program soil studies were made at each site to determine a suitable type of sub-grade and surface treatment. Cement and asphalt stabilization and concrete were being utilized successfully as required for soil conditions.

As a result of these programs the United States would have with their completion at least 87 Class IV airports and 370 Class III airports, exclusive of strictly military fields.

Federal Airways System.—To serve the mounting volume of commercial and military traffic, the federal airways system was extended and improved. At the end of the year 1942 there were in operation 32,487 mi. of light airways, equipped with radio course signals (known as radio ranges), communications and weather-reporting facilities, and emergency landing fields.

Traffic along these routes was separated and otherwise controlled from CAA centres, which recorded 1,628,400 aircraft operations during the year, a gain of 45% over 1940.

The growing volume of traffic occasioned a ruling during 1941 that all craft flying the airways above 3,500 ft. must be equipped with two-way radio. Another step to insure safe movement of aircraft during the emergency was the passage of legislation authorizing the CAA to establish or take over operation of control towers at airports where there is both civilian and military flying. This work was under way in 1942.

To improve weather-reporting service, an additional 24,400 mi. of teletype lines were leased, bringing the total to 55,790 mi. in addition to the 10,360 mi. used exclusively for traffic control. Ultra-high frequency radio ranges, which transmit with virtually no interference, were put into operation along the New York-Chicago airway as a service test system. Instrument landing systems operating in the U-H-F band were being installed at Washington and Atlanta, with five more being manufactured for use at New York, Cleveland, Chicago, Kansas City and Los Angeles.

Air Navigation Facilities of the U.S., March 1, 1942

Source: *Civil Aeronautics Journal*

AIRPORTS	
Airports with servicing*	1,050
Airports with paved runways	316
Airports with two-way radio	418
Lighted airports†	670
Airports by class:	
Municipal	1,105
Commercial	946
Private	31
Army	78
Navy	38
Misc. govt.	40
CAA intermediate fields	283
Total	2,521
SEAPLANE BASES	
Army, navy, coast guard, marine corps	36
Other seaplane bases and anchorages	326
Total	362
Seaplane bases having any night lighting equipment	21

RADIO AIDS	
Ranges	314
Range stations, simultaneous with voice	202
Range stations, nonsimultaneous with voice	100
Range stations, no voice	12
Broadcast stations	124
Broadcast stations, simultaneous	122
Broadcast stations, nonsimultaneous	2
Marker stations	35
Fan markers	152
Voice (only) stations	21
Z markers (not range stations)	3

*Servicing: hangar, repairs and fuel available.
†Lighted airport: boundary and beacon and/or floodlights.

Airways Traffic.—Aircraft operations on the airways of the United States more than tripled within a year. With the commissioning of the latest nine new airway traffic control centres, the CAA had its entire 35,000 mi. of airways controlled from 23 centres spotted about the country. Each of these centres handled an average of 27,000 operations during March 1942 compared with 8,000 handled in the same month in 1941 by each of the 14 centres then functioning. The increase, CAA officials believed, was due primarily to the large amount of military flying along the airways. More than 70% of traffic on the airways in 1942 was by military aircraft, while the 17% of the traffic total chargeable to airlines represented almost entirely the movement of military personnel or businessmen on necessary travel in the war effort.

Extending its coverage of aeroplane movements from "ramp to ramp" at airports where such was requested by the war department, by the middle of April 1942 the CAA was operating 42 airport traffic control towers, and by the end of June 1942, 20 more were under CAA control. Of these, 25 were newly established towers at airports where none was formerly maintained, and 37 were taken over from municipalities. All this airport control work was requested from the CAA by the army air forces due to the large amount of military activity on the field concerned, and the desire to have a federal agency controlling traffic. These 42 towers handled an average of 9,200 such operations during March 1942.

Airport Towers.—The importance of complete co-ordination between airport and airway traffic control was reflected in the tremendous increase in aircraft operations handled by the CAA's airway traffic control centres. For instance, more aircraft operations were handled by these centres in the single month of Jan. 1942 than during the entire fiscal year ending June 30, 1940. The number of operations for Jan. 1942 was 659,180, as against approximately 400,000 for the year ending June 30, 1940. Viewed in another light, the total operations in January of 1942 represented a 600% increase over the total, 106,437, in Jan. 1941.

Traffic clearances issued by the CAA's 18 airway traffic control centres operating in Jan. 1942 totalled 171,445, as against 68,472 in Jan. 1941. The high efficiency of operation was indicated by the percentage of clearances delivered, which was 99.4% in Jan. 1941 and 99.5% in Jan. 1942.

Of the 659,180 aircraft operations handled in Jan. 1942, 116,132 involved air carrier aircraft, 404,969 involved army aircraft, 62,591 navy aircraft, 387 coast guard aircraft, and 75,101 itinerant or private aircraft.

On March 1, 1942, the last of 23 airway traffic control centres was commissioned. This provided airway traffic control service for practically all the civil airway system. The remaining portion was planned to be included in control areas of the established centres in the near future.

Another significant development of air travel was the increasing resort to instrument approaches. A survey by the air traffic control division of the CAA showed that for the period of July through Dec. 1941, a total of 8,929 instrument approaches were made at the 103 airports in the country under the jurisdiction of the CAA airway traffic control service.

New Developments.—*Landing Strips.*—During 1942 the first emergency landing strip, capable of handling the largest airliners and the biggest bombers of the air forces, was completed by the federal government. Paved with 8 in. concrete, the first strip was 8,000 ft. long, 500 ft. wide and had a hard surface 7,000 ft. by 150 ft. It was the first of the flight strips to be constructed under a program authorized by congress for which $10,000,000 had been allocated by that body.

Portable Turntables for Airports.—Pilots, airline officials and airport managers expressed their approval of a portable type of turntable for large aircraft, developed and installed at the Washington National airport. The turntable was 5 ft. 6 in. in diameter, had a 4 ft. 6 in. revolving plate and was only 2 in. in height. The steel ballbearings were protected against dust and dirt by 2½-in. felt seals. The unit weighed approximately 700 lb., was self-draining and required no anchorage to, or cutting of the pavement surface. The unit performed successfully under a one-wheel load of 20,500 lb. Very little deflection of the top plate occurred and rotation was free under all loads imposed.

In addition to its possible military application, the turntable was a distinct contribution to civil aviation. Its manufacture required only small quantities of critical materials, and its use would prevent loss of rubber on tires and injury to pavement surfaces through the elimination of locked wheel turns. Landing gear failures too had been traced to tortional strain induced in the landing gear while making a locked wheel turn on a crowded airport apron.

Airport Lighting.—The hazards of landing and taking off at night were greatly reduced through the development of effective airport lighting. Perhaps the best example of this service was the new Washington National airport, which was termed the best lighted airport in the world. This airport's lighting system included all the normal airport lights, such as boundary, range, obstruction, floodlighting, and contact lighting and had, in addition, a complete installation of traffic control and taxi guidance lighting. So complete was the equipment and planning of the airport's lighting that even if all radio communication between plane and ground should be halted, operations of aircraft landing, taxiing and taking off could be controlled from the airport tower by a system of lights with safety.

The lighting at the Washington airport was designed for the needs of the largest and most heavily used commercial airport. This complete system might not be needed on smaller airports. However, it was important that all lighting used on any airport conform to standard patterns, using equipment which gave uniform results.

Approach Control.—Under a co-ordinated approach control procedure, the CAA planned to offer air traffic of the U.S. a speedier, unified air traffic control service. Approach control required delegation of jurisdiction over arriving and departing aircraft from an airway control centre to an airport control tower. The procedure was made possible by the fact that the CAA had taken over most of the major airport towers in the U.S. Approach control presented these changes: (a) The pilot would maintain direct communication with the tower controller through the voice channel of the range after receipt of a clearance from the centre having jurisdiction over such direct communications; (b) Under instrument flight rules, an aircraft would be cleared to a holding fix (range station or other radio fix) by the centre. The centre would include instructions in the holding clearance for the aircraft to hold "until further advised by the (name of airport) tower." All subsequent instruction, relative to holding, descent and approach would be issued by the tower on the range's voice channel.

There were a number of additional research projects which had been carried on by men in aviation which, unfortunately, cannot be disclosed at this time. (*See* also AIR FORCES OF THE WORLD; AVIATION, CIVIL.) (E. M. E.)

Air Races.

Air races were completely nullified during 1942 in order to put forth every bit of energy in the aeroplane industry toward winning the war. For the obvious reasons that production lines were tied up making bombers and pursuit planes, and that all available pilots were being used in the vital business of fighting the enemy, or transporting war cargo, both factors essential to conducting an air race were nonexistent. By the same token, European countries had no air races whatsoever, a condition which had existed for three years.

First among the annual U.S. races postponed were the National Air races, the Bernarr Macfadden Trophy race, the Firestone Trophy race, the Colonel Batista Cup race, and the Culver Trophy races in California. (T. J. D.)

Air Raid Defense.

U.S. air raid defense in 1942 began far from the nation's shores. In the east, and in part of the south, warnings of enemy raiders might be received from ships at sea and from patrol planes; two friendly nations guarded the approaches from the north and south land boundaries; and in the west, there was again partial dependence on ships and patrol planes. Nearer the shorelines defenses thickened. From all the boundaries, well into the interior, ran lines of observation posts, manned day and night by hundreds of thousands of volunteer plane "spotters," operating directly under the fighter command of the army air forces. These observers noted the passage of every plane, and reported the type, number, height and direction of flight of all planes, by telephone, to a designated "filter centre." There, messages from many observers were evaluated.

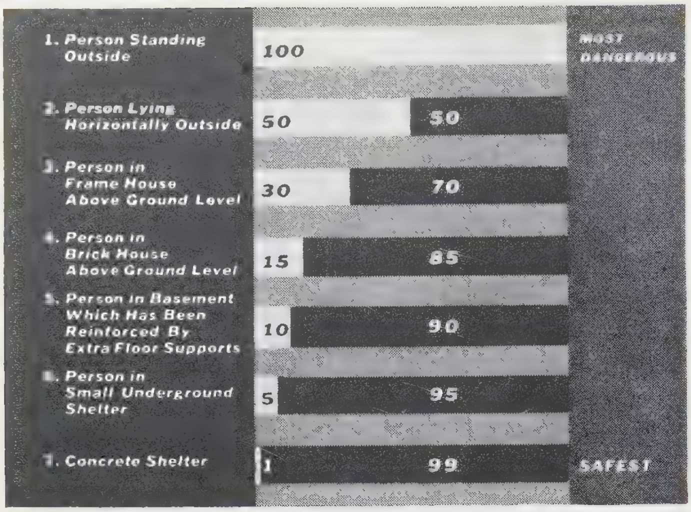
The army in 1942 was in control of the air raid warning system, but the warning district centres were operated by civilians. The warning district centre was responsible for telephoning warnings to all control centres in the warning district. The control centre was made the clearing house for action at the point of possible attack, and was to receive advance warning signals from the warning district centre to permit prompt mobilization of civilian and industrial forces.

"SMOKEOUTS" to hide U.S. factories from enemy bombers in daytime were successfully tested at Gary, Ind., in 1942

In Feb. 1943 new regulations for uniform air raid signals were ordered for the 16 Atlantic seaboard states and the District of Columbia, to permit earlier blackout and mobilization of civilian defense personnel, and minimum interference with essential war production and transportation. The first public warning—a steady two-minute blast of sirens or horns—was to be given when the control centre received the "blue" warning and indicated the probability of an enemy air raid. Civilian defense forces were to mobilize and the blackout was to be complete except for certain street and traffic lights. Civilian and traffic movement was to be permitted under slight restriction.

On the "red" warning, a second public air raid alarm was to be sounded by a series of short blasts on horns or whistle, or warbling notes of the siren. This signal was designated to mean that enemy planes were practically overhead, and called for a blackout of all but authorized emergency lights. The public was to take shelter, and all but emergency traffic stopped. However, if there had been insufficient time for sounding the "blue" alarm, the "red" signal might be the first audible public alarm.

After the "red" alarm, when the raiders had either dropped their bombs or left the immediate vicinity, the "blue" alarm was to be sounded again, thus permitting an early return to conditions under which essential activities could be resumed, pending the "all-clear."



RELATIVE PROTECTION during an air raid, according to figures compiled in 1942 and based on actual experience by the British

No audible "all-clear" signal was prescribed in the regulations. This was to be indicated by the turning on of street lights, by radio and telephone announcements and by air raid warden communications. Communities might adopt audible "all-clear" signals, provided such signals did not resemble the "blue" or "red" warning signals.

The U.S. Office of Civilian Defense recommended the adoption of these regulations by all states except those in the western defense command, which in 1942 was already operating under a uniform system adapted to its own needs and approved by the war department. Uniform air raid alarm systems helped to prevent confusion and public alarm in all but the area which might be the real objective of the enemy. Blackout and dimout regulations emanated from the army service commands and might be put in force either before, or upon, the sounding of the alarm. Such regulations, whenever put into effect, were an integral part of nation-wide air raid defense.

At the sound of the alarm the last line of civilian defense was to go into action—the air raid wardens, auxiliary firemen and policemen and all other units in the protective services. There were 20 such units, including the staff corps and volunteers-in-training, each assigned to its own specialized tasks in case of air attack. Taken together, these units in 1942 made up the U.S. Citizens Defense corps, the operational arm of civilian protection. This defense corps was distinct from the U.S. Citizens Service corps, both of which stemmed from the U.S. Office of Civilian Defense. The service corps volunteers in 1942 undertook a wide range of civilian war activities not connected with the actual protection of life and property.

In the type of air raid shelters, the U.S. system of 1942 differed sharply from the British, for it seemed inadvisable to divert labour and material resources into comprehensive shelter construction in a nation not immediately subject to sustained enemy air attack. The U.S. shelter system provided for the best use of buildings already constructed.

There were other ramifications of U.S. air raid defense in 1942 just as important as those described above. Actual raids in other countries during World War II had proved that the greatest single danger was that of fires during and after a raid. To meet this threat the U.S. Office of Civilian Defense not only encouraged the training of auxiliary firemen and fire watchers in great numbers but also provided for a substantial increase in fire equipment available for those cities in the "target areas." A very large proportion of the $100,000,000 granted by congress early in 1942 to the OCD was spent in the manufacture and distribution of large and small fire-fighting equipment, ranging from hose couplings to 500-gallon-per-minute mobile fire fighting units.

In co-operation with other federal agencies the Office of Civilian Defense organized the Forest Fire Fighting service, "triple-FS," which protected valuable forest lands against both regular fire hazards and the increased war dangers. The Office of Civilian Defense at the end of 1942 planned a still greater expansion in all the lines of fire defense, taking into account the greater efficiency of new types of incendiary bombs.

Another part of the structure of air raid defense in 1942 was the civil air patrol, with more than 20,000 trained civilian pilots, twice that number of substitutes, mechanics and field attendants, and thousands of privately owned aircraft. The duties of the civil air patrol included courier service, towing of aerial targets, observation trips over blacked-out areas, coastal patrol, and emergency aid in case of actual air attack.

Finally, careful plans were made for evacuation of areas attacked or threatened. Extensive surveys were made, with the co-operation of state and local defense authorities, to determine available accommodations and transportation for populations in the danger areas.

The successful operation of U.S. civilian defense in 1942 rested primarily upon state and local authorities, under a decentralized plan. The OCD was responsible for the co-ordination of federal, state and local bodies into a functioning nation-wide organization. The national office advised state and local defense councils on training and organization procedure, set up standards for training and equipment, approved the use of official insignia, loaned many items of equipment other than fire protective equipment, and passed upon many devices designed for civilian protection manufactured by private concerns, recommending to local defense councils those devices which met prescribed standards of efficiency and usefulness.

For technical assistance the Office of Civilian Defense in 1942 turned to the war department and to the chemical warfare service of the United States army and was able also to call upon other divisions of the government. (*See* also Civilian Defense; London: *Civil Defenses in 1942.*) (J. M. Ls.)

A.L.A.: *see* American Library Association.

Alabama. Alabama is one of the "deep south" states of the United States, admitted to the union 1819. Area, 51,609 sq.mi.; pop. (1940) 2,832,961. Capital, Montgomery (78,084). Cities with larger population were Birmingham (267,583) and Mobile (78,720). Of the state's population in 1940, 855,941 were urban, or 30·2%. There were, in 1940, 1,847,850 whites; 983,290 Negroes; 574 of other races; 2,821,004 native-born; 11,957 foreign-born; 47·2% of the total population was rural.

History.—Chauncey Sparks, Democrat, was elected governor Nov. 3, 1942, to succeed Frank M. Dixon. Eight of the nine congressional representatives, all Democrats, were re-elected. The new representative, from the ninth district, defeated Luther Patrick, the incumbent, in the Democratic primaries run-off election in June. Aside from Gov. Sparks, the principal state officers elected in Nov. 1942 were: Handy C. Ellis, lieutenant governor; Warren C. Lusk, treasurer; John Brandon, auditor; Howell Turner, secretary of state; Joe N. Poole, commissioner of agriculture; and Elbert B. Norton, superintendent of education.

Education.—State appropriations in 1941 amounted to $14,795,041. Total revenues from all sources in 1941–42 were $30,424,454. Illiteracy among whites between 10 and 20 years was 1.9%, Negroes 2.6%. There are seven state-supported institutions of higher education for whites and three for Negroes.

Charities and Correction.—The state supports many philanthropic and penal institutions: institutions for the deaf and blind of both races; hospitals for the insane of both races; a school for feeble-minded children; training schools for wayward white boys and girls; and a reformatory school for Negro boys, etc.

CHAUNCEY SPARKS, Democrat, elected governor of Alabama Nov. 3, 1942

Banking and Finance.—In 1941 there were 66 national banks with capital stock, surplus and undivided profits of $50,462,000, deposits of $233,731,000 and total assets of $268,659,000; 151 state banks with a capital stock surplus and undivided profits of $22,224,499, deposits of $96,320,940 and total assets of $111,644,594. State receipts for the fiscal year 1939–40 were $66,128,786; disbursements, $65,046,810; state debt, $64,703,000.

Agriculture.—The total income of farmers in Alabama in 1940 was $115,463,000, divided as follows: cash income from crops, $62,006,000; cash income from livestock, $27,606,000; government payments, $25,851,000. In 1939 farm lands and buildings were valued at $408,782,488.

Table I.—*Leading Agricultural Products of Alabama, 1942 and 1941*

Crop	1942 (est.)	1941
Corn, bu.	44,422,000	51,228,000
Oats, bu.	4,580,000	4,400,000
Cotton, bales	925,000	790,000
Potatoes, bu.	3,900,000	5,600,000
Peanuts, lb.	462,000,000	252,000,000
Tame and wild hay, tons	702,000	822,000
Tobacco, lb.	235,000	305,000

Manufacturing.—In 1939, by the federal biennial census of manufactures, there were 2,052 manufacturing establishments hiring 126,215 workers and producing goods valued at $574,670,690. The leading manufactures were cotton textiles (valued at about $92,000,000; spindles in operation, 1,835,909), iron and steel and electricity. Corporation and municipal production of electricity amounted to about 900,000 h.p., and the TVA plants were capable of producing slightly more. There were more than 6,000 mi. of rural electric lines. Other important industries: lumber, blast furnace products, cast iron pipes and fittings, coke oven products, cotton seed oil and meal, paper, aluminum, cement, chemicals, fertilizers, meat packing and shipbuilding. War demands caused expansion of old industries and the rise of new industries, such as powder, aluminum and chemical manufacturing in 1941 and 1942.

Mineral Production.—The total value of Alabama's mineral production in 1939 was $54,124,382; in 1938 it was $46,296,293.

(A. B. Mo.; X.)

Table II.—*Principal Mineral Products of Alabama, 1939 and 1938*

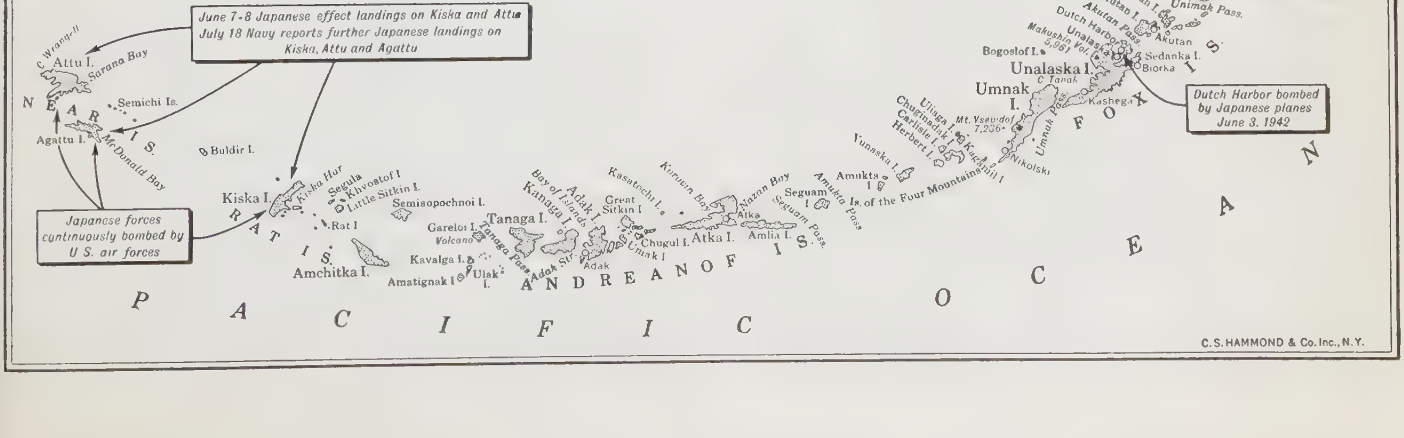
Mineral	Value, 1939	Value, 1938
Pig iron	$43,902,681	$29,190,091
Coal	27,708,000	26,769,000
Coke	10,917,559	9,888,292
Iron ore	9,971,024	7,341,620
Cement	6,690,765	6,114,246
Stone	2,516,584	1,809,379
Clay products	2,306,712	1,487,067

Alaska.

Alaska is one of the two incorporated territories of the United States. Alaska has an area of 586,400 square miles, approximately one-fifth the area of the 48 states, and lies between the meridians 130° W. and 173° E. longitude and between the parallels of 51° and 72° N. latitude. It is bounded on the north by the Arctic ocean, on the west by the Arctic ocean, Bering strait and Bering sea, on the south and southwest by the Pacific ocean and on the east by Canada.

The population of the territory, which in 1941 had reached an all-time high (72,524 in the 1940 census as against 59,278 in 1930) was further increased in 1942 by the arrival of many defense construction workers and military personnel, although there was some exodus of civilians. The school population, after reaching new highs in the cities in the school year 1941–42 but declining slightly in the rural communities, dropped sharply in the 1942 fall enrolment.

In 1942 Alaska figured prominently in World War II. Early in June, the Japanese raided the naval base at Dutch Harbor



ALEUTIAN ISLANDS
Military and Naval Developments to Dec. 31, 1942

June 7-8 Japanese effect landings on Kiska and Attu
July 18 Navy reports further Japanese landings on Kiska, Attu and Agattu

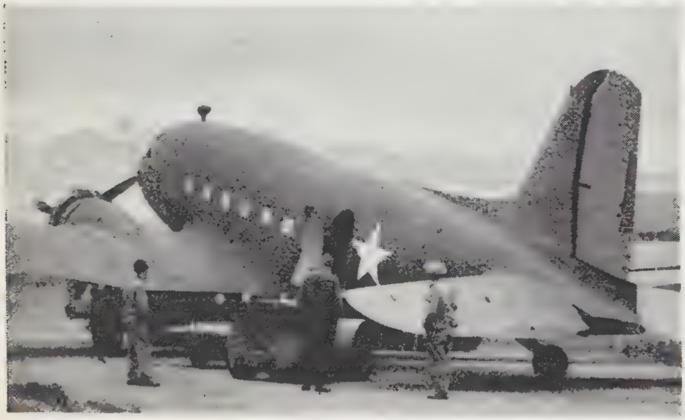
Japanese forces continuously bombed by U. S. air forces

Dutch Harbor bombed by Japanese planes June 3. 1942

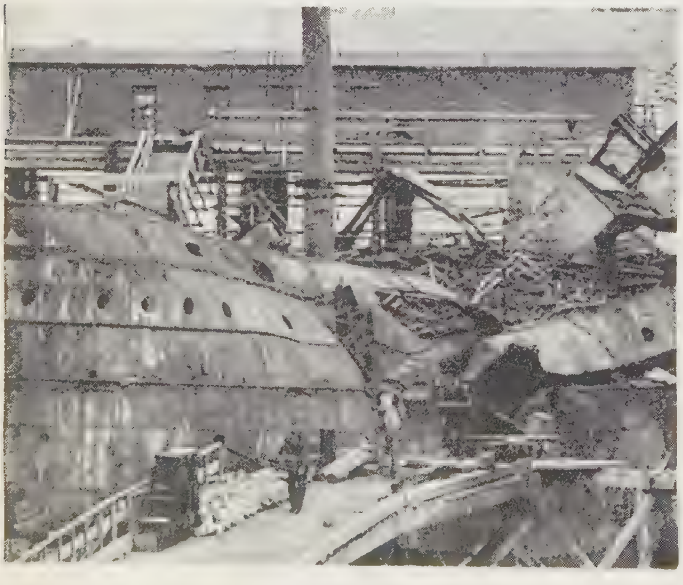
C.S. HAMMOND & Co. Inc., N.Y.

THE LONELY ANDREANOF ISLANDS in the western Aleutians were occupied by an armada of U.S. troops Aug. 30, 1942, for use as advanced bases against the Japanese

CONVERTED AIR LINERS were pressed into service in 1942 to fly supplies to airports and other military bases in Alaska



THE STATION SHIP "NORTHWESTERN," used as workers' barracks at Dutch Harbor, Alaska, was destroyed June 3, 1942, when Jap bombers raided the base



FIRST CASUALTIES of the war in the Aleutians were landed at Seattle harbour late in June 1942

from the air and a few days afterward were found to be occupying the three western-most Aleutian islands, Attu, Agattu and Kiska. Alaska defenses were strengthened, meanwhile, and toward the end of August a U.S. expeditionary force moved westward and landed on one of the unoccupied Andreanof islands of the Aleutians, from which shortly thereafter a continuing aerial bombardment of Kiska, the most strongly held of the Japanese islands, was undertaken with such effectiveness that by the middle of October all Japanese planes there had been destroyed. The Japanese meanwhile abandoned Attu and Agattu, concentrating their defenses on Kiska.

The International highway to Alaska, the construction of which had been urged upon the military for several years preceding the war, was begun in March, 1942, and a winter road was completed before the end of the year. This highway connects air fields previously constructed by the Canadian authorities and extends from Edmonton by way of Forts St. John, Nelson, Watson Lake, Whitehorse and Kluane Lake straight toward the Alaska highway system, with which it connects at Big Delta. Meanwhile also, the Richardson highway was improved and the connecting Glenn highway between it and the system of roads out of Anchorage was nearing completion. By the end of 1942, it was possible to drive from New York city to Anchorage, Alaska, by automobile.

In October, the War Production board ordered the closing of U.S. gold mines for the purpose of conserving vital materials and utilizing the labour employed in this industry unessential to the conduct of the war. This order seriously affected Alaska since gold is its second industry (second to salmon). In the preceding two years, gold production had been: 1939, $23,279,000; 1940, $26,178,000. By way of compensation, however, an intensive exploration for critical and strategic minerals was undertaken.

The salmon catch was also reduced somewhat in 1942, the average pack of 6,000,000 cases being diminished to approximately 4,500,000.

The post of commander of the Alaska sector (Comalsec) created in 1940 and held by a captain in the United States navy, was advanced in importance in 1942 and was held by a rear admiral.

In June 1942, certain outlying islands in the Aleutians, and also the Pribilofs, were evacuated of their civilian population, who were temporarily resettled in southeastern Alaska. (*See* also World War II.) (E. Gru.)

Alaskan Highway: *see* Roads and Highways.

Albania,

a kingdom in the western part of the Balkan peninsula, occupied in 1939 by Italy. Area 10,631 sq.mi.; pop. (census 1930) 1,003,068; (estimate 1939) 1,063,000. Capital, Tirana. Chief cities: Tirana (30,806); Scutari (29,209); Koritsa (22,787); Elbasan (13,796); Valona (9,100). Religion: Mohammedans (688,280); Orthodox Christians (210,313); Roman Catholics (104,184). Prime minister (1942): Mustafa Merlika Kruja.

History.—Albania was invaded by Italy on Good Friday, 1939, and its union with Italy was proclaimed. The Italian aggression against Greece in Oct. 1940 brought a swift Greek penetration of Albanian territory after the defeat of the Italian invading forces, and for several months the Greeks held part of Albania, until the German victory in April 1941 forced evacuation by the Greeks. Thus Albania came again entirely under Italian administration, and fascist laws were reintroduced throughout the country. A new Albanian government was formed under Mustafa Merlika Kruja, an Albanian who had spent much of his life in Italy and was a member of the Italian Senate. Other members of the new cabinet were the head of the Albanian fascist party, Kazazi, the minister of justice, Hasan Dosti and the minister of public works, Ilias Agushi.

At his press conference on Nov. 30 Cordell Hull, secretary of state of the United States, praised the spirit of resistance of the people of Albania against Italian occupation. In an official statement on Dec. 10 Mr. Hull declared that the restoration of a free Albania was inherent in the Atlantic Charter. Guerrilla warfare in Albania continued throughout 1942.

Education.—Though primary education is nominally compulsory, illiteracy was still very high in 1942, especially among women. In 1939 there existed 663 state elementary schools with 38,988 male and 17,948 female pupils and 19 secondary schools with 4,810 male and 1,425 female students. There were no institutions of higher education.

Defense.—The Albanian army consisted in 1938 of 13,040 men. Military service was compulsory. A small navy of light craft was based on Durazzo. On May 29, 1939 the Albanian army was incorporated into the Italian army.

Trade and Finance.—The value of the foreign trade for 1938 amounted to $9,644,000. Imports amounted to $6,719,000, of which 37.2% came from Italy and 6% from the United States. The total exports amounted to $2,925,000, of which 68.4% went to Italy and 4.5% to the United States. The major import articles were cotton and cotton goods, corn, benzine and woolen goods; the main exports were wool, hides and furs, cheese, cattle, eggs and bitumen. Of the mineral wealth of the country aluminum and petroleum were of importance. In 1939, 229,278 tons of crude petroleum were produced. With the economic life of the country still on a very primitive level there exists practically no modern industry. Albania has no railroads but a good highway system, improved by the Italians for strategic reasons. The Albanian currency is pegged to the Italian currency; an Albanian franc equals 6.25 lire (32.89 cents U.S., June 1941). The external debt of Albania amounted to $15,000,000 in 1938.

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Albemarle, Arnold Allan Cecil Keppel,

8th Earl of (1858–1942), British peer, was born June 1 in London. A veteran of the Boer war, he was an officer in Britain's auxiliary forces. He represented Birkenhead in the house of commons, 1892–94. He died in Quidenham, England, April 11.

Alberta.

The most westerly of the three prairie provinces of Canada (*q.v.*). Area, 255,285 sq.mi.; pop. (1941) 796,169, of which the greater part was rural. The largest city is Edmonton (92,404), the provincial capital. The climate of Alberta is considerably moderated (from the extreme continental climate of the middle west) by the chinook winds which blow across the mountains from the Pacific ocean. The natural resources of Alberta are extremely varied. In the south, there are considerable deposits of coal in the neighbourhood of Lethbridge, of which 6,969,864 tons were mined in 1941. In the north, natural gas and petroleum are developed in the Turner valley and other areas. In 1941, 26,365,770 cu.ft. of natural gas, with a value of nearly $5,000,000, were produced. The production of petroleum in the Turner valley and other Alberta fields advanced from 1,312,368 bbl. in 1936 to 9,928,162 bbl. in 1941. In 1940 the value of the product was over $10,000,000. The Turner valley region produced fully 97% of all the petroleum in Alberta. The natural gas and petroleum industries, like the coal industry, suffer from lack of a large near-by market, central and eastern Canada being supplied from the neighbouring United States fields.

In all parts of Alberta, agriculture is followed extensively, representing a capital outlay of over $600,000,000.

In 1941, of the 12,067,113 ac. in cultivation, more than a half was under wheat, 2,798,722 ac. under oats and 1,543,063 ac. under barley.

Local administration is in the hands of a provincial parliament; Alberta in 1942 returned to Ottawa 17 members of the house of commons, and six senators to the senate. The Social Credit party, under the leadership of William Aberhart, continued in office throughout 1942. The political event of greatest significance was the invalidation by the supreme court of the Alberta Debt Adjustment act on Dec. 3, 1941. The act had prohibited the forced collection of debts on resident farmers without the assent of the Debt Adjustment board which was set up under the act.

(J. I. C.)

Alcohol, Industrial.

Production of alcohol in the United States in 1942 was the subject of continuous controversy. There were two urgent and somewhat conflicting needs for it: in the manufacture of smokeless powder and as a basic material for synthetic rubber tires. Conflict also occurred among producing groups as to how production might best be expanded. During the year, the manufacture of beverage alcohol was greatly reduced by the conversion of the whisky distilling industry to the manufacture of alcohol for war purposes. Varying figures were announced as to the requirements of alcohol production, running from a preliminary WPB announcement in 1941 calling for 175,000,000 gal. to a request for 356,000,000 gal. in April 1942. This latter figure was an increase from a previous requirement of 275,000,000 gal., which represented about three times the normal demand for industrial alcohol.

At the beginning of 1943 plant capacity for the year was placed at 490,000,000 gal. New plants had been authorized to be built at Kansas City, Mo., Omaha, Neb., and Muscatine, Ia., with a combined capacity of 40,000,000 gal. Still other plants were projected for the corn and grain belts. Further withdrawal of food grains, lest they affect the food supply severely, was a salient factor in the controversy over alcohol, involving therein the congressional farm bloc, the department of agriculture, OPA, WPB, whisky distillers and the sugar and alcohol consuming industries. If, as had been proposed, the production of alcohol was to be stepped up by 100,000,000 gal. by using sugar, a further cut of 12% would be required in the consumption of sugar, already strictly rationed. The alcohol required for manufacturing rubber and smokeless powder is 190 proof. Whisky distillers, who use only grain in producing alcohol, experienced difficulty in producing such high-proof alcohol, and delays in production were encountered through the necessity of introducing new equipment in distilleries. Trade reports in Sept. 1942 said the distilleries were steadily increasing production and had at that time reached the rate of 135,000,000 gals. per year. A source of alcohol, entirely new to America, was seen in the beginning of construction in 1942 at Thorold, Ont., of a plant to make alcohol from sulphite liquor, a waste product from the manufacture of wood pulp for paper. The plant was being constructed by the Ontario Paper Co., a subsidiary of the *Chicago Tribune,* to utilize methods of sulphite liquor distillation in commercial use in Europe, particularly Sweden. If, it was estimated, all sulphite liquor wasted in U.S. wood pulp mills were so distilled it would provide enough alcohol to manufacture 90,000 tons of synthetic rubber annually, and relieve the other sources of primary supply.

(S. O. R.)

Alcoholic Intoxication: *see* INTOXICATION, ALCOHOLIC.

Alcoholic Liquor: *see* BREWING AND BEER; LIQUORS, ALCOHOLIC; WINES.

Aleutian Islands: *see* ALASKA; WORLD WAR II.

Alexander, Sir Harold Rupert Leofric George

(1891–), British army officer, was the 3rd son of the 4th earl of Caledon. He was educated at Harrow and Sandhurst. He received his commission in the Irish Guards in 1911. At the end of World War I he was commanding a battalion with the rank of lieutenant colonel. In 1919 he commanded a landwehr of the Lettish army during the confused fighting in the Baltic provinces. In 1934 he was given command of a brigade in India; in 1938 he became major general and was given the 1st division. In Sept. 1939 he took the 1st division to France with the B.E.F. Later as lieutenant general he was promoted to command the 1st corps. At Dunkirk it fell to him to organize the final defense and evacuation, and he was among the last men to leave the beach. After Dunkirk, he was made general officer commanding-in-chief, southern command, serving in this capacity till he went to Burma in Feb., 1942, as general officer commanding at a critical period in the campaign. In Aug. 1942, General Alexander was sent to the middle east as commander-in-chief, in time to break the full-scale attack launched by the enemy at the end of August against the El Alamein position. On Oct. 23, 1943, he launched the great British counteroffensive against Rommel's army.

Alfalfa.

A record crop of alfalfa hay was harvested in 1942 in the United States, 36,547,000 tons, compared to 32,338,000 tons in 1941 and a ten-year (1930–39) average of 24,907,000 tons. The acreage harvested in 1942 was 15,851,000 ac. as against 14,963,000 ac. in 1941 and a ten-year average of 12,867,000 ac. This was also a record acreage in the United States. Harvesting early cuttings was more difficult than usual because of rain, but conditions were favourable for harvesting later cuttings, and the yield was thereby increased to 2.31 tons per acre, compared to 2.16 tons in 1941 and a ten-year average of 1.93 tons per acre. Production of alfalfa seed in 1942, however, was the smallest in ten years—974,500 bu. of thresher-run seed. Early frost reduced acreage that ordinarily would have been harvested for seed, particularly in Montana and the Dakotas.

U.S. Production of Alfalfa Hay in Leading States, 1942 and 1941 and the 10-Yr. Average

(in thousands of tons)

States	1942	1941	10-yr. average	States	1942	1941	10-yr. average
California .	3,440	3,198	3,038	Nebraska .	1,593	1,106	1,533
Minnesota .	3,170	2,776	1,659	Illinois . .	1,411	1,369	767
Iowa . . .	2,992	2,426	1,504	Colorado. .	1,369	1,389	1,265
Wisconsin .	2,859	2,698	1,459	Montana .	1,253	1,202	1,061
Michigan .	2,268	1,813	1,422	Indiana . .	1,142	833	578
Idaho . . .	1,852	1,911	1,886	Ohio . . .	1,107	923	719
Kansas . .	1,720	1,247	972	New York .	1,035	749	513

Production in all other states was less than 1,000,000 tons apiece in 1942. The foregoing are estimates as of Dec. 1, 1942, by the U.S. department of agriculture. (*See* also HAY.)

(S. O. R.)

Algeria: *see* FRENCH COLONIAL EMPIRE.

Aliens.

The alien registration of 1940 provided the United States government with its first nation-wide inventory of the noncitizen population in continental United States and its territories. The Alien Registration act, 1940, which authorized the department of justice to conduct the registration, required that a record be made and kept current of aliens in the United

JAPANESE FROM THE PACIFIC COAST entering an internment camp in Owens valley, Calif., in March 1942, after the U.S. government had ordered their evacuation inland from strategic areas

States. The act provides that all aliens (except foreign government officials and members of their families) who remain in the United States, including Alaska, Hawaii, Puerto Rico and the Virgin Islands, 30 days or longer must be registered and, if 14 years or older, fingerprinted.

The act required also that registered resident aliens notify the authorities in writing of each change of residence and new address within five days from the date of such change. Any registered alien who is temporarily in the country as a student, visitor or otherwise, is required to notify the authorities in writing of his address at the expiration of each three-months' period of residence in the United States.

Aliens currently arriving in the United States are being registered before admission. As of Dec. 31, 1940, there were 4,921,452 registered aliens in the United States and territories, excluding seamen and aliens registered abroad in consular offices. This number was considerably reduced during 1941 and 1942 so that the total as of Dec. 1942 was 4,520,374. The reduction was due to departures, deaths and the naturalization of civilian aliens as well as of aliens serving in the armed forces.

Analyses made by the alien registration division of the immigration and naturalization service revealed that the median age of the alien population, as of the 1940 registration, was 48 years, as contrasted with the median age of 28 years for the native-born and naturalized citizens. The United States census of 1940 showed that 31% of the general population was under 18 years of age; 42% was in the 18 to 44 years age group, and 27% was in the age group of 45 years and over. This is sharply contrasted with the age-group distribution of the alien population. Among them only 1.5% was under 18 years; 34% was in the group of 18 to 44 years and 64.5% was 45 years and over. This factor accounted for a much higher death rate among aliens than among the general population.

Almost 75% of the registered aliens were born in Europe. Another 20% came from neighbouring countries in North and Central America, and the remainder from South America, Africa, Asia and the islands of the Pacific. Listed below are ten countries in rank order of registered aliens, as of Dec. 31, 1940:

Italy, including Sicily and Sardinia	695,472
Canada	447,898
Poland	442,547
Mexico	416,690
Russia, including Russia in Asia	366,827
Germany	314,870
Great Britain, including England, Scotland, and Wales	291,557
Austria	191,600
Eire	158,154
Hungary	116,701

Further studies indicated that more than 80% of the registered aliens were living in the following ten states: New York, 1,234,995; California, 531,882; Pennsylvania, 365,229; Massachusetts, 360,416; Illinois, 320,053; Michigan, 296,834; New Jersey, 276,026; Texas, 209,450; Ohio, 200,322; Connecticut, 157,120.

The total noncitizen population of the country consisted of 2,629,215 females and 2,292,237 males; hence, there were 115 women for every 100 men. There were 674,622 men in the age group 18 to 45. Of this total there were only 109,751 that had any previous military experience. One-fourth of this number had served with the armed forces of the United States.

Out of the total registered, more than 70% arrived in the United States prior to 1924, and among these, more than 900,000 actually came prior to 1906. Approximately 700,000 were found to be illiterate. Of this total, 67% were women and 33% men. The percentage of illiteracy rises sharply among those forty-five years of age or older, in both groups.

A large percentage of aliens have family ties in the U.S. Even when measured within the closest range of family relationship, by inclusion of spouse only, spouse and child, and children only, it represents 61%. This percentage climbs sharply with a broader range of family ties by inclusion of brother, sister and other immediate blood relations.

Naturalization.—Of the nearly 5,000,000 aliens who registered under the Alien Registration act of 1940, approximately half were eligible for American citizenship. The registration and unsettled world conditions tended to increase their desire to achieve United States citizenship. In the fiscal year 1942, 221,796 declarations of intention were filed, as compared with 224,123 in 1941 and 203,536 in 1940. Petitions for naturalization numbered 343,487, which is the highest number filed during any fiscal year since June 30, 1906 when the federal government took over supervision of this activity.

Certificates of naturalization were issued to 270,364 persons during the fiscal year of 1942. The nations to which these new citizens formerly owed allegiance were: British empire, 90,405; Poland, 35,757; soviet Russia, 26,811; Italy, 18,663; Germany, 12,360; Czechoslovakia, 11,106; Sweden, 9,241; Yugoslavia, 7,745; Greece, 5,873; Hungary, 3,794; all other countries, 47,609.

Alien Enemies.—Under the Nationality act of 1940 alien enemies include natives, citizens, denizens, and subjects of the countries against whom the United States has declared war. In 1942 these countries were Japan, Germany, Italy, Hungary, Rumania and Bulgaria. By authority of presidential proclamations of Dec. 7 and 8, 1941, and Jan. 14, 1942, a series of regulations was promulgated by the department of justice affecting the conduct of citizens or subjects of Japan, Germany and Italy 14 years of age or older. On Oct. 12, 1942, aliens of Italian nationality, except those already interned or under parole, were excepted from the regulations for alien enemies by order of the attorney-general.

Although citizens or subjects of enemy countries other than Germany and Japan are not required to observe any of the regulations prescribed for alien enemies, they are subject to arrest and detention as "alien enemies" if, at any time, the apprehension of any of them is deemed necessary to maintain national security. The regulations affecting aliens of German and Japanese nationalities place restrictions on their travel, and prohibit them from owning certain articles, such as cameras, short-wave receiving and transmitting sets and firearms. They are not permitted to make any air flight, or to change their place of abode or employment without notifying authorities. The regulations require them also to possess and carry certificates of identification; prohibit them from residing in or entering any areas designated as "prohibited areas," and from residing in areas designated as "restricted" areas except under conditions prescribed by the authorities.

Aliens of enemy nationalities who are considered dangerous or who violate the regulations are subject to summary apprehension. Such aliens receive hearings before alien enemy hearing boards consisting of prominent citizens from the alien's own community. On the basis of the recommendations made to the attorney-general by the boards, apprehended aliens are either interned for the duration of the war, paroled, or released unconditionally.

Japanese Relocation.—When the United States entered the war in Dec. 1941, there were more than 100,000 persons of Japanese ancestry living in the far western states. Approximately two-thirds of them, born in the United States, were American citizens. The aliens, *Issei,* are an older group who came to the United States as labourers and farm workers. Their average age is around 60. The citizens, *Nisei,* are largely a young group, most of them educated or being educated in American schools. Their average age is around 22. (E. G. H.)

The Jan. 29, 1942 order of Attorney-General Francis Biddle creating restricted zones along coastal areas and regulating the movement of enemy aliens therein, provoked a few days later a recommendation to the president by Pacific coast congressmen that all persons of Japanese ancestry be removed from these restricted areas. On Feb. 19 an executive order authorized the secretary of war to prescribe military areas within which civilian movement might be restricted and from which any or all persons might be excluded. Lieutenant General John Lessene DeWitt, commanding general of the western defense command, embracing the western states, shortly thereafter invited the voluntary migration of the approximately 110,000 persons of Japanese ancestry living in the three coastal states and Arizona, this despite the fact that approximately 75,000 of them were American citizens.

In the light of the unfavourable publicity attaching to the Japanese, the states in the mountain area and midwest to which they attempted to remove did not welcome the migrants and in some cases they were forcibly ejected. The voluntary evacuation was terminated on March 29 by an order providing for the systematic transfer of all persons of Japanese ancestry to selected assembly centres. The western defense command created the Wartime Civil Control administration under Colonel C. R. Bendetsen on March 14, to take charge of the removal. This was followed on March 18 by an executive order of the president establishing the civilian War Relocation authority to "formulate and carry out a program of a planned and orderly relocation of persons evacuated from military areas." This agency was to select permanent relocation centres where the army would erect temporary wooden barracks for the housing of the evacuated Japanese for the duration. Milton Stover Eisenhower was selected as first director of the War Relocation authority.

The movement of evacuees to the 13 selected reception centres in the four western states began almost immediately, many residents having but two to four days warning of their removal. As many of the Japanese were large property owners, the federal reserve bank, acting as agency for the treasury department, undertook to assist them in disposing of their property. The Farm Security administration and later the War Relocation authority were also vested with some responsibility in this matter but aside from assisting to place non-Japanese operators on vacated farms, delegated their authority to the federal reserve bank in order to avoid conflicting jurisdiction.

The first permanent relocation camp was started on the Colorado River Indian reservation early in April and by the end of the summer ten camps were either completed or nearing completion. These were located at Colorado River and Gila River Indian reservations in Arizona; Manzanar and Tulelake in California; Heart Mountain, Wyo.; Minidoka, Ida.; Granada, Colo.; Central Utah, Utah; and Rohwer and Jerome in Arkansas.

On May 8 the first contingent of evacuees was received at Poston, the new community on the Colorado River Indian reservation which within three months with its 18,000 population became the third largest community in Arizona. In practically every instance the land selected for the relocation centres was under the control of the federal government but was raw land awaiting clearing and irrigation or draining. In every instance communities of from 7,000 to 18,000 people were newly created with all of the problems of construction, sanitation, water supply, light, power, roads, heat, food supply and other community services to be built out of nothing. The initial construction was carried on by the army engineers. Homes were provided in rough wooden buildings 100 ft. long by 20 ft. wide subdivided into four apartments. From five to eight persons were assigned to each apartment. For every 12 such barracks buildings, community kitchens, dining halls, recreation space, toilets, shower baths and laundry were provided. A program of food cultivation first for subsistence and later for war use was announced and factories constructed for the production of camouflage nets and other war products. The organization of community co-operatives for the management of stores and personal services was permitted.

Evacuees were supplied food, housing, medical service and schools. In addition, a clothing allowance was made and a monthly compensation provided of $12, $16, or $19 based on unskilled, skilled or professional labour to those evacuees who engaged in the work program. On May 7 a National Student Relocation council was organized to arrange for as many as possible of the approximately 15,000 evacuees who had been attending colleges or universities to continue their education in colleges outside of the restricted zones. Several hundred students were permitted to continue their education under this plan. Fire protection and internal security are provided by evacuees under non-Japanese supervisors; community government is largely in the hands of Japanese officials elected by adults of the community. Elected positions, however, were limited to citizen Japanese who constituted approximately 35% of the adult group, despite the fact that they amounted to almost 66% of the total. The rest were children under 18. This disfranchisement of the older noncitizens created considerable dissatisfaction among the centre residents.

During the harvest season a number of Japanese labour groups were permitted to accept employment outside of the camps and, after the appointment of Dillon Myer on June 17 as director of the War Relocation authority, succeeding Milton Eisenhower, the announced objective of the War Relocation authority was to find permanent employment outside of the camps for as many of the evacuees as possible. It was pointed out by the agencies connected with the evacuation that there was not and never had been any charges of disloyalty of any kind against the group under the War Relocation authority, that at most they were under protective custody and that the vast majority were considered loyal to the United States.

The anti-Japanese agitation on the Pacific coast flared up on June 26 into a trial in the courts of San Francisco instituted by the Native Sons of the Golden West, a California organization, to bar Japanese-Americans from voting. At the instance of this organization and the western posts of the American Legion and the Veterans of Foreign Wars, legislation was introduced into the 77th congress calling for the revocation of citizenship of persons of Japanese ancestry born in the United States. No action was taken. Several Japanese instituted test suits challenging the right of the government to invade the civil rights of American citizens in the manner carried out by the army and the War Relocation authority.

Only one of these suits reached a tentative decision.

It was held that unusual curfew restrictions could not extend to citizen Japanese.

The Japanese-American Citizens league co-operated closely with the government in urging full conformity to the restrictions imposed and up to Jan. 1943 no suit had been filed challenging the legality of the removal of citizens of Japanese ancestry.

The American Civil Liberties union and other agencies concerned with the rights of citizens evidenced considerable concern for the protection of citizen Japanese in their civil rights.

(W. W. B.)

New Legislation.—During 1942 the following laws affecting aliens were passed by congress:

The act of March 27, 1942, known as the Second War Powers act, provided a simplified procedure for the naturalization of persons in the armed forces during World War II.

The act of April 2, 1942 extended to persons who entered the military or naval service of one of the allies the right of repatriation, the same privilege that persons had who were members of the military or naval services of allies of the U.S. during World War I.

The act of Oct. 9, 1942 amended Section 409 of the Nationality act of 1940. The new act extended to Oct. 14, 1944, the period during which a person would not lose citizenship by living outside the U.S., under the provisions of Sections 404 and 407 of the Nationality act of 1940. (*See* also CENSUS, 1940.) (E. G. H.)

Alimentary System, Disorders of.

The Oesophagus. — Dick and Hurst observed that chronic oesophageal peptic ulcer is a comparatively common disorder with characteristic symptoms and roentgenographic signs. It is generally associated with a congenitally short oesophagus and diaphragmatic hernia of a portion of the stomach, which allows the acid gastric secretion to regurgitate into the oesophagus. Anaemia with dysphagia (Plummer-Vinson syndrome) is the most frequent disorder of the oesophagus in the opinion of Waldenström and Kjellberg. They preferred the term sideropenic dysphagia, because anaemia and achlorhydria are lacking occasionally. These observers described typical roentgenologic changes in the upper part of the oesophagus, observed most clearly or solely on lateral view. A special roentgenologic technique is required.

The Stomach and Duodenum.—Studies by Hay, Varco, Code and Wangensteen showed that prolonged maximal secretion of acid gastric juice as a result of the intramuscular injection of histamine imbedded in beeswax produced gastric and duodenal ulcers with some regularity in a number of common laboratory and domestic animals. Observations by Wolf and Wolff on a patient who had a large gastric fistula led them to conclude that the natural history of peptic ulcer in human beings is directly concerned with emotional conflict involving anxiety, hostility and resentment. This gives rise to accelerated gastric secretion, hypermotility, and hyperaemia and engorgement of the gastric mucosa resembling hypertrophic gastritis. Under such circumstances mucosal erosions and haemorrhages were induced readily by even the most trifling traumas. Prolonged exposure of an erosion to acid gastric juice resulted in the formation of a chronic ulcer.

In a series of observations made on 128 patients who had hiatus oesophageal hernia Jones emphasized features that distinguish the symptoms engendered by such hernias from those due to cardiac disease. He also described the pain mechanism or pathway and expressed the conviction that hiatus hernias have a reasonably characteristic set of symptoms by means of which, under careful observation, the hernias can be diagnosed properly.

Gastroscopic studies of the gastric mucosa of chronic alcoholic addicts by Berry and by Gray and Schindler demonstrated independently the infrequency with which alcohol gives rise to unequivocal chronic gastritis. Benedict stressed the significance of haemorrhage in about a fifth of all cases and varieties of gastritis. Apart from ulcerative gastritis, Palmer minimized the clinical significance of nonspecific chronic superficial, atrophic and hypertrophic forms.

In Black's opinion, the pathogenesis of alimentary azotaemia is as follows: The usual moderate rise of blood urea is accounted for mainly by absorption of nitrogen in large amounts from the blood in the bowel at a time when the kidneys are hampered by a diminished flow of blood. If the haemorrhage is unusually severe, breakdown of tissue proteins becomes important as a source of nitrogen and renal function is further impaired, so that the azotaemia is more pronounced than when haemorrhage is not severe.

The Biliary Tract and Pancreas.—Diagnostic alertness and surgical conservatism continued to be the watchword in acute pancreatitis. Elman urged physicians always to consider the pancreas as a cause of severe pain in the upper part of the abdomen and to resort promptly to the test for serum amylase. Demel observed that even early operation for acute pancreatic necrosis does not arrest the necrotic process, so that many surgeons now adopt a conservative attitude in the presence of this condition. Surgical intervention, however, is warranted under two circumstances: namely, drainage of a pancreatic abscess which may eventually develop, or interval operation for associated demonstrable disease of the gall bladder or extrahepatic biliary ducts, or both.

Intestines.—The diagnostic indications for intubation according to Abbott are aimed at detection of disorders of absorption, minimal lesions ill defined by roentgenoscopy, advanced intestinal obstruction forbidding the use of opaque meals, and rare gastrointestinal disorders unidentifiable by standard methods of study. The intramuscular injection of a combination of gynergen (ergotamine tartrate, 0.25 mg.), prostigmin methylsulphate (0.25 mg.) and solution of posterior pituitary (1.25 units) was recommended by Adler, Atkinson and Ivy in the treatment of postoperative distention. This treatment should not be employed except under the direction of a physician.

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(G. B. En.)

Allen, Glover Morrill

(1879–1942), U.S. naturalist, was born February 8 in Walpole, N.H. Dr. Allen was professor of zoology at Harvard and curator of mammals at the university's museum of comparative zoology. A naturalist of national renown, he was a member of many scientific expeditions and was an authority on birds and mammals. He died February 14 at Cambridge, Mass. (See *Encyclopædia Britannica.*)

Allergy.

The subject of air-borne moulds as causes for allergic symptoms was further clarified by two excellent atmospheric surveys. In the study by Morrow and associates of the mould distribution throughout the central and southern U.S.A., alternaria and hormodendrum were found to be the most common. In the south, these two moulds were present uniformly throughout the year, while in the north, high counts reaching numerous peaks were present during the summer and low counts during the winter. A similar but more intensive study over a five-year period of the mould distribution in the Chicago area by Bernstein and Feinberg confirmed the more general study by Morrow and co-workers. Pratt and Crossman investigated the antigenic properties of moulds and found the spores many times more potent than the mycelia.

DUMPING RAGWEED, chief source of hay fever, into incinerators in New York city in Aug. 1942

Two reports, one on the passage of ingested proteins into cow's milk (Rockwell), the other on its transmission through breast milk (Bruner and Baron), may help to explain puzzling instances of allergy in infants whose symptoms appear after the first ingestion of certain foods. In Rockwell's case, a farmer sensitive to alfalfa but not to milk developed asthma after drinking milk from cows fed on alfalfa. Immunization with alfalfa extract resulted in tolerance to such milk. This report suggested the possibility that cottonseed or flaxseed sensitivity may result from minute amounts of these materials passed into the milk. The report by Bruner and Baron that experimentally fed cottonseed meal will pass into human milk, substantiated this possibility.

Refinements in diagnostic measures were added by the following reports: that fruit juices, when freshly expressed, give positive skin reactions in sensitive patients, but lose this property within 24 hours (Tuft and Blumstein); that odours from flowers, plants, chemicals and foods can produce respiratory allergy (Urbach); that direct examination (gastroscopy) of the stomach lining during an attack of gastro-intestinal allergy shows swelling, redness and bumpiness of the mucosa (Pollock and Stuart); that under certain conditions the blood serum of patients with hives caused by sensitivity to light, is capable of transmitting this sensitivity to the skin of normal persons (Rajka). This would indicate the relationship of at least one of the physical allergies with the well recognized group of typical allergic conditions.

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B. Baron, "The Presence of Ingested Cottonseed Protein in Woman's Milk," *ibid.*, 13:358–465 (1942); L. Tuft and I. Blumstein, "Sensitization to Fresh Fruits," *ibid.*, 13:514–82 (1942); E. Urbach, "Odors as Allergenic Agents," *ibid.*, 13:387–96 (1942); H. M. Pollock and G. S. Stuart, "Gastric Allergy in Human Beings," *ibid.*, 13:467–73 (1942); E. Rajka, "Passive Transfer in Light Urticaria," *ibid.*, 13:327–45 (1942). (B. Z. R.)

Allocations and Allotments: *see* BUSINESS REVIEW; PRIORITIES AND ALLOCATIONS.

Alloys: *see* BERYLLIUM; MAGNESIUM; METALLURGY; MOLYBDENUM; MONAZITE; NICKEL; TITANIUM; VANADIUM; WAR PRODUCTION, U.S.

Aluminum.

World production of aluminum (or aluminium) was almost doubled by 1943 as a result of war demand, and was increasing heavily. The estimated total for 1941 was 1,045,000 metric tons, as compared with 785,000 tons in 1940, though many of the figures for both years are conjectural. The outputs contributed by the main producers are shown in the accompanying table.

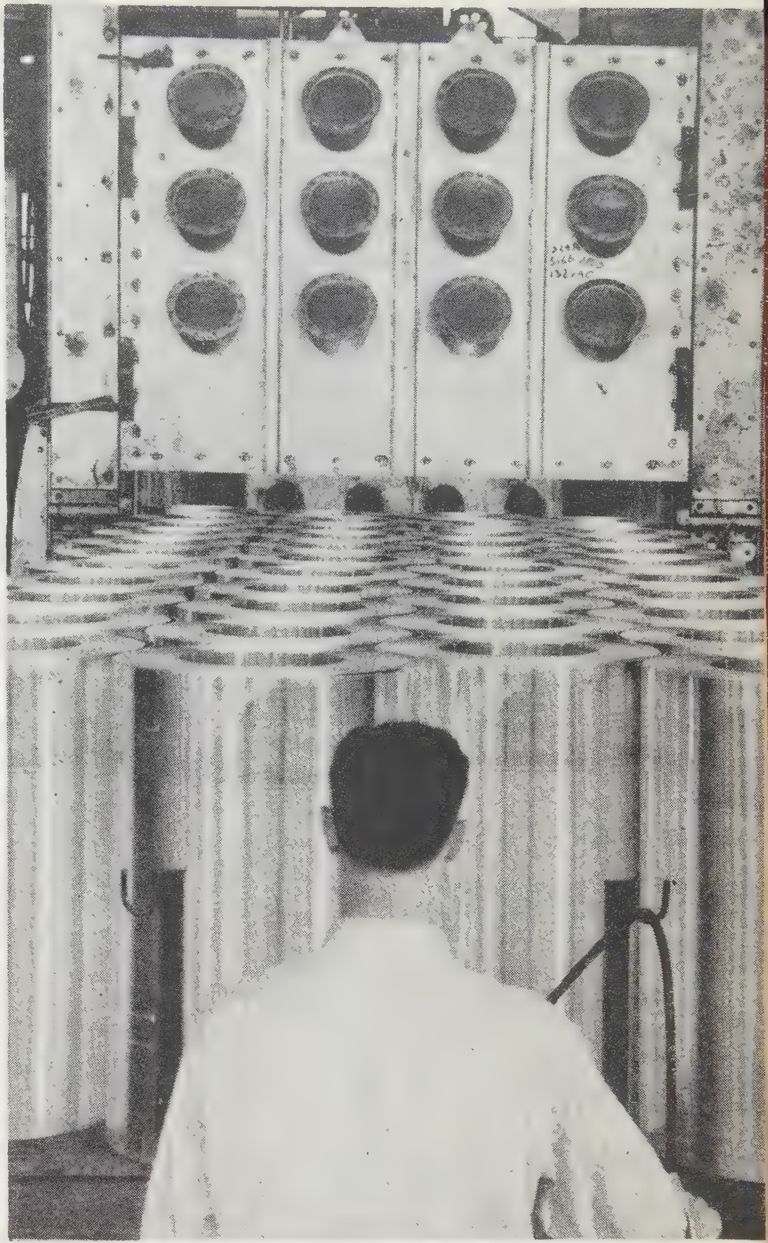
World Production of Aluminum
(Metric tons)

	1937	1938	1939	1940	1941
Canada	42,500	66,000	75,000	95,000	200,000
France	34,500	45,300	50,000	50,000	60,000
Germany	127,500	161,100	200,000	240,000	270,000
Great Britain	19,400	23,300	25,000	32,000	35,000
Italy	22,000	25,800	32,400	36,000	40,000
Japan	10,500	17,000	23,000	32,000	40,000
Norway	23,000	29,000	31,100	20,000	35,000
Switzerland	24,000	27,000	28,000	29,000	28,000
U.S.S.R.	37,700	43,800	50,000	55,000	50,000
United States	133,000	130,400	148,700	187,600	280,000
Others	7,200	10,400	7,400	7,500	6,000
Total	482,300	581,600	672,400	785,000	1,045,000

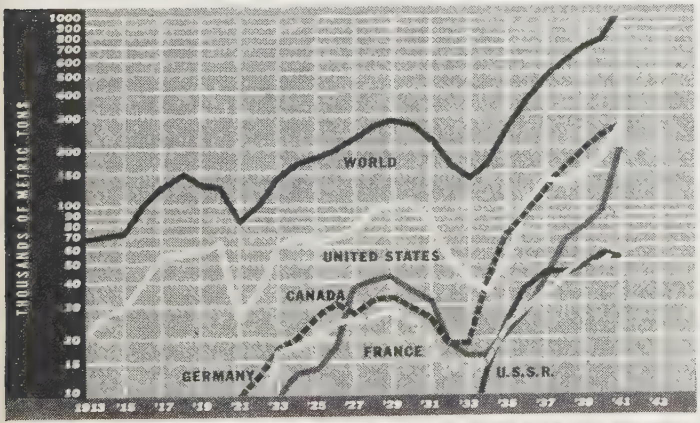
United States production was advanced by nearly one-half in 1941, to 307,500 short tons, and even greater increases were in store; new plants were constructed, and others were under way, which, when completed, were expected to bring the production capacity up to something like 1,050,000 short tons before the end of 1943. This domestic supply was to be supplemented by imports, chiefly from Canada, to a point where the total supply by the end of 1943 would be approximately equal to world production in 1941.

Three successive drops, each of 1 cent, brought the price down from 20 cents to 17 cents in 1940, and this was reduced to 15 cents in Sept. 1941; no further changes were made in 1942.

Although the three axis countries themselves had 350,000 tons of the 1941 production capacity, controlled by occupation nearly 100,000 tons more in France, Norway and Yugoslavia, and dominated 30,000 tons in Switzerland and Sweden through control of sources of ore supply, the United Nations had a clear supremacy of a full 10%, even after deducting the losses of Russian capacity, and the new plant construction under way was expected to throw the balance heavily in favour of the United Nations. (*See* also CRYOLITE; METALLURGY; WAR PRODUCTION, U.S.) (G. A. Ro.)



THE WORLD'S LARGEST ALUMINUM ROLLING MILL, at Alcoa, Tenn., went into operation months ahead of schedule in 1942. The photograph shows coils of aluminum after leaving the continuous mill, ready for heat processing



ALUMINUM PRODUCTION OF THE WORLD and the chief producing countries, as compiled by *The Mineral Industry*

Alvear, Marcelo Torcuato de

(1868–1942), Argentine politician and president of Argentina, 1922–28, was born Oct. 4 at Buenos Aires. Exiled in 1931 because of his opposition to government policies, he returned to Buenos Aires in 1933; on his arrival, he was arrested and interned in a concentration camp for alleged participation in a revolutionary plot. After his release, he re-entered the political arena, reorganized the Radical party after President Irigoyen's death and ran, unsuccessfully, for president in 1937. He died in Buenos Aires, March 23. (See *Encyclopædia Britannica.*)

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Ambassadors and Envoys.

The following is a list of ambassadors and envoys to and from the United States and to and from Great Britain Jan. 1, 1943.

To and From the United States

(*=ambassadors; unstarred, envoys.)

To the United States	*Country*	*From the United States*
. . . .	Afghanistan	Engert, Cornelius Van H.
*Espil, Felipe A.	Argentina	*Armour, Norman
Dixon, Sir Owen	Australia	Johnson, Nelson T.
*Straten-Ponthoz, Count Robert van der	Belgium	*Biddle, Anthony J. D., Jr.[3]
*Guachalla, Dr. Luis F.	Bolivia	*Boal, Pierre de L.
*Martins, Carlos	Brazil	*Caffery, Jefferson
McCarthy, Leighton	Canada	Moffat, Jay Pierrepont[4]
*Michels, Rodolfo	Chile	*Bowers, Claude G.
*Wei Tao-ming, Dr.	China	*Gauss, Clarence E.
*Vargas Nariño, Alberto[1]	Colombia	*Lane, Arthur Bliss
Fernández, Dr. Luis	Costa Rica	Scotten, Robert M.
*Concheso, Dr. Aurelio F.	Cuba	*Braden, Spruille
Hurban, Vladimír	Czechoslovakia	Biddle, Anthony J. D., Jr.[3]
Kauffmann, Henrik de	Denmark	Atherton, Ray (absent)
Troncoso, Dr. J. M.	Dominican Rep.	Warren, Avra M.
*Alfaro, Capt. Colón E.	Ecuador	*Long, Boaz
Hassan Bey, Mahmoud	Egypt	Kirk, Alexander C.[5]
Brennan, Robert	Eire (Ireland)	Gray, David
Castro, Dr. Hector D.	El Salvador	Frazer, Robert
Kaiv, Johannes[2]	Estonia	. . . . . .
Procopé, Hjalmar J.	Finland	Schoenfeld, H. F. Arthur
*Halifax, Viscount	Great Britain	*Winant, John G.
*Diamantopoulos, Cimon P.	Greece	*Biddle, Anthony J. D., Jr.[3]
Recinos, Dr. Adrian	Guatemala	Des Portes, Fay A.
Liautaud, André	Haiti	White, John C.
Caceres, Dr. Julian R.	Honduras	Erwin, John D.
Thors, Thor	Iceland	Morris, Leland B.
Shayesteh, Mohammed	Iran	Dreyfus, L. G., Jr.
Jawdat, Ali	Iraq	Wilson, Thomas M.
Bilmanis, Dr. Alfred	Latvia	. . . . . .
. . . .	Liberia	Walton, Lester A.
Žadeikis, Povilas	Lithuania	. . . . . .
Le Gallais, Hugues	Luxembourg	Moffat, Jay Pierrepont[4,6]
*Castillo Nájera, Dr. Francisco	Mexico	*Messersmith, George S.
*Loudon, Dr. A.	Netherlands	*Biddle, Anthony J. D., Jr.[3]
Nash, Walter	New Zealand	Hurley, Patrick J.
DeBayle, Dr. León	Nicaragua	Stewart, James B.
*Munthe de Morgenstierne, Wilhelm	Norway	*Biddle, Anthony J. D., Jr.[3]
*Jaén Guardia, Ernesto	Panama	*Wilson, Edwin C.
*Velázquez, Dr. Celso R.	Paraguay	*Frost, Wesley
*Freyre y Santander, Manuel de	Peru	*Norweb, R. Henry
*Ciechanowski, Jan	Poland	*Biddle, Anthony J. D., Jr.[3]
Bianchi, João A. de	Portugal	Fish, Bert
*Cárdenas, Juan F. de	Spain	*Hayes, Carlton J. H.
Boström, W.	Sweden	Johnson, Herschel V.
Bruggmann, Charles	Switzerland	Harrison, Leland
Seni Pramoj, Rajawongse	Thailand	. . . . . .
*Ertegün, Mehmet M.	Turkey	*Steinhardt, Laurence A.
Close, Ralph W.	Union of South Africa	Mac Veagh, Lincoln
*Litvinov, Maxim	U.S.S.R.	Standley, William H.
*Blanco, Dr. Juan C.	Uruguay	*Dawson, William
*Escalante, Dr. Diógenes	Venezuela	*Corrigan, Frank P.
*Fotitch, Constantin	Yugoslavia	*Biddle, Anthony J. D., Jr.[3]

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[1] Chargé d'Affaires ad interim.

[2] Acting consul general, in New York city.

[3] Accredited to governments of Belgium, Czechoslovakia, Greece, The Netherlands, Norway, Poland and Yugoslavia, all established in England.

[4] Died Jan. 24, 1943.

[5] Accredited also to Saudi Arabia; resident in Cairo.

[6] Minister to Canada but accredited also to government of Luxembourg, established in Canada.

To and From Great Britain

(*=Ambassador; unstarred=Envoy-Extraordinary; ‡=Minister Resident; §=Chargé d'Affaires.)

To Great Britain	*Country*	*From Great Britain*
Sardar Ahmed Ali Khan	Afghanistan	Wylie, Sir F. V.
*Carcano, Dr. Miguel Angel	Argentina	*Kelly, Sir D. V.
*de Marchienne, Baron E. de C.	Belgian Govt. (in London)	*Oliphant, Sir Lancelot
Patiño, Antenor	Bolivia	Dodds, J. L.
*de Aragâo, J. J. Moniz	Brazil	*Charles, Sir Noel N. H.
*Bianchi, Manuel	Chile	*Orde, Sir Charles W.
*Koo, Dr. V. K. Wellington	China	*Seymour, Sir H.
Jaramillo Arango, Dr. Jaime	Colombia	Snow, T. M.
(*Vacant*)	Costa Rica	§Lyall, G.
de Blanck, Guillermo	Cuba	Ogilvie-Forbes, Sir G.
Lobkowicz, Maximilian	Czechoslovak Provis. Govt. (in London)	[1]Nicholls, P. B. B.
[2]Reventlow, Count Eduard	Denmark	. . . .
§Pérez-Alfonseca, Dr. Ricardo	Dominican Republic	‡Paterson, A. S.
§Puig-Arosemena, Alberto	Ecuador	‡Hallett, L. C. Hughes
*Hassan Nashat Pasha	Egypt	*Lampson, Sir Miles
Gabre, Belata Ayela	Ethiopia	Howe, R. G.
. . . . . .	France (Fr. Nat. C'tee in London)	Peake, C. B. P.
. . . . . .	Greek Govt. (in London)	Palairet, Sir Charles M.
§Arévalo, Dr. Ismael Gónzalez	Guatemala	Leche, J. H.
. . . . . .	Haiti	‡Hillyer, R. A. N.
. . . . . .	Honduras	Kemball, C. G.
§Benediktsson, Pétur	Iceland	. . . . . .
Seyed Hassan Taqizadeh	Iran	Bullard, Sir R. W.
§Sayid Ata Amin	Iraq	*Cornwallis, Sir K.
‡de Lynden, Baron Robert Aernout	Liberia	§Routh, A. C.
Diaz, Alfonso de R.	Mexico	Bateman, Harold
Gen. Shingha Shamsher Jung Bahadur Rana	Nepal	Betham, Lt. Col. G. L.
van Verduynen, Dr. Michiels	Netherlands Govt. (in London)	Bland, Sir N.
Herdocia, Dr. C.	Nicaragua	§Gooden, A.
Colban, E. A.	Norwegian Govt. (in London)	Collier, L.
§Sandoval, R. Rivera	Panama	Dodd, C. E. S.
(*Vacant*)	Paraguay	‡Brickell, D. F. H.
Benavides, Alfredo	Peru	Forbes, V. C. W.
*Raczyński, Count Edward	Polish Govt. (in London)	*Dormer, Sir Cecil
*Monteiro, Dr. Armindo Rodrigues de Sttau	Portugal	*Campbell, Sir R.
(*Vacant*)	Salvador	§Joint, E. J.
Sheikh Hafiz Wahba	Saudi Arabia	Stonehewer-Bird, F.H.W.
*The Duke of Alba	Spain	*Hoare, Sir Samuel
Prytz, Björn Gustaf	Sweden	Mallet, V. A. L.
Thurnheer, Walter	Switzerland	Norton, C. J.
*Orbay, Huseyin Rauf	Turkey	*Knatchbull-Hugessen, Sir H. M.
*Winant, John G.	United States	*Halifax, Viscount
Castellanos, Dr. Daniel	Uruguay	Stevenson, R. C. S.
*Maisky, Ivan	U.S.S.R.	*Clark Kerr, Sir Archibald
. . . . . .	Vatican	Osborne, F. d'A. G.
Carnevali, Dr. Atilano	Venezuela	Gainer, D. St. C.
Milanovitch, Vladimir	Yugoslav Govt. (in London)	Rendel, G. W.

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[1] British representative. [2] Charged informally with the protection of certain Danish interests not under enemy control.

Amblygonite: *see* LITHIUM MINERALS.

American Academy of Arts and Letters.

The American Academy of Arts and Letters was founded in 1904 by the National Institute of Arts and Letters, in order to make the institute more efficient in carrying out the purposes for which it was organized, namely the protection and furtherance of literature and the fine arts and to give greater definiteness to its work. The membership of the academy is limited to 50, chosen only from the members of the institute.

The 1942 annual meeting of the academy was held on May 8. For the first time the academy participated with the National Institute in a public ceremonial at which new members were inducted and ten $1,000 grants were given. This was followed by the opening of the first comprehensive exhibition of the works of members of both organizations from the departments of art, literature and music, in the art gallery and museum, closing on June 15. It was reopened in October and continued until the end of the year.

The officers of the academy for 1942–43 were: Walter Damrosch, president; James Truslow Adams, chancellor and treasurer; William Lyon Phelps, secretary. The other six directors were Stephen Vincent Benét, Van Wyck Brooks, William Adams Delano, Charles Dana Gibson, Deems Taylor and Chauncey B. Tinker. (F. GN.)

American Academy of Arts and Sciences.

The academy is limited to 800 fellows and 130 foreign honorary members, divided among four classes: mathematical and physical sciences, natural and physiological sciences, the social arts, the humanities. The officers for 1942 were: president, Harlow Shapley; corresponding secretary, Abbott P. Usher; recording secretary, Hudson Hoagland; treasurer, Horace S. Ford. The following papers were presented at the regular monthly meetings: Vladimir K. Zworykin, "The Electron Microscope"; Alfred North Whitehead, "Statesmanship and Specialized Learning"; Igor I. Sikorsky, "On the Air Transportation of the Future"; Walter S. Lemmon, "Radio as a New Force in the Post-War World"; Zechariah Chafee, Jr., "International Utopias"; Clarence F. Jones, "South America and the War"; Samuel Van Valkenberg, "The Importance of the Netherlands East Indies"; Carleton S. Coon, "Systems of Human Relations"; Conrad M. Arensberg, "Nature of World Equilibrium"; Eliot D. Chapple, "How a World Equilibrium Can Be Organized"; A. Warren Stearns, "Psychiatry and the Structure of Society"; Mark Granbard, "Morale for a Democratic Offensive."

The following papers were read by title: P. W. Bridgman, "Pressure-Volume Relations for 17 Elements to 100,000 kg. 1 cm.^{2}"; F. M. Carpenter, "The Lower Permian Insects of Kansas"; P. W. Bridgman, "Freezing Parameters and Compressions of 21 Substances to 50,000 kg. 1 cm.^{2}"; F. R. Hildebrand, "The Approximate Solution of Singular Integral Equations Arising in Engineering Practice"; T. L. Davis and Ch'en Kuo-fu, "The Inner Chapters of Pao-p'u-tzu."

Grants in aid of research were made from the Rumford fund, the C. M. Warren fund and from the Permanent Science fund.

(A. P. U.)

American Academy of Political and Social Science.

On April 10 and 11, 1942, there was held the 46th annual meeting of the academy with the general subject "Winning Both the War and the Peace." Other meetings of 1942 included a session on Feb. 26 addressed by Viscount Halifax, the British ambassador, on the subject "Anglo-American Relations"; a gathering on Nov. 16 on "The Future of Central and Eastern Europe" with addresses by Henryk Strasburger, minister of finance of Poland, Bogoljub Jevtitch, minister of state of Yugoslavia, and others; and a meeting on Nov. 30, addressed by Randolph E. Paul, general counsel of the treasury of the United States, Beardsley Ruml, chairman of the board of the Federal Reserve Bank of New York, and Professor Roswell F. Magill of Columbia university.

During 1942 the six bimonthly issues of *The Annals* had the following titles: "The Press in the Contemporary Scene" (January); "Organizing for Total War" (March); "Administrative Regulation of Private Enterprise" (May); "Winning Both the War and the Peace" (July); "Minority Peoples in a Nation at War" (September); and "Labor Relations and the War" (November). The academy also publishes a pamphlet series; during 1942 there appeared No. 11 entitled "Latin American Viewpoints," and No. 12 entitled "Topical Index to National Constitutions."

Student memberships, offered for the third year in 1942, totalled approximately 350. Under this arrangement students enrolled in educational institutions receive all of the privileges of regular membership at a cost of only $3 per year instead of the usual $5.

The officers for 1942 were: Ernest Minor Patterson, president; J. P. Lichtenberger, secretary; Charles J. Rhoads, treasurer; Thomas S. Hopkins, assistant treasurer; Herbert Hoover, Carl Kelsey and C. A. Dykstra, vice-presidents. Headquarters are at 3457 Walnut St., Philadelphia, Pa.

(E. M. P.)

American Association for the Advancement of Science.

The officers of the American Association for the Advancement of Science for 1942 were: Dr. Arthur H. Compton, Charles H. Swift Distinguished Service professor of physics of the University of Chicago, president; Forest Ray Moulton, permanent secretary; Otis W. Caldwell, general secretary; Charles Carroll Morgan, treasurer; and Sam Woodley, assistant secretary. The retiring president was Irving Langmuir.

The 1942 membership of the association passed 23,500. Its affiliated and associated societies, 186 in number, had a combined membership, including duplicates, of nearly 1,000,000. The association held a meeting in Dallas, Tex., which closed on Jan. 3, 1942, with an estimated attendance of about 4,000. At the Dallas meeting, Dr. A. F. Blakeslee gave his retiring address on the subject, "Individuality and Science." The annual association $1,000 prize was awarded to Drs. Dugald E. S. Brown and Douglas A. Marsland of New York university and Dr. Frank H. Johnson of Princeton university for two joint papers referring to two aspects of the same broad problem, the titles of which are as follows: (1) "The Reversible Denaturation of Enzymes as a Determining Factor in the Reaction of Biological Systems to Temperature and Pressure" and (2) "The Mechanism of Temperature and Hydrostatic Pressure Reversal of Narcosis in Luminous Bacteria." Nine grants-in-aid of research were given. During 1942 four books for the symposia series were published as follows: (1) *Liebig and After Liebig—A Century of Progress in Agricultural Chemistry;* (2) *Aerobiology;* (3) *Relapsing Fever;* and (4) *Fluorine and Dental Health.* One book—*Alcohol Explored*—was published for the non-technical series. In March the association inaugurated another journal, the *A.A.A.S. Bulletin.* This eight-page journal was intended to contain articles and items of timely interest to all members of the association. Subscriptions for it are included in the annual dues of $5. In addition, members receive either the weekly journal *Science* or *The Scientific Monthly* without extra cost.

(F. R. Mo.)

American Bankers Association.

Under the administration of Henry W. Koeneke, president of the Security Bank of Ponca City, Ponca City, Okla., the association devoted a major portion of its efforts towards aiding the government in raising the huge sums necessary to finance the U.S. treasury's war outlay and providing capital for the great expansion of industries as they converted plants and equipment from peace to wartime operation.

In response to the request of government transportation agencies, the association cancelled its annual convention which was to have been held in Detroit, Mich., in Sept. 1942, and substituted in its place a "Convention in Print" which was sent to the A.B.A.'s membership through the medium of *Banking,* official publication of the association, and through other publications. Reports of activities and speeches which would have been given at the convention were thus made available to banks throughout the country.

Officers for the association in 1942–43, inaugurated at a meeting of the association's executive council in New York in Sept. 1942, were: president, W. Linn Hemingway, St. Louis, Mo.; first vice-president, A. L. M. Wiggins, Hartsville, S.C.; treasurer, William F. Augustine, Boston, Mass.; executive manager, Dr. Harold Stonier, New York, N.Y.; secretary, Richard W. Hill, New York, N.Y.; national bank division, president, S. A. Phillips, Louisville, Ky.; savings division, president, W. W. Slocum, Detroit, Mich.; state bank division, president, Frank P. Powers, Mora, Minn.; trust division, president, Louis S. Headley, St. Paul, Minn.; state secretaries section, president, Fred M. Bowman, Topeka, Kan. (L. Gn.)

American Bar Association.

Assistance to U.S. war agencies in specific projects was reported by a special committee composed of Walter P. Armstrong, George Maurice Morris and Thomas B. Gay. This committee announced the co-ordination of committees on war work, civilian defense, bill of rights, international law, administration of justice, public information and U.S. citizenship in a comprehensive program which included continued assistance in the administration of the Selective Service act, issuance of a manual of law for civilian defense officials, maintenance of civil rights, preparing a roster of lawyers available for war service, and the study of postwar law problems. The demand for the "Manual of Law" for the use of Selective Service advisory boards, prepared by the war work committee, required the publication of a second edition. Elected at the 1942 meeting in Detroit were: George Maurice Morris, president; Guy R. Crump, chairman of the house of delegates; Harry S. Knight, secretary; John H. Voorhees, treasurer; Joseph D. Stecher, assistant secretary.

Awards.—The annual medal of the association was awarded to Charles Evans Hughes, retired chief justice of the U.S., for conspicuous service to the cause of American jurisprudence; the Ross prize of $3,000 went to Frank E. Cooper of Detroit, Mich., for an essay on "What Changes in Federal Legislation and Administration Are Desirable in the Field of Labor Relations Law"; awards of merit were given to the state bar of California, the District of Columbia Bar association, the Detroit Bar association, and the Lake County (Ill.) Bar association. (M. Dn.)

American Bible Society.

The 126th annual meeting of the American Bible society was held in May 1942. John T. Manson was president; Gilbert Darlington, treasurer. General secretaries were Rev. Dr. Eric M. North, Rev. Dr. Frederick W. Cropp (on leave), Frank H. Mann, M.A., and Rome A. Betts, M.A. Rev. Dr. Francis C. Stifler was editorial and recording secretary.

The society distributes about 4,000,000 volumes of Scripture annually in the United States. In co-operation with the British and Foreign Bible society, the Scottish Bible society and other missionary organizations, the Scriptures were translated into 1,055 languages up to the end of 1941 and about 21,000,000 volumes were distributed in 1941 throughout the world. (F. C. St.)

American Chemical Society.

The society operates under a national charter from the 75th congress. In 1942 the presidency passed from Dr. William Lloyd Evans of Ohio State university to Dr. Harry N. Holmes of Oberlin college, with Dr. Per K. Frolich of the Standard Oil Development Co. as president-elect. Frolich became president Jan. 1, 1943. National meetings in Memphis and Buffalo showed attendances of 2,324 and 4,288 with 331 and 425 papers, respectively. The 99 local sections were more active than ever. The awards of the society: John Lawrence Oncley, American Chemical society award in pure chemistry; Earl A. Evans, Jr., Eli Lilly and company award; George E. Holm, Borden award; Florence B. Seibert, A.C.S. Women's award (Garvan medal); Webster N. Jones, Pittsburgh award; M. X. Sullivan, Hillebrand award; Arthur B. Lamb, Nichols medal; Lawrence H. Flett, Schoellkopf medal; Thomas Midgley, Jr., Willard Gibbs medal; F. G. Keyes, Theodore William Richards medal. Membership passed 32,000. (C. L. Ps.)

American Citizens Abroad.

The annual statements heretofore released by the department of state showing the number of American citizens residing abroad and giving a summary of certain passport statistics are not available for the information of the general public. (R. B. S.)

American College of Surgeons.

The college was founded in 1913 by 500 surgeons of the United States and Canada, under the leadership of Dr. Franklin H. Martin, to elevate the standards of surgery and to stimulate high professional and ethical ideals. The fellowship for 1943 numbered 13,350; 792 were received into fellowship in 1942. Chairman, board of regents, Dr. Irvin Abell, Louisville, Ky.; president, 1941 until the succeeding presidential meeting (the 1942 clinical congress and inaugural ceremony was cancelled because of the war): Dr. W. Edward Gallie, Toronto, Ont.; president-elect, Dr. Irvin Abell, Louisville, Ky.; treasurer, Dr. Dallas B. Phemister, Chicago, Ill.; secretary, Dr. Frederic A. Besley, Waukegan, Ill.; associate director and chairman, administrative board, Dr. Malcolm T. MacEachern, Chicago, Ill.; associate director, Dr. Bowman C. Crowell, Chicago, Ill.; assistant director, Dr. E. W. Williamson, Chicago, Ill. The organization originated hospital standardization, 1918, formulating minimum standards for approval and starting periodic surveys; 2,989 hospitals in United States, Canada and other countries were on the 1942 approved list; 385 cancer clinics in hospitals and 1,053 medical services in industry were approved in 1942. Hospitals approved for graduate training in surgery and the surgical specialties in 1942 numbered 217. An approved list of medical motion picture films is issued yearly. The college maintains a medical library and literary research department. Committees on cancer, archives of cancer, fractures and other traumas, and the Hall of Art and Science of Surgery function through a department of clinical research. War sessions were held in 1942 in 27 cities throughout the United States, with a combined attendance of nearly 40,000 physicians and medical students, in addition to large numbers of hospital executives. (M. T. M.)

American Dental Association.

The American Dental association, founded in 1859 at Niagara Falls, N.Y., is the second national dental association to be formed in the United States, the first being the American Society of Dental Surgeons, established in 1840 and disbanded in 1856. The Civil War split the American Dental association's membership, and in 1869 the Southern Dental association was organized. In 1897 the two organizations merged to form the National Dental association, which in 1922 adopted the original title, The American Dental association.

The American Dental association is composed of 58 state and territorial societies which in turn are formed of approximately 440 component societies organized in cities, counties and districts. The 56,000 members, through their state and local societies, annually elect their delegates, about 280, who in turn elect the association's president, three vice-presidents, secretary, treasurer and 13 trustees. These officers conduct the business affairs of the association.

The association endeavours to cultivate and promote the art and science of dentistry, to direct and encourage dental research, to improve dental education, to disseminate knowledge of dentistry, and to enlighten and direct public opinion in relation to oral hygiene and the care of the oral cavity.

These duties are performed by the officers and trustees, assisted by standing and special committees, councils and bureaus, chief of which are: judicial council, council on dental therapeutics, council on dental education, research commission, council on dental health, committee on legislation, committee on economics, relief commission and relief fund committee, membership committee, library bureau, bureau of chemistry and bureau of public relations. (H. B. P.)

American Economic Association.

This nation-wide professional organization of economists was founded in 1885 to encourage economic research and stimulate thought and discussion of economic problems. It was composed in 1942 of 3,675 members and 1,220 library, corporate and other subscribers. Publications consisted of a quarterly journal, the *American Economic Review*, the *Proceedings and Papers* of the annual meetings, occasional monographs on special subjects, a *Directory* of its members including classification by fields of specialization and by residence, and an information booklet.

The association is affiliated with the American Council of Learned Societies and the Social Science Research council and has representatives on the National Bureau of Economic Research and certain public advisory bodies. The 55th annual meeting, scheduled to be held in Cleveland Dec. 29–31, 1942, was cancelled by government request but the papers prepared for the occasion were included in the regular volume of the proceedings. The program centred around the economic claims of government and of private enterprise, industrial adjustments at the end of the war, labour problems, price controls and international finance.

Officers for the year 1943: president, Albert Benedict Wolfe, Ohio State university; vice-presidents, William Morris Leiserson, National Labor Relations board; Myron Webster Watkins, United States department of justice; elected members of the executive committee, Corwin D. Edwards, United States department of justice; Carl Sumner Shoup, Columbia university. (J. W. Bl.)

American Federation of Labor.

The American Federation of Labor during 1942 devoted its activities to co-operating with the government in its war effort and extending organization to wage-earners under the American flag so that they might realize economic freedom.

Immediately following the attack on Pearl Harbor and the subsequent declaration of war by the United States, a conference of representative trade union officials met in Washington and pledged full co-operation and support to the government in its war work. Subsequently the federation pledged that its members would purchase at least a thousand million dollars' worth of war bonds and stamps during 1942.

Federation officials early recognized the fact that the workers of America would have a major responsibility in the prosecution of the war in that the material needs of the armed and civilian population of the United Nations would inevitably make unprecedented demands on those engaged in the production field. Every possible effort was made to meet this need. To obtain the highest production level, the wage-earners in many industries lengthened their established work day and work week for the duration of the emergency. As a result, all previous production records were exceeded during 1942 and strikes reduced to a minimum.

The federation anticipated post-war adjustments and urged advance planning so that the transition might take place with minimum hardship for the workers, industry and the public generally. The total dues-paid membership in the American Federation of Labor at the close of its fiscal year on Aug. 31, 1942, was 5,482,581, the highest figure in its history. (*See* also CONGRESS OF INDUSTRIAL ORGANIZATIONS; LABOUR UNIONS; STRIKES AND LOCK-OUTS; UNITED STATES: *Labour*.) (W. G.)

American Geographical Society.

Early in 1942 the American Geographical society published a new three-sheet map on the scale of 1:5,000,000 covering Mexico, Central and South America and the West Indies. This map—a topographical-political map with topography shown by contours and hypsometric tints—was chiefly a reduction of the 107-sheet map of Hispanic America on the scale of 1:1,000,000 which had been one of the society's major projects for 21 years. The map was produced at the request and with the support of the Office of the Coordinator of Inter-American affairs, and, in addition to the English edition, Spanish and Portuguese editions were produced for distribution in Latin America. The society had been long associated with the study of Latin American boundary disputes, and in continuation of that work its department of Hispanic American research, at the request of the department of state, prepared a report on the status of existing survey work along the route of the Ecuador-Peru boundary accompanied by a map compiled from the best available sources for use by the United States commission on the survey and demarcation of the boundary.

In Feb. 1942 a group of experts in various fields met at the society's building under the joint sponsorship of the society and the committee on Latin American studies of the American Council of Learned Societies to discuss plans for an "Atlas of the Americas" which the society contemplated undertaking as a long-range research project.

The society's regular annual book publication was an addition to the Special Publications series entitled *The Face of South America*—a volume of photographs taken from the air by the author, Professor John Lyon Rich of the University of Cincinnati, on a flight around South America by commercial airways, with explanatory text.

In its quarterly journal, *The Geographical Review*, special attention was given during 1942 to articles on the lesser known parts of the world of special interest as the result of World War II. Publication was continued of the *Current Geographical Publications*—a classified list of titles of books, articles, and maps selected monthly for inclusion in the society's research catalogue. (R. R. P.)

American Indians: *see* INDIANS, AMERICAN.

American Iron and Steel Institute.

Virtually all of the activities of the American Iron and Steel institute during 1942 had to do directly or indirectly with the steel industry's contributions to the war effort. Many long-established institute activities, such as the collection of statistical data and the work of technical committees, proved valuable to the various war agencies of the government.

Perhaps the most significant wartime contribution was the announcement of a new family of alloy steels developed at the request of the War Production board by metallurgists comprising the Alloy Steel committee of the institute. These new steels, known as the N.E. (National Emergency) series of steels, contain relatively small amounts of alloying elements yet are thoroughly comparable in performance and usefulness with alloy steels containing higher percentages of alloying elements.

During 1942, the American steel industry for the first time in history faced the threat of a basic raw material shortage. It found itself needing greater tonnages of scrap iron and steel in order to keep up its record-breaking volume of steel production. A nation-wide salvage campaign, supported by the steel industry's contribution of $1,500,000 toward a program of publicity, brought in a substantial quantity of scrap. (W. S. To.)

American Law Institute. Since its organization, the chief work of the American Law institute has been a *Restatement of the Law,* best described as an orderly statement of the common law. While the sections into which the restatement is divided are written in statutory form, they are not presented to legislatures for adoption. The object of the restatement is to clarify and simplify the common law, but not to prevent its continued development by judicial decision. Prior to 1942, 16 volumes of the restatement were published, including the law of contracts, conflict of laws, agency, trusts, restitution, torts and security, besides large portions of the law of property.

During 1942 work on the fourth and fifth volumes of the restatement of the law of property went forward, and the work on a model code of evidence was completed and published. The institute also began work on two matters of importance: (1) an international bill of rights to further education in post-war problems and for possible use in the post-war settlement; (2) a code of commercial law.

The American Law institute was organized in Feb. 1923. Its object is to carry on constructive scientific work for the improvement of the law. Aside from the official members, who are those holding the leading judicial, bar and law school faculty positions, there are 825 life members, membership being a distinct professional honour. The governing body is a council of 33. The members meet each year in Washington, D.C. All legal and other official publications of the institute must be first approved by the council and by a meeting of members. The president in 1942 was George Wharton Pepper; William Draper Lewis was director and chief of the editorial staff. The executive office was in 1942 at 3400 Chestnut Street, Philadelphia, Pa. (W. D. L.)

American Legion. An organization of American veterans of both World Wars I and II. It was originally chartered as a World War I veterans' organization by congress in 1919. It became a two-war organization Oct. 29, 1942, when President Roosevelt signed Public Act 767, making honorably discharged veterans of World War II eligible for membership. The congressional amending of the 1919 charter was authorized by the 24th national convention in Kansas City, Mo., Sept. 19–21, 1942.

The accomplishments of the American Legion in 1942 included: (1) producing 350,000 graduates from its air-raid warden schools for the civilian defense program; (2) selling more than $100,000,000 worth of war bonds and stamps in its nation-wide sales campaign; (3) training thousands of instructors in special legion schools for teaching military drill to students in secondary schools under the U.S. victory corps high school program; (4) obtaining 242,312 recruits for the navy, 93,208 for the army, 6,368 for the marine corps, 2,396 for the coast guard, 8,009 for the state guards, 568 for the merchant marine and 5,943 as air cadets; and (5) defining the nation's war aims to be, First, to win the war; Second, to win the peace; and Third, to preserve the U.S. form of government.

Other 1942 achievements were: (1) operations of 2,370 aircraft warning posts by 2,017 posts in the danger zones, at an annual cost to them of more than $112,000; (2) enrolment of approximately 100,000 legionaries in the aircraft warning systems, 337,941 legionaries as air-raid wardens, 272,306 as volunteer policemen, 34,132 as volunteer firemen, 330,456 as first-aid workers, 3,570 as members of ration boards, 9,671 as members of draft boards and 812 in the civil air patrol; (3) contributions of 63,493 pints of blood by 47,660 legionaries to blood banks; (4) participation of some 172,465 legionaries in nation-wide scrap metal and rubber collections, including collection of more than 10,000,000 old phonograph records which were sold to raise funds for new records that were sent to all U.S. units serving overseas; (5) collection through its fun and honour society, the Forty and Eight, of more than 200,000 decks of playing cards for fighting men in overseas service; (6) distribution of more than 1,500,000 copies of "Fall In," the American Legion's booklet of advice, to men going into the nation's war service; and (7) active co-operation of more than 75,000 key legionaries with the Federal Bureau of Investigation against all espionage, sabotage and fifth column activities.

While the American Legion during 1942 subordinated all its activities to the war effort, it also (1) sponsored more than 3,000 Boy Scout troops; (2) expended the known total of $2,769,440.33 in emergency financial aid to 550,668 needy children, mostly for food, clothing and medical treatment; (3) recovered through its national rehabilitation committee $2,760,862.87 in various contested government benefits for thousands of World Wars I and II veterans and their dependents, without any cost to these beneficiaries; (4) enrolled more than 500,000 boys under 17 years of age in its annual junior baseball program; (5) sponsored another national high school oratorical contest on the U.S. constitution and Bill of Rights, in which 120,000 students in 47 states participated; (6) conducted 29 Boys' States in which more than 12,000 boys selected for leadership qualities received training in civic government; (7) awarded more than 12,317 medals through its posts and auxiliary units to public school pupils outstanding in scholarship and leadership qualities; (8) held its second annual, nation-wide safe driving contest in which more than 9,000 drivers entered; and (9) distributed more than 60,000 copies of a new pamphlet entitled "Know Your America."

All membership records of the American Legion again were broken during 1942. On Dec. 31, 1942, a new all-time high enrolment record of 1,136,148 members was reached. At the same time the number of posts rose to a new high of 11,834. The American Legion auxiliary for the seventh consecutive year also set a new high for membership, reaching a peak of 537,421 divided among 9,382 units, also a new high. The Sons of the American Legion closed the year with an enrolment of 38,862 members in 3,468 squadrons. The Forty and Eight membership rolled to a new high of 46,146 in 714 voitures. The Eight and Forty also broke all former records with a membership of 8,118 in 289 salons.

At the annual national convention Roane Waring, Memphis, Tenn., attorney, was elected national commander. (R. Wg.)

American Library Association. The official organization in the United States and Canada of librarians and others interested in libraries. Founded in 1876, the American Library association is the oldest and largest organization of its kind in the world and during 1942 had about 16,000 members from all continents. Keyes D. Metcalf, Harvard university library, was president for 1942–43.

Work.—The work of the A.L.A. is carried on by its officers; by more than 80 committees and boards of volunteer workers, covering such fields as federal and international relations, war information and education, postwar planning, and general library activities; and by a staff of 84 members. The address of A.L.A. headquarters is 520 North Michigan avenue, Chicago.

Objectives.—Complete and adequate library coverage for the

United States and Canada is one of the chief objectives. During 1942 a recount based on the 1940 census showed that 27% of the population of the United States (35,000,000 persons) is without library service as compared with 34% in 1938. Other objectives are to raise standards of library service and training, to improve the status of the profession, and to integrate its interests with those of the federal and local governments.

Income.—The association's income in 1941–42 (excluding cash balances on Sept. 1, 1941) was $554,800. Income from membership dues, conference, sale of publications, advertising, subscriptions, etc. was about $193,800; $278,000 came from outside sources in the form of grants for special purposes, and $83,000 was endowment income. The association's endowment is approximately $2,137,000.

Annual Conference.—"Winning the War and the Peace: How Libraries Can Help" was the theme of the 64th annual A.L.A. conference held June 22–27, 1942 in Milwaukee, Wis., and attended by more than 2,300 persons from every state in the union, six Canadian provinces, seven Latin-American republics and England. The annual Newbery medal was presented to Walter Dumaux Edmonds for his children's book, *The Matchlock Gun,* and the annual Caldecott medal to Robert McCloskey for his picture book, *Make Way for Ducklings.* James Oliver Modisette of Baton Rouge, La., was cited posthumously for his service to libraries, both as a library trustee and chairman of the Louisiana state library commission. Honorary A.L.A. membership was conferred on Frederick P. Keppel and Theodore S. Chapman for outstanding services to libraries. Officers of the newly formed Canadian Library council and the Council of National Library Associations of the United States and Canada, reported on progress in organization and planning.

War Activities.—An A.L.A. war policy statement urged "that every library give the greatest possible emphasis for the duration of the war to those materials and services which will give people the facts and ideas that will enable them to make intelligent decisions" on the issues involved in winning the war, planning for postwar America, and planning for the postwar world. A series of reports were made on a survey of war activities in public libraries and similar surveys were being considered for school, college and university libraries. Instead of the annual Midwinter conference a National Library institute on war and postwar problems was conducted in Chicago, Jan. 30–31, 1943, followed by similar regional and local institutes. At the suggestion of A.L.A., a librarian was appointed to the staff of the Office of War Information, as chief of the Library Liaison section. During the year 1942, more than 12,000,000 volumes were collected through the Victory Book campaign, which was expected to be augmented by a second campaign opening early in 1943. Close co-operation between the A.L.A. and various governmental departments and bureaus was maintained and some 4,000 libraries were receiving government publications on war-related subjects. A report on postwar planning covering standards for public libraries was made at the request of the National Resources Planning board. As a member of the U.S. office of education wartime commission, the executive secretary of A.L.A. participated in its activities, including studies of the probable shortage of school, college and library personnel. A shortage in professional librarians was expected to total about 1,200 by 1943. Many changes were being made in the programs and schedules of library school curricula to accelerate the preparation of new librarians under emergency conditions without lowering standards. The A.L.A. also issued numerous booklists, pamphlets and bulletins on war-related subjects in addition to publishing similar material in its six periodicals—*A.L.A. Bulletin, Booklist, College and Research Libraries, Journal of Documentary Reproduction, Hospital Book Guide* and *Subscription Books Bulletin.* Libraries were maintaining war information centres; supplying vocational and technical materials to war industries and workers; disseminating authentic information in the fields of history, economics, government and international relations; making available valid interpretations of the war's causes and aims; helping people to participate in postwar planning; and supplying recreational reading to relieve the strains of war.

International activities.—Projects in which the A.L.A. assisted were: the establishment of the Benjamin Franklin library at Mexico City; the conduct of a short library school in Bogotá, Colombia; the inauguration of a Books for Latin America project for supplying books by United States authors to Latin-American libraries; and the collection of scholarly journals for postwar shipment to libraries outside the U.S. During 1942 all international activities of the A.L.A. were co-ordinated under the newly created Board on International Cultural Relations. (M. O. P.)

American Literature.

Beyond the expected increase in war books of different varieties, 1942 did not differ to any noticeable degree from 1941 so far as tendencies in American literature were concerned. Of 100 novels worthy of consideration, more than a third dealt with historical subjects, and this was the only noticeable drift in fiction. Fewer and better books on South America made their appearance, the average output of poetry was below that of 1941 in quality, history and biography more or less held to the average, and aside from another expected increase in scientific books more or less relating to the war effort, the year was not unusual. Interest was strongly maintained in regions, rivers, ports and cities of the U.S.

Among the most noteworthy publications in a variety of fields may be mentioned Esther Forbes's *Paul Revere and the World He Lived In,* in which a distinguished novelist turned to the recreation of revolutionary Boston and vicinity with conspicuous success; Karl Schriftgiesser's *The Amazing Roosevelt Family, 1613–1942,* the whole history of the Roosevelts in the United States; Robert D. Feild's *The Art of Walt Disney,* which was more important for its significance than for its intrinsic quality, but which at least gave Mr. Disney the respect his great art deserved; Charles Morrow Wilson's *Ambassadors in White,* the story of tropical medicine, with strong bearing on Pan-American relations and a stirring account of scientific heroism. The most notable book of verse of the year was Robert Frost's *A Witness Tree,* in which Mr. Frost, passing 65, showed himself still master of his individual idiom.

Herbert Agar sounded a clarion call to his country in *A Time for Greatness,* an appeal for moral as well as physical heroism in this time of crisis and in the postwar period, and H. L. Mencken gave us a magnificent contribution to the art of quotation in *A New Dictionary of Quotations,* containing 1,000,000 words and 33,000 quotations. Marjorie Rawlings' *Cross Creek,* a collection of factual tales about her Florida friends, anecdotal and amusing, almost matched *The Yearling* in popularity, and among other miscellaneous books of lasting value was Lucy Salamanca's *Fortress of Freedom,* the story of the Library of Congress, with a foreword by Archibald MacLeish, librarian of Congress. Major Alexander P. de Seversky's *Victory Through Air Power* maintained categorically that with enough airplanes and men to fly them, the United Nations could win the war.

One of the most widely read books of the year was Joseph E. Davies' *Mission to Moscow,* a readable and valuable report on Russian affairs by the former ambassador. Willard Kiplinger's candid camera portrait, *Washington Is Like That,* the capital as it was in the midst of another war, was widely read and liked.

The War.—There were also many books on how to be a soldier, an art which some 5,000,000 young men were learning. There were a number of books on airplanes and their importance, in addition to the de Seversky volume already mentioned, among them *Parachutes* by Herbert S. Zim, which explained that America's own Billy Mitchell trained parachute troops in 1928, long before Russia or Germany had ever thought of such a thing. A biography of General Mitchell, *Billy Mitchell,* by Lester Cohen and Emile Gauvreau, reviewed the whole sad story of a man ahead of his times. Russell Whelan told the story of U.S. fighters against the Japanese in aid of China in *The Flying Tigers.* Naval strategy was discussed in *Admiral Sims and the Modern American Navy* by Elting E. Morison, a good biography, among its other merits, and naval action in *North Atlantic Patrol* by Lieutenant Commander Griffith Baily Coale, a seagoing artist who came home with many good paintings; while modern conceptions of ocean fighting were considered in Bernard Brodie's excellent *Sea-Power in the Machine Age.*

In war books, the Pacific area, where until the beginning of the campaign in North Africa U.S. efforts were concentrated, came in for the larger share of attention. There were such general books as *How War Came: An American White Paper; from the Fall of France to Pearl Harbor* by Forrest Davis and Ernest K. Lindley, a complete record of world-shaking events; *December 7, The First 30 Hours,* by the correspondents of *Life, Time* and *Fortune* and *The Face of the War, 1931–1942,* by Samuel H. Cuff, which with many maps gave a rounded story of the whole matter and proved to be an invaluable reference book. There were many excellent books on Japan by informed observers, such as Willard Price's *Japan Rides the Tiger,* Helen Mears's *The Year of the Wild Boar;* and *The Setting Sun of Japan* by Carl Randau and Leane Zugsmith, all balanced and fair accounts of the Japanese and their great adventure. Another valuable book of this kind was Frederick Moore's *With Japan's Leaders,* studies of outstanding Nipponese by the former adviser to the Japanese embassy in Washington. There were other excellent books covering larger aspects of affairs in the Pacific, such as Nathaniel Peffer's *What We Fight for in the Pacific,* the book of an "old China hand," and exceptionally valuable; *America in the New Pacific* by George E. Taylor, which looks into the future as well as the immediate past; *Ramparts of the Pacific* by Hallett Abend, a veteran correspondent in the East; and *The Ageless Indies* by Raymond Kennedy, which praised the Dutch as colonists and supplied a wealth of facts.

Clinton Hartley Grattan, who for years had been writing about Australia, presented the island continent anew in *Introducing Australia,* while Jean Potter performed a similar service in *Alaska under Arms.* There were several good books about the Philippines, and some other excellent ones about the heroism of U.S. soldiers who defended the islands. *Crisis in the Philippines* by Catherine Porter, revised and amplified in view of recent events and published by the Institute of Pacific Relations, was one of the best of these, and others of value included Joseph Ralston Hayden's *The Philippines,* written by one of the great living experts on the subject. Books dealing with the war in the island area numbered William Lindsay White's *They Were Expendable,* the thrilling story of the famous PT boats and their remarkable work, and John Hersey's *Men on Bataan,* a heroic chapter of U.S. national history that deserves to live. *Queen of the Flat Tops: U.S.S. "Lexington" and the Coral Sea Battle* by Stanley Johnston, was a saga of modern sea fighting told by an eye-witness, and Cecil Brown's *Suez to Singapore* was another first-hand account of such matters as the sinking of the "Prince of Wales" and the "Repulse." *The Raft* by Robert Trumbull, as told by Harold Dixon, told the curious tale of how three aviators lived for more than a month on a rubber boat in the Pacific.

Escaped correspondents like Wallace Deuel told of life in Germany in such books as *People under Hitler,* and Howard K. Smith described similar scenes in *Last Train from Berlin.* Ben Lucien Burman wrote of the thrilling deeds of the Fighting French in *Miracle on the Congo;* Wallace Carroll argued for Russia in *We're in This with Russia;* Robert L. Baker described the near eastern scene in *Oil, Blood and Sand;* and Elliot Paul, who wrote a classic in *The Life and Death of a Spanish Town,* produced a reminiscent book called

ALEXANDER DE SEVERSKY'S best-selling *Victory Through Air Power* was made the basis for a full-length film in 1942 by Walt Disney, shown (right) conferring with Seversky (left)

The Last Time I Saw Paris, which was interesting enough but not up to the earlier story of the island of Ibiza and the Spanish revolution. Russell Hill's *Desert War* was a vivid account of the fighting in and around Libya by one who was there.

Fiction.—Of novels by established authors the year produced only a moderate quantity. One of the best of these was James Gould Cozzens' *The Just and the Unjust,* in which a distinguished writer of a many-faceted talent examined the workings of the U.S. legal system in a small town with care and interest, producing one of his finest works. Louis Bromfield's *Until the Day Break,* a story of occupied Paris, was widely popular and one of the better of the later Bromfield books, although not within range, for merit, of his early American novels. John Steinbeck's best-seller, *The Moon Is Down,* a story of moral resistance to invading Germany, showed Mr. Steinbeck's cleverness and versatility but was a minor effort. Nancy Hale's *The Prodigal Women* was a sharp analysis of the feminine soul by one of the most noted short story writers of the day, and Eudora Welty produced a medium-length fantasy of merit in *The Robber Bridegroom,* her first venture into longer fiction. In 1942, Miss Welty, who in 1941 won second prize in the O. Henry Memorial prize short story contest, came first with *The Wide Net,* and the other prizes went to Wallace Stegner, Wilbur Schramm and Jeanne Eaton, Miss Eaton winning the special prize for a first published story. The 1942 O. Henry volume, edited by Herschel Brickell, contained 21 stories, one of the best of them being Miss Hale's *Summer—1913.* The 1942 edition of Edward J. O'Brien's *Best Short Stories,* edited by Martha Foley, also was excellent.

Of the usual flood of historical novels, many about the Revolutionary and Civil wars, one of the best was Howard Fast's *The Unvanquished,* which had George Washington for its central figure. Elizabeth Pickett Chevalier's *Drivin' Woman,* a southern story with an appealing heroine, was popular, although not of any special literary merit, and LeGrand Cannon, Jr.'s *Look to the Mountain,* a story of New Hampshire in the early days of the nation, was one of the surprise novels of the season, well conceived and strikingly well written. Other novels of past times included Philip Van Doren Stern's *The Drums of Morning,* a Civil War story from the abolitionist angle by a sound historian of the period; Oscar Lewis' *I Remember Christine,* a story of California in an earlier day; Laura Benét's *Come Slowly, Eden,* a story centring about Emily Dickinson, delicately and freshly told; James Street's *Tap Roots,* a novel of a county in Mississippi, Jones, which refused to secede during the Civil War, full of colour and vigorous action; and Vivien R. Bretherton's *The Rock and the Wind,* a well done story of the Pacific northwest.

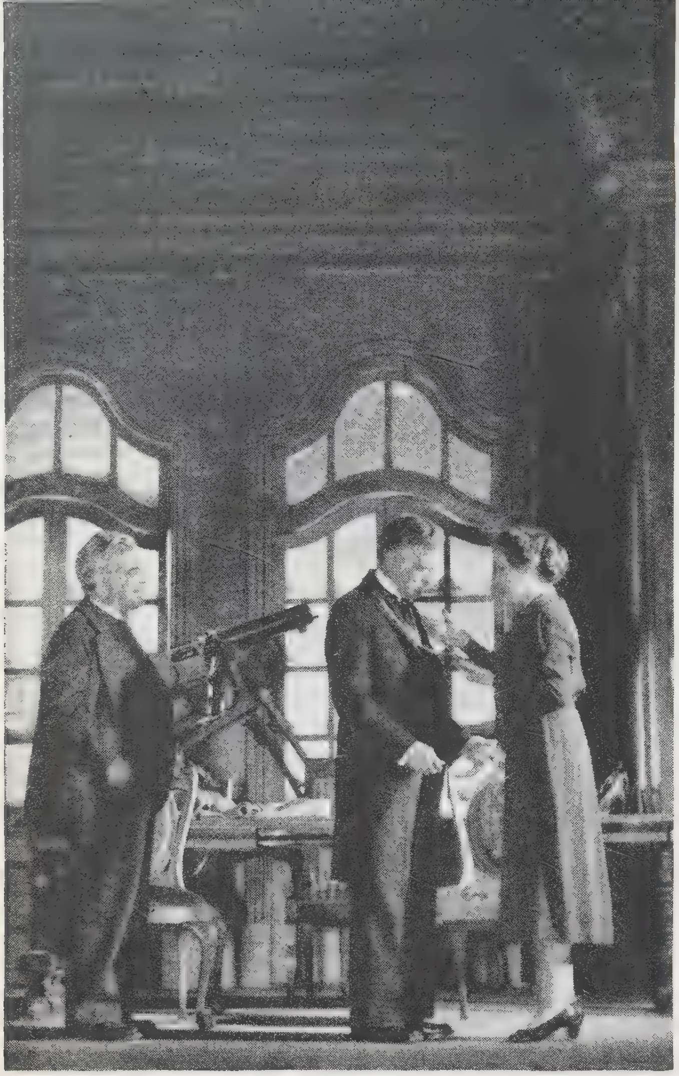
The war invaded the fiction field in unmistakable fashion, one of the most popular books of the year being a piece of humour by a soldier, *See Here, Private Hargrove.* The author's name is Marion Hargrove, and the book may be taken for autobiography. Other books on the subject were more serious and included two about Norway, the scene of Mr. Steinbeck's *The Moon Is Down.* One of these was Elliott Arnold's *The Commandos,* the description of a raid, and the other *The Edge of Darkness* by William Woods, which many reviewers considered superior to the Steinbeck book, on more or less the same subject. James Aldridge's *Signed With Their Honour* was filled with vivid descriptions of air battles, and Howard Hunt's *East of Farewell,* one of the notable first novels of the year, told of the North Atlantic patrol.

Other novels of the year that were outstanding included Austin Tappan Wright's fantasy, *Islandia,* which created a land and peopled it; Rachel Field's *And Now Tomorrow,* a curiously significant title for this author's last book before her death, and an excellent story of logging on Georgia's rivers; Brainard Cheney's *River Rogue,* an account of life in a little known region; William Bradford Huie's *Mud on the Stars,* the autobiographical story of a southern boy which was topical, since it dealt with the war, and was one of the striking first novels of the year; Alice Tisdale Hobart's *The Cup and the Sword,* a story of vintners in the American west, and worth reading; and Dawn Powell's *A Time to be Born,* a savage satire on writers and their world. Granville Hicks wandered back from communism to democracy in *Only One Storm,* and Marcia Davenport, who wrote *Of Lena Geyer* and an excellent life of Mozart, produced *The Valley of Decision,* a long novel of seven decades of American life, centring around one woman. Upton Sinclair completed his trilogy, of which *World's End* and *Between Worlds* had already appeared, with *Dragon's Teeth,* no less readable than its predecessors. The publication of a collection of short stories of South American tales called *Fiesta in November,* edited by Dudley Poore and Angel Flores, with an introduction by Katherine Anne Porter, was a genuine gesture of Pan-American amity.

The American Scene.—The year saw many interesting additions to series dealing with rivers, regions, ports and inland cities. A new series of informal biographies of the states was started with studies of *Georgia: The Unfinished State* by Hal Steed and *Desert Challenge; an interpretation of Nevada* by Richard G. Lillard. Other states which received attention were California in *Thirty-First Star,* by James A. B. Scherer, a story told in terms of leading figures; Washington in *The Roaring Land* by Archie Binns; *Texas; A World in Itself* by George Sessions Perry; and *Virginia Is a State of Mind* by Virginia Moore. The whole country was covered in beautiful photographs chosen by Samuel Chamberlain, the title of the collection being *Fair Is Our Land* (*The Portrait of America*), with an introduction by Donald Moffat. The excellent *Rivers of America* series, started by the late Constance Lindsay Skinner and carried on by Stephen Vincent Benét and Carl Carmer, added *The Sangamon* by Edgar Lee Masters, *The Allegheny* by Frederick Way, and *The Kentucky* by Thomas D. Clark. Walter Havighurst told the story of shipping on the Great Lakes in *The Long Ships Passing,* Karl Bickel explored west Florida in *The Mangrove Coast,* Hulbert Footner wrote lovingly of Maryland in *Maryland Main and the Eastern Shore;* Harold Sinclair did one of the outstanding jobs of the year in *The Port of New Orleans,* another book in a series already well established, and Provincetown found an affectionate chronicler in Mary Heaton Vorse, the book being called *Time and the Town.*

Other books of this variety ranged from a six-volume encyclopaedic study of one town, called *Yankee City,* edited by W. Lloyd Warner and Paul S. Lunt, done with a microscope, to Eric Thane's *High Border Country,* about the wide open spaces of Montana, the Dakotas, Wyoming and Idaho and filled with tall tales. The Folkway series edited by Erskine Caldwell, which got under way in 1941, added *Mormon Country* by Wallace Stegner, *Blue Ridge Country* by Jean Thomas and *Ozark Country* by Otto Ernest Rayburn, all excellent studies. Philip Ainsworth Means examined a famous monument in *Newport Tower.* Ben Robertson wrote eloquently and affectionately of western South Carolina in *Red Hills and Cotton;* Marion Nicholl Rawson added another volume of Americana in *New Hampshire Borns a Town, 1753–1853;* and Herbert Asbury wrote about oil in *The Golden Flood,* the story of the early days of black gold in western Pennsylvania.

South America.—Interest in the United States's southerly neighbours did not slacken in 1942, but there was a refreshing change in the general quality of the books on the subject. There were far fewer volumes by fast-flying journalists, otherwise known as parachutists, and far more by informed students of the subject. Brazil received most attention, with two studies centring about the nation's ruler: Karl Loewenstein's *Brazil under Vargas*



THE MOON IS DOWN, by John Steinbeck, was released simultaneously as a novel and as a play in 1942. In his story about the invasion of a small country (the resemblance to Norway is unmistakable), Steinbeck attempted to prove that it is impossible "to break a man's spirit . . . permanently." This scene from the play shows the heroic mayor (centre) of a town in the invaded country, with his wife and a friend

and Paul Frischauer's *A Biography of President Vargas,* both well done; Vera Kelsey's *Brazil in Capitals,* the account of 28 provincial capitals, carefully and accurately written; *Frontier by Air* (*Brazil Takes the Sky Road*) by Alice Rogers Hager, an account of the wonderful development of aviation in a country where the aeroplane is of supreme usefulness; and Donald Pierson's *Negroes in Brazil,* an absorbing study of the race situation in a country where prejudice is unknown and people of mixed blood are often preferred.

Of books on individual countries, John W. White's *Argentina* was the most important because of the great strategic importance of the largest of the Spanish-speaking countries in South America. Mr. White lived in the country as a newspaper correspondent for many years and is a careful, conscientious student of history and current affairs. Of general books, Preston James's *Latin America,* written from the point of view of the economic geographer, but readable as well as strikingly complete and accurate, was one of the best, and with it went Dana Gardner Munro's *The Latin American Republics,* perhaps the best one-volume history available in 1942. Paul Radin's *Indians of South America* covered a highly important subject creditably, and the veteran traveler Harry A. Franck, with the aid of Herbert C. Lanks, turned in an up-to-date account of a significant development in *By Pan-American Highway through South America,* 13,000 miles by what will be one of the most vital highways in the world. There are many good photographs in this timely volume. Thomas Harper Goodspeed's *Plant Hunters in the Andes* was a popular account of a notable botanical expedition, and the West Indies came in for their share of attention in Walter Adolphe Roberts' *The French in the West Indies* and Amy Oakley's *Behold the West Indies,* with illustrations by Thornton Oakley, both books of merit. Hoffman Birney retold the stirring story of the four Pizarro brothers, those most extraordinary of conquistadores, in a sound historical novel, *Brothers of Doom,* and in *The Days of Ofelia* Gertrude Diamant captured much of the irresistible charm of Mexico and the Mexicans. *The Panama Canal in Peace and War* by Norman J. Padelford was particularly timely.

Biography and Autobiography.—The momentary importance of Alaska in allied strategy gave special interest to Hector Chevigny's *Lord of Alaska,* the story of Baranov, that remarkable Russian who may rightly be called the father of the great land which was once known as "Seward's folly." The Civil War period engaged the attention of biographers as much as it did of historians, and Douglas Southall Freeman produced the first of three large volumes on *Lee's Lieutenants.* Vol. 1 covered the period from Manassas to Malvern Hill and touched on Beauregard, Johnston, Magruder, Garnett, Ewell, Stuart and Jackson, making the beginning of a set to go on the shelf with Dr. Freeman's definitive *Robert E. Lee.* John C. Pemberton, with the help of Dr. Freeman's introduction, tried to present a fair picture of the Philadelphia Quaker who commanded the southern troops at Vicksburg in a book called simply *Pemberton;* and William E. Brooks, author of *Lee of Virginia,* produced a good biography on the other side, with *Grant of Appomattox.*

Samuel Eliot Morison wrote a sailor's book about a sailor in *Admiral of the Ocean Sea: A Life of Christopher Columbus,* also published in a one-volume edition for popular consumption, which was a real contribution to a baffling subject, while there were two notable additions to recent studies of the men who built America's great fortunes, Wheaton J. Lane's *Commodore Vanderbilt; An Epic of the Steam Age,* and John K. Winkler's *Tobacco Tycoon,* the story of James B. Duke. Twenty-eight noted contemporary writers produced *There Were Giants in the Land,* 28 studies of great men, introduced by Henry Morgenthau, Jr.; Hendrik Van Loon filled a fat volume with short biographies of striking figures from the ages, called simply *Lives;* Saul K. Padover was the author of *Jefferson,* one of the finest of all the biographies of the noble Virginian; Harold B. Hinton did a portrait of a distinguished living statesman in *Cordell Hull,* with a foreword by Sumner Welles; and J. Brett Langstaff brought to life a famous doctor in *Doctor Bard of Hyde Park,* a study of revolutionary times in New York state and of an extraordinary individual.

Literary life stories included Sherwood Anderson's *Memoirs,* the final autobiography of a man who wrote many autobiographies; *Whittier: Bard of Freedom* by Whitman Bennet; and *The Life of Margaret Fuller* by Madeleine B. Stern. Matthew Josephson's *Victor Hugo* was a fine contribution of American scholarship to the study of an international figure.

History.—The Civil War and Abraham Lincoln were the two subjects that received the largest share of attention from the historians, and on the first subject the important books were Avery Craven's *The Coming of the Civil War,* a southern historian's documented arguments against the irrepressibility of the conflict; Wood Gray's *The Hidden Civil War: The Story of the Copperheads,* a striking illustration of the lack of national unity in the fatal sixties; and *Storm over the Land: A Profile of the Civil War,* made up of selections from Carl Sandburg's monumental life of Lincoln which relate directly to the war. The Lincoln books included *Lincoln and His Party in the Secession Crisis* by David M. Potter, a study of the Republican party between the election in 1860 and the outbreak of armed conflict in April 1861;

Abraham Lincoln and the Fifth Column by George Fort Milton, an account of plots all over the union to destroy it with uprisings; and *Lincoln among His Friends,* assembled by Rufus Rockwell Wilson—51 first-hand accounts of the liberator by people who actually knew him. The outstanding work of American history, however, was Thomas Jefferson Wertenbaker's *The Old South; The Founding of American Civilization,* a realistic and well done volume in a series which began with an admirable study of the middle colonies. Charles A. and Mary Beard tried to explain the nation with *The American Spirit,* made up of quotations from the leaders of the past and present, which showed that the United States had proceeded from the certainty of the earlier period to a time of doubt, hesitation and uncertainty in the later.

Belles Lettres.—Ferner Nuhn and Maxwell Geismar made important contributions to certain aspects of national culture, the first with *The Wind Blew from the East,* subtitled "A Study in the Orientation of American Culture," and mostly concerned with writers strongly under European influences, which will eventually be a trilogy on this subject, and the second with *Writers in Crisis,* an attempt to show the return to faith of Hemingway, Dos Passos and Steinbeck after a period of pessimism and doubt. The thesis itself was laboured and not proved, but there were highly stimulating studies of the writers mentioned, as well as Faulkner, Lardner, Wolfe, MacLeish and others.

Allen Tate and John Peale Bishop edited a large anthology called *American Harvest: Twenty Years of Creative Writing in the United States* and did not give their own group, especially in the south, the worst of it from the point of view of selection, while Bernard DeVoto continued to explore Twainiana, with *Mark Twain at Work,* notebooks on Tom Sawyer and Huckleberry Finn. E. B. White's collection of essays, *One Man's Meat,* proved again that White is one of the most original thinkers of the day.

Poetry.—The year produced only a handful of volumes of poetry of enduring importance, in addition to Robert Frost's contribution. Carl Sandburg's *Smoke and Steel, Slabs of the Sunburnt West* and *Good Morning, America* were collected into a single volume; Lew Sarett's *Collected Poems* also appeared; Genevieve Taggard proved a somewhat difficult singer in *Long View,* although still of obvious talent; and Hans Zinsser, author of *Rats, Lice and Men* and *As I Remember Him* revealed another side of a gifted man of science and writer in a fine volume of poems, *Spring, Summer and Autumn.* Arthur Davison Ficke's sonnets in *Tumultuous Shore and Other Poems* were of high quality, while Rolfe Humphries' *Out of the Jewel* spoke in original tones and manifested a striking mastery of technique. The war provoked Muriel Rukeyser's *Wake Island* and Mark Van Doren's *Our Lady Peace,* while Stephen Vincent Benét's radio play, *They Burned the Books,* was another powerful piece of propaganda against the dictators. (*See* also ENGLISH LITERATURE.)

(H. BL.)

American Medical Association.

In 1942 the American Medical association had more than 121,000 members out of about 152,000 doctors practicing medicine in the United States, and 180,000 licensed to practice. The annual meeting of the house of delegates in 1942 was in Atlantic City. The 1943 meeting, scheduled for San Francisco, was cancelled, but the house of delegates was to meet in Chicago in June 1943. The association had a gross income of approximately $2,000,000 annually. It is incorporated not for profit.

The association actively participated in the war effort in 1942 through its committee on war participation and through the publication of a periodical called *War Medicine.* In the headquarters office of the association a suboffice of the War Manpower commission was established, charged with aiding in the procurement and assignment of physicians for the army and navy, and the public health service, industrial medicine and the civilian population.

The headquarters office is located at 535 North Dearborn st., Chicago, Ill. The association publishes the *Journal of the American Medical Association,* with a circulation of 105,000 weekly; *Hygeia,* with a circulation of more than 125,000 monthly, and other medical journals in each of the medical specialties. The association also publishes the *Quarterly Cumulative Index Medicus,* which indexes regularly the contents of 1,400 medical periodicals, and a directory of all U.S. physicians. At the end of 1942 the association began distribution of a fortnightly letter to the army and navy, the public health service and all medical officers, to keep them abreast of progress in medical science.

The library of the American Medical association conducts a package library service, sending packages of articles and reprints to physicians throughout the nation to aid them in keeping themselves up-to-date on subjects of interest and importance in medical advancement. Particularly requested during 1942 were articles on the sulphonamide drugs, industrial diseases, anaesthesia, vitamins, tuberculosis, the war, national defense problems and aviation medicine.

The council on pharmacy and chemistry of the American Medical association standardizes drugs sold only on prescription, and reports on all new advances in the field of drugs. Reports in 1942 included bacteriophage therapy, human blood plasma and serum, glandular products and vitamins.

The council on physical therapy gave special attention in 1942 to apparatus for artificial respiration, audiometers and hearing aids. The council on foods and nutrition was exceedingly active in the improvement of foods by restoration of important vitamins and minerals and in the consideration of vitamin products.

The council on industrial health investigates industrial health services, standardizes industrial health organizations, and advises on all health problems in industry. The bureau on health education conducts radio programs and circulates thousands of pamphlets on health subjects. The bureau of legal medicine and legislation is concerned with standards of proposed federal and state legislation in the field of health. The bureau on medical economics makes available complete data on the economics in medical practice, carrying on constantly studies of the distribution of physicians, prepayment medical service plans, and similar projects. The bureau of investigation is charged with studies of quackery and nostrums. The bureau of exhibits provides exhibits for state and county medical societies, national medical associations, and many public agencies.

(M. FI.)

American National Red Cross: *see* RED CROSS.
American Samoa: *see* SAMOA, AMERICAN.
American Volunteer Group (Flying Tigers): *see* CHENNAULT, CLAIRE L.
American Youth Congress: *see* YOUTH MOVEMENTS.

Amulree, William Warrender Mackenzie,

1ST BARON (1860–1942), British lawyer and labour mediator, was born August 19 near Perth, Scotland. He attended Edinburgh university and University college, London, and was called to the bar in 1886. He became a King's counsel in 1914 and privy councillor in 1930, maintaining both positions until his death. Lord Amulree, who was raised to the peerage in 1929, joined the MacDonald cabinet as secretary of state for air, and was president of the air council, 1930–31. He was also air minister in MacDonald's second cabinet and was active as arbitrator in labour disputes. He was chairman of the royal commission on licensing laws, 1929–31, and president of the industrial court of Great Britain, 1919–26. Lord Amulree died at Winterbourne, Wilts., May 5.

Anaemia. After three years of war no significant change in the level of haemoglobin was noted in infants in England, but there was a decrease in that of school children. A moderate decrease in the percentage of haemoglobin in women and children living in London was attributed to wartime diets. Pregnant British women of the artisan class were more anaemic than before the war. Iron medication is prophylactic.

Following haemorrhage there is a significant increase in the volume of water in cardiac muscle, the pancreas, pylorus, duodenum, colon, skin and liver, but not in skeletal muscle. After haemorrhage, hemodilution is complete in 24 hr. in normal individuals and in 3 to 4 days in patients who have undergone operations. After chronic haemorrhage in dogs, more haemoglobin than plasma protein is produced, regardless of the kind of protein used in the diet. The average time required to regenerate haemoglobin after donation of 555 cc. of blood is 49.6 days. The period is shortened to 35.2 days when 1 g. of iron and ammonium citrate is given daily. Liver and liver extract have value as accessories in haemoglobin regeneration after venesection in dogs. The iron of white bread is available for haemoglobin regeneration, but not that of brown (wheatmeal) bread. In anaemic rats, antiacids (calcium carbonate, aluminum hydroxide) reduce iron retention. In the absence of bile, anaemic dogs absorb iron normally when the diet is low in neutral fats but not when the fat content is high. Radioactive iron, liberated from dissolved "tagged" erythrocytes in acetylphenylhydrazine anaemia, is promptly reutilized, nearly quantitatively, in the regeneration of new red blood cells. In experimental anaemia in dogs, copper therapy is followed by an irregular, moderate increase in haemoglobin. Radioactive copper appears rapidly in the circulating red blood cells of anaemic dogs, after ingestion. Reserve iron stores, rather than the degree of anaemia, control the absorption of radioactive iron in anaemic dogs. The controlling mechanism is in the mucosa of the gastro-intestinal tract. In the treatment of dogs with anaemia of chronic haemorrhage, human liver is 20% to 60% more effective than animal liver.

Transfusion of blood, fluids and marrow cells via the sternal marrow cavity came into more general use. Transfusions were given successfully via the corpus cavernosum of the penis. The Rh factor received additional attention as an element in the etiology of erythroblastosis foetalis and as a source of transfusion reactions. The Rh antibody may be excreted in the milk of mothers of babies with erythroblastosis. Multiple transfusions to Rh negative recipients from Rh positive donors are potentially dangerous. There is a transitory increase in serum bilirubin after the transfusion of "stored" blood which is not present when fresh blood is used. Group O blood, in which the isoagglutinins have been neutralized by purified A and B substances, may be used safely in exsanguinating haemorrhages. Transfusion of plasma is effective in restoring the blood volume after small haemorrhages. "Conditioned" or "safe" universal blood was used more extensively in transfusion. A "fourth type" of erythroblastosis foetalis, showing hepatic cirrhosis, was described.

Serial bone marrow studies in patients with pernicious anaemia showed an increase in the degree of maturation of red blood cells, six hours after liver extract therapy. In three to four days the marrow is converted to the "normoblastic" type. In "pernicious" (megaloblastic) anaemia of pregnancy, the bone marrow is identical with that true (Addisonian) pernicious anaemia caused by arrested maturation of the megaloblasts. Hypoprothrombinaemia in pernicious anaemia (40% to 60% of the normal) is corrected by liver therapy but not by vitamin K. Additional cases of acute hemolytic anaemia after phenothiazine, sulphathiazole and sulphanilamide were reported. The primary pathogenesis of Cooley's anaemia is a disturbance of porphyrin metabolism. In acetylphenylhydrazine anaemia, the mechanism of erythrocyte destruction lies in the damaging of the red blood cells so that they are phagocytized by cells of the reticuloendothelial system. The blood plasma iron is abnormally high in dogs with anaemia from pyridoxin deficiency. With recovery, on pyridoxin therapy, the level is restored to low normal.

The fundamental pathologic physiology of sickle cell anaemia is thrombosis. This may result in cerebral thrombosis. Painful abdominal crises in sickle cell anaemia may be due to splenic infarcts with stretching of the capsule. Additional cases in white (Italian) families have been discovered. The bleeding in haemophilia may be controlled by the intravenous injection of lyophile human plasma. Infection, ileus, phlebitis and pulmonary complications are more frequent after hysterectomy in patients with anaemia than in those with normal haemoglobin content. The porphyrinuria of lead poisoning is not the result of haemolysis, but of dyshaemopoiesis. "Target" red blood cells are hyper-resistant cells produced by the bone marrow in response to blood loss. They are not the fundamental pathological cell of Cooley's anaemia but are temporarily present during the regenerative phase of any acute anaemia and for longer periods during chronic anaemia.

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Anaesthesia. In Jan. 1942 the use of continuous caudal anaesthesia for labour and delivery was developed by Waldo B. Edwards and Robert A. Hingson, passed assistant surgeons, United States public health service, United States Marine hospital, Staten Island, N.Y. This was the most unique and outstanding contribution of the year in anaesthesia. Technical difficulties, such as breakage of needles, caused trouble at first. The suggestion of Dr. R. C. Adams of using an in-dwelling ureteral catheter was an ingenious alternate method of producing continuous caudal anaesthesia. This procedure reopened the question of anaesthesia in obstetrics. Much good was expected to come of the revival of interest. Among the most outstanding advantages are: little or no moulding of the head of the new-born with a minimal amount of respiratory difficulty for the baby, little or no pain for the mother, and a practical demonstration of the innervation of the uterus. The results obtained with this method depend on the skill and care in carrying out the procedure in order to avoid trauma and infection, and to avoid its use in cases in which patients do not tolerate local anaesthetics. Lemon's continuous spinal anaesthesia, the method which suggested continuous caudal anaesthesia, continued to be more and more widely used.

The year 1942 saw the army and navy of the United States giving equal consideration to medical officers in anaesthesia. This encouragement to the specialty gave added impetus to its advancement. This was reflected in increased activity and effectiveness of organizations of anaesthetists; that is, the American Board of Anesthesiology, Inc., the American Society of Anesthetists, the section on anaesthesiology of the American Medical association, the International Anesthesia Research society, the National Research council, and many sections on anaesthesiology of state medical societies.

Pender, Ashburn and Essex, acting on the suggestion of Captain F. R. Hook, (M.C.) U.S.N., investigated the question of the use of sulphonamide drugs in the presence of shock in anaesthetized animals. They found that sulphanilamide did not increase the risk to the animal and in some instances seemed to be beneficial. That is, some animals which had received sulphanilamide and which had suffered from shock lived longer while anaesthetized than did those which had not received sulphanilamide.

The teaching of anaesthesiology in medical school was assisted materially by the splendid discussion of anaesthetics in *The Pharmacological Basis of Therapeutics*. The plan of the National Research council for the training of medical officers, which included those engaged in anaesthesiology, increased considerably the number of physician anaesthetists. The experience derived from the courses of instruction developed intensified methods of teaching, stressed certain techniques and resulted in many successful teaching programs. (*See* also SURGERY.) (J. S. L.)

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Anderson, Kenneth Arthur Noel (1891–), British army officer, was born Dec. 25 and was educated at the Royal Military college, Sandhurst. Starting in the army as a 2nd lieutenant in the Seaforth Highlanders, 1911, he was wounded in World War I and was awarded the military cross. After the war, he advanced through the grades and was made major general in 1940. Gen. Dwight Eisenhower, U.S. commander of Allied forces in Africa, selected Gen. Anderson as one of his three task force commanders in French North Africa. Appointed acting lieutenant general, Gen. Anderson led the British 1st army, supported by U.S. auxiliary and assault units, that advanced on Tunisia shortly after the initial Allied landings on Africa, Nov. 8, 1942. Anderson's forces made rapid progress in the early stages of the campaign and closed in on the axis strongholds of Tunis and Bizerte. Hitler, however, rushed reinforcements in planes and men to his Tunisian beachheads and brought Anderson's forces to a temporary halt by Dec. 5, at the villages of Tebourba and Mateur.

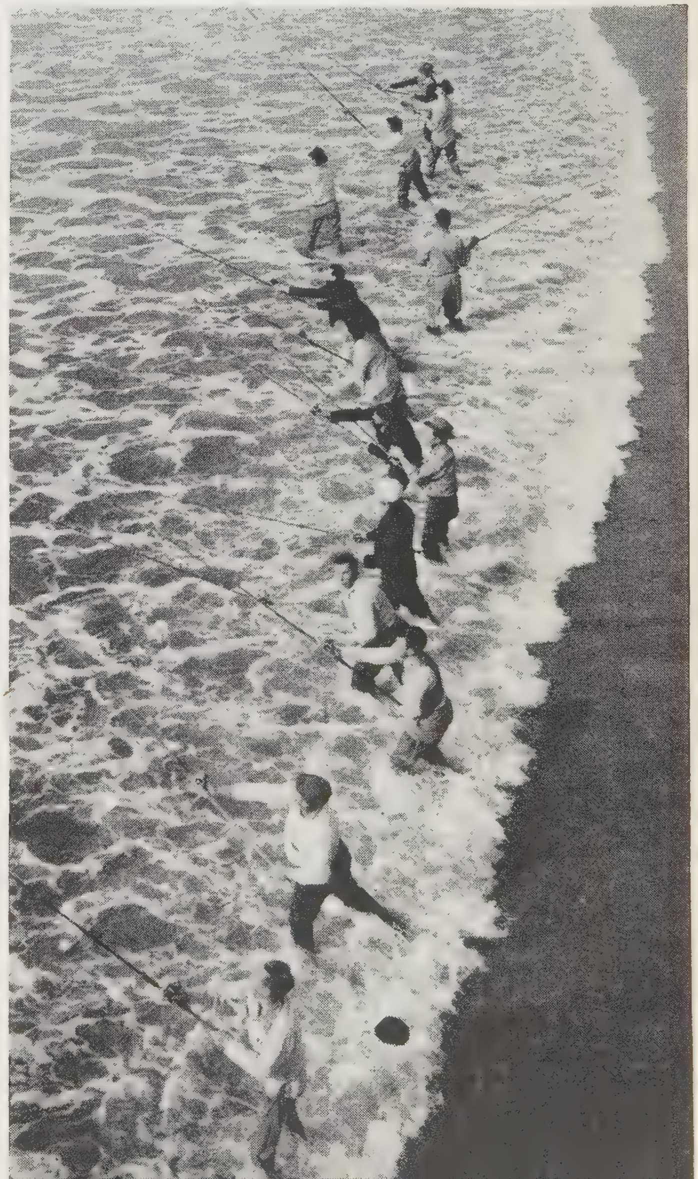
Andrews, Frank Maxwell (1884–), U.S. army officer, was born Feb. 3 in Nashville, Tenn. He was graduated from West Point, 1906, became a cavalry lieutenant and was promoted through the grades to colonel in 1935. Gen. Andrews saw service in the Philippines, 1906–07, and in Hawaii, 1911–13. He was a major with the signal corps during World War I and served with the U.S. army of occupation in Germany, 1920–23. He was appointed temporary major general of the air corps in 1935 and major general commanding G.H.Q. air force, 1936–39. While in the latter post, Andrews piloted an army air corps amphibian bomber 1,425 mi. from San Juan, Puerto Rico, to Langley field, Va., setting a new world's distance and straight-line record for amphibian planes. In Sept. 1941 he was promoted to the rank of lieutenant general and head of the Caribbean defense command and the Panama canal department. On Nov. 4, 1942, Gen. Andrews was given command of U.S. forces operating with the British in the middle east zone, and was awarded the D.S.M. on Dec. 19 for his role in the defeat of Rommel.

Angling. Coast guard regulations kept fishing boats away from most of the marine big-game fish grounds; many small craft were requisitioned for government use; tire and gasoline rationing affected both salt- and fresh-water anglers.

Added to this, priorities stopped the manufacture of fishing tackle early in the spring, for the duration of the war. Stocks on hand, at the end of the year, were estimated to last but a few months. Many items were unobtainable, notably rods and reels.

Tournament activities were greatly reduced, but interest remained keen in the events which were held. Among them was the

ANGLING EXPERTS practising for the U.S. All-Western Surf Casting tournament held at Long Beach, Calif., March 7, 1942



All-Western Surf Casting tournament at Long Beach, Calif., March 7.

No world's records were broken in salt water. The largest tuna taken by angling, according to available records, was a fish of 816 lb., caught by Frank Sawyer off Bailey's island, Me., in the late summer.

Striped bass runs were plentiful, and many fish weighing over 40 lb. were taken. The largest caught with rod and reel weighed 58 lb.—a fine specimen, but 15 lb. lighter than the world's record fish. Few broadbill swordfish were taken by angling, as most of the fishing waters lie within restricted zones.

A new world's record was established by a woman angler in a popular branch of the sport—wall-eyed pike fishing. Hazel Griffin of Akron, Ohio, captured a walleye weighing 19 lb. 12 oz., thereby bettering the existing rod-and-reel record of 18 lb. by 1 lb. 12 oz. This, incidentally, is the largest wall-eyed pike ever recorded captured by any method. The fish was taken at Deep Bay, Ont., Can., on June 16. (W. J. Sh.)

Anglo-Egyptian Sudan. A territory under the joint sovereignty of Great Britain and Egypt in northeastern Africa, south of Egypt (*q.v.*). Area 967,500 sq.mi.; pop. (est. Jan. 1, 1941) 6,362,852. Chief towns (pop. Jan. 1, 1941): Khartoum, inc. Khartoum North (61,641), Omdurman (117,041), Port Sudan (26,255), Atbara (19,757), El Obeid (33,328). Governor general: Lt. Gen. Sir Hubert Huddleston; languages: English and Arabic; religion: Mohammedan.

History.—With the fall of Gondar toward the end of 1941 the Sudan became remote from the active operations of the war; its effects on the ordinary inhabitant were reflected only in the increased cost of living and in the scarcity of such few luxuries as were in common demand, particularly sugar. As a result of the military operations based upon the Sudan the material condition of the people had been good, and since the Sudan was still playing its part in furnishing supplies, particularly sheep, cattle and camels, the prosperity in 1942 seemed likely to continue. There was much money in the country and little upon which to spend it. The cattle owner and the cultivator benefited, but the control of exports and of prices of essential foodstuffs protected the town dweller. The cost of living increased slowly, but the position generally was regarded with satisfaction. The decrease in the import of cotton piece goods, always an important factor in Sudan life, led to the revival of local spinning and weaving. This was formerly a widespread industry; Sudan cotton cloth, if not of the finest texture, was noted for durability. The Gezira cotton crop for 1941-42, averaging some 4 kantars to the feddan, was all shipped before the end of August. A noteworthy event of 1942 was the opening of the broadcasting station in Omdurman in February, when opportunity was taken to broadcast messages to some of the tribal gatherings. The events in India and the failure of the Cripps mission aroused great interest among the educated and politically-minded classes. A record number of pilgrims, including many from Eritrea and Ethiopia, were carried from Port Sudan and Suakin to Jidda for the pilgrimage. (B. H. B.)

Education.—(Jan. 1, 1941) Government schools: elementary schools 137, scholars 17,184; intermediate schools 11, scholars 357; Gordon Memorial college: scholars 1,308; state-aided Koranic schools 501, scholars 23,000; scholars at nongovernment (mission) schools 12,925.

Banking and Finance.—In 1940: revenue £E7,143,731; expenditure £E7,052,899; public debt (Dec. 31, 1940) £E10,023,570; exchange rate £E1 = £1 0*s.* 6*d.* = approx. $4.14 (U.S.) in 1942.

Trade and Communication.—In 1941, imports were valued at £E5,466,901; the value of exported merchandise amounted to £E8,547,327; re-exports £E337,718. Communication: roads, suitable for motor traffic, all weather, *c.* 1,000 mi.; railways 1,991 route miles; river service 2,325 mi.; motor vehicles licensed (1937) 4,354 cars, commercial vehicles and cycles; telephone subscribers (1938) 2,383.

Agriculture and Mineral Production.—(1938–39) Production (in metric tons): cotton seed (1940–41) 89,300, ginned cotton (1940-41) 49,600, millet (1937–38) 315,000, sesamum 33,200, maize 10,300, wheat 8,200, ground-nuts 8,600, barley 1,600, gold (1938) 252 kg.

Angola: *see* PORTUGUESE COLONIAL EMPIRE.
Animal Fats: *see* VEGETABLE OILS AND ANIMAL FATS.
Annam: *see* FRENCH COLONIAL EMPIRE.

Annenberg, Moses Louis (1878–1942), U.S. publisher, was born Feb. 11 in Insterburg, East Prussia. His father, a small shopkeeper, emigrated in 1885 with his eight sons to Chicago, where Moe shifted from job to job until he joined the subscription department of the *Chicago Tribune*. He then became circulation manager of the *Chicago Examiner*, 1904, and three years later went to Milwaukee as distributing agent there for all Chicago papers. In 1917 he became publisher of Arthur Brisbane's *Wisconsin News*, and was circulation manager of the Hearst newspaper chain, 1919–26. In 1922 he bought the *Daily Racing Form*, which became the foundation-stone of the "Annenberg empire." He introduced the relaying, by phone and wire, of race results to "bookies" throughout the country on such a scale that he was the fifth largest customer of the American Telephone and Telegraph company. Expanding his interests, he acquired radio, screen and pulp magazines and newspapers; in 1936 he bought the *Philadelphia Inquirer*. In 1939 he pleaded guilty to a federal charge of income tax evasion and although he agreed to pay $9,500,000 in settlement of all the government claims, he was nevertheless sentenced to a three-year term in a federal prison. He was released in June 1942 and died in Rochester, Minn., July 20.

Anniversaries and Centennials: *see* CALENDAR, 1942, page xx.
Antarctic Exploration: *see* EXPLORATION AND DISCOVERY.

Anthropology. Anthropology in 1942, was facing a paradoxical crisis: the increasing employment of anthropologists in the war effort as administrators and consultants and the growing recognition of the value of anthropology in dealing with the many problems of human organization arising out of the emergency was accompanied by a marked decrease in the production of trained anthropologists. This crisis was the result of the marked difference which had grown up in recent years between the teaching of anthropology and its practice, a difference accentuated by the fact that almost all of those responsible for the modern trend were in government service and no longer free to influence teaching. Lacking this influence, little was done to reorganize curricula so that students could be fitted to the need of government agencies and the armed services, and no emphasis was placed, in the colleges, on the contributions anthropology could make and had already made.

The extension of U.S. activities over the face of the globe created a basic need for people who were able to appraise the way in which widely differing groups of people could be fitted most effectively into the war effort and brought to co-operate fully with U.S. representatives. This seemed particularly important if the groundwork was to be laid for the rehabilitation of these areas and their eventual participation in a world-wide system. A similar lack of trained investigators was being faced in the U.S. where the dislocations in community functioning due to the radically changing industrial structure, the many organizational difficulties in industry and government resulting from the process of applying controls over the habitual routines of every citizen, whether as producer or consumer, and the concomitant maladjustments in individual lives were all problems for whose diagnosis and solution anthropology is of great value.

The year 1942 brought forth a number of important advances in knowledge, although the amount published was sharply reduced. C. M. Arensberg and D. Macgregor demonstrated the steps by which the increase in size and volume of business of an industrial company brought about marked changes in its organizational structure. In this company, the engineering department, which had been an important staff unit, moved gradually into a line position several steps lower in the hierarchy without management being aware of what was happening until the resulting increase in generalized dissatisfaction among the engineers made them realize that something was wrong. From this study, it is clear that similar changes with consequent loss of efficiency and lowering of morale must be looked for in almost every organization, such as the several agencies of the federal government and the war industries which underwent a tremendous expansion in number of employees and in volume of business handled ("Determination of Morale in an Industrial Company," *Applied Anthropology,* vol. 1, no. 2).

F. L. W. Richardson, Jr. published the second part of his analysis of a resettlement project in which he showed that the influence of regional forces upon small resettlement projects was so great as to make it extremely unlikely that they would be able to achieve a stable community existence if the region itself was in an unstable state. He emphasized that the solution of the unemployment problem could only be achieved in terms of regional planning based upon the utilization and modification of existing systems of relations ("Community Resettlement in a Depressed Coal Region II," *Applied Anthropology,* vol. 1, no. 3).

J. Gillin in a study of the Flambeau Chippewa showed how the effects of continual changes in the administrative policies of the agency system quite unwittingly were to condition the Indians to a habitual state of uncertainty and apathy which resulted in extremely poor assimilation during the period 1885–1934 ("Acquired Drives in Culture Contact," *American Anthropologist,* vol. 44, no. 4).

The publication of *Principles of Anthropology* by E. D. Chapple and C. S. Coon (Holt, New York) marked the appearance of the first textbook in the field in which the analysis was based upon the properties of human interaction. It provides a systematic account of the physiological basis of human behaviour and the ways in which environment and technology acting on human relations combine to build up human institutions. Together with C. M. Arensberg, Chapple and Coon presented before the American Academy of Arts and Sciences a symposium, "Anthropology and World Equilibrium," in which they outlined the principles which they considered to be basic in organizing and administering a world system. They discussed the reasons for setting up political units (which would form the component elements of a world organization) which represent natural geographic-technological regions within which trade and the exploitation of natural resources occur within the bounds set by natural barriers, climate and the common highways of travel. They emphasized the necessity for a world police force, the inclusion of all peoples in the system, and the fundamental significance of democratic systems of government in maintaining stability and promoting administrative efficiency. They warned against the failure to plan such a system long in advance, working out the specific steps to be taken and the timing required to put them into operation. They also stressed the importance of using the task of feeding the starving populations and returning the economy to a peacetime basis as mechanisms by which populations could begin to be educated to use the new machinery (*Proceedings of the American Academy of Arts and Sciences,* vol. 75, no. 1).

Also concerned with the utilization of full human resources in the war effort was M. Mead's popular book, *And Keep Your Powder Dry* (Morrow, New York), which gives her conception of the basic behavioural characteristics of the people of the United States which have to be taken into account if full efficiency is to be obtained. Basing her analysis on the way in which children are brought up and the conduct patterns which result, she points out how these differ from those found in other countries. She then goes on to suggest ways in which the administrator should handle people on the home front to secure full and wholehearted co-operation.

Another active field for anthropology in 1942 was the work of the Committee on Food Habits of the Division of Anthropology and Psychology of the National Research council. This committee fostered a large number of studies intended to help determine how food habits can be changed in order to raise the nutritional status of the people of the United States and ultimately of other peoples of the world. The research had two major aspects, determining existing patterns of food habits and testing out methods of changing them. M. Cussler and M. deGive of the Office of Defense Health and Welfare Services, Office for Emergency Management, published one such study which indicated the importance of working out the regional network of relations in order to determine what persons were in a strategic position to institute changes and how these changes had to be introduced so as not to destroy habitual routines which played an important role in the existing system of relations ("The Effect of Human Relations on Food Habits in the Rural Southeast," *Applied Anthropology,* vol. 1, no. 3).

Facing the need for a stocktaking in the methods of investigation actually being employed to solve problems of human relations, the Society for Applied Anthropology devoted its annual meeting, held in Washington, D.C. in Oct. 1942, to a critical evaluation of methods used to deal with specific problems and the results obtained by their use. Four major topics were discussed: the mapping of spacial relations with the emphasis on means of defining environmental influences; methods of making observations on the relations of individuals with much attention being paid to new methods of measurement which have recently been introduced; techniques of interviewing; and the relative value of the different methods in dealing with specific problems. The results of the discussion were to be summarized and issued as a handbook in 1943. Dr. John Provinse of the War Relocation authority was elected president of the society for the term 1942–43.

Because of the war, the annual meeting of the American Anthropological association which was to be held in Toronto in December was abandoned. (E. D. C.)

Anti-Aircraft Guns: *see* Munitions of War.
Antigua: *see* West Indies, British.
Antilles, Greater and Lesser: *see* West Indies.

Antimony.

There was little information available on world production of antimony, or on the supply in the United States. Efforts were being made to expand ore production in the United States in several different localities, particularly in Alaska, Arizona, California, Montana, Nevada, Oregon and Washington, but nothing was made public on the results. Imports were being maintained; the metal in ore imported in the first nine months of 1941 being only slightly less than the total for 1940, while metal receipts were several times the usual amount; receipts from China were of course cut off completely, but South American and Mexican ores were arriving in good volume.

Bolivian exports of antimony increased from 11,753 metric tons in 1940 to 14,870 tons in 1941. Peruvian exports were 1,463 tons in 1941, and were expected to double in 1942. The Mexican output, which had formerly furnished the largest share of the United States imports, declined from 12,267 tons in 1940 to 11,132 tons in 1941. (G. A. Ro.)

Anti-Saloon League of America, Inc. The Anti-Saloon League of America is a non-partisan, interdenominational, federated temperance organization formed in 1895. During 1942 its state activities consisted of temperance education, efforts to secure reduction in the number of liquor licences and limitations upon hours of sale, and local option elections on sale of liquor in local communities. In the units voting, non-sale prevailed by 8 to 6.

In Arkansas the voters approved by a vote of 52,830 to 41,040 an initiated law providing that on petition of 15 per cent of the qualified electors (instead of the former 35 per cent), special local option elections may be called in counties, townships, municipalities, wards or precincts on the question of the manufacture or sale of intoxicating liquors, *i.e.,* any beverage containing more than one-half of 1% of alcohol by weight.

Nationally, the league centred upon petitions and appeals to the administrative and legislative branches of the government to minimize the evils of liquor during the war. Many restrictions were imposed on the manufacture and sale of alcoholic beverages, such as the conversion of the distilleries to the production of industrial alcohol, limitations on materials used in processing liquors, curtailing hours of sale and, to some extent, rationing.

The subject of liquor in relation to the armed forces came before congress when Senator Josh Lee, on Oct. 22, offered in the senate an amendment to the Gurney Teen Age Draft bill to incorporate therein the text of a bill introduced by the late Senator Morris Sheppard to prohibit the sale or possession of alcoholic beverages within military or naval establishments, and to authorize the secretaries of war and the navy to establish reasonable zones around such establishments within which the sale or possession of alcoholic beverages would not be permitted. This was opposed by the war and navy departments, and on motion of the majority floor leader the amendment was committed to the Senate Military Affairs committee for hearings by a vote of 49 to 25, 22 not voting.

Subsequently, on Nov. 16, the senate, by a vote of 44 to 19, 33 not voting, refused to consider the Sheppard bill itself, which had been reported by the Military Affairs committee without recommendation. National headquarters are at 131 B st. S.E., Washington, D.C. (*See* also LIQUOR CONTROL.) (E. B. DU.)

Anti-Semitism. Hitler reiterated, on Jan. 31, 1942, the ninth anniversary of the establishment of his régime, that he aimed at the physical extermination of the Jews in Europe, of whom by then about 7,000,000 were under his rule or influence. After the R.A.F. raids on Cologne the German propaganda minister, Josef Goebbels, declared that Germany proposed to carry out in reprisal a mass extermination of the Jews throughout Europe, and "perhaps even beyond Europe." This extermination proceeded during 1942 in almost continuous pogroms of the Jewish population of eastern Europe.

In German controlled countries Jews were denied ration cards, given to the rest of the population, for clothing and for many essential articles of food, with the exception of bread and potatoes. For their purchases only one hour in the late afternoon was allotted, and this only in a few stores. More than 2,000,000 Jews were confined to newly created ghettos, where living conditions, especially the lack of sanitation, were responsible for an unprecedented death rate among the inhabitants. Especially dreadful were the conditions in the conquered Russian territories and in the parts of the Ukraine occupied by the Rumanians.

Most of the Jews of central and western European countries which came under national socialist domination were transported to eastern Europe, where they were either shut up in overcrowded ghettos or, irrespective of age or training, put to heaviest menial work. All their property was confiscated; they did not enjoy any protection of law or any security whatsoever. The yellow badge had to be worn by Jews in all countries occupied by Germany. This badge excluded them not only from the use of any cultural or social institution and from the enjoyment of any recreation, but also from every contact with non-Jews. All Jewish social, cultural and religious institutions were destroyed or forbidden, and Jews were not allowed to use any public means of transportation, to own radios or to visit parks.

The situation of the Jews in Italy, Hungary and non-occupied France was slightly better than in Germany. Yet even in those countries Jews were deprived of all political and social rights and were excluded from all professions and all gainful occupations, with the exception of a few kinds of menial labor. The official propaganda singled out the Jews as responsible for the war. This propaganda campaign against the Jews was conducted with especial violence in Italy, where the American war effort was identified with Judaism.

The greatest deterioration in the Jewish position happened in 1942 in France. In the occupied zone, measures were introduced on July 14 which excluded them entirely from any contact with the French people and reduced their status to that of the German Jews. In the early fall, thousands of Jews born outside of France, but having found a refuge in that country, were deported to eastern Europe. Families were separated, small children left behind. Soon these measures were extended to the nonoccupied zone, where the accession of Pierre Laval to power marked a very far-reaching degeneration of the status of all Jews. On May 8, 1942, Marshal Pétain named Darquier de Pellepoix the new general commissioner of Jewish affairs in France to replace Xavier Vallat, an anti-Semitic leader in France before World War II, who was much more moderate than his successor. De Pellepoix was one of the most militant of anti-Semites.

The extreme anti-Semitic measures of the German administration and the Laval government aroused in France bitter criticism and open opposition on the part of the non-Jewish population. Some of the leading Catholic prelates of France protested against the inhumanities perpetrated upon the helpless Jews. The new violent forms of anti-Semitism were recognized as the most ingenious single device of German propaganda in its efforts to weaken Germany's adversaries by disseminating racial and religious strife and by undermining the foundations of democracy and Christianity.

Of the countries under German influence yet not occupied directly by Germany, it was only in Bulgaria that the anti-Semitic measures of national socialism were applied with full ferocity, a ferocity only equalled by the persecutions and wholesale massacres in Rumania. On the other hand there was much less open anti-Semitism in the western hemisphere, where, with the exception of Argentina, propaganda of a pro-fascist nature and appeasement policies toward fascist ideology and war policy were condemned and driven into hiding. Several notable anti-Semitic publications, which had generally followed the line of national socialist propaganda, were suspended, and some of the more militant organizations were disbanded.

Towards the end of 1942 substantiated reports emanating from all German-occupied countries in Europe on the accelerated and premeditated extermination of the Jewish people aroused widespread indignation. Eleven of the United Nations, Belgium, Czechoslovakia, Greece, Luxembourg, Netherlands, Norway, Poland, soviet union, Great Britain, the United States, Yugoslavia, and the French national committee of the Free French released an official statement that their intention "has been drawn to numerous reports from Europe that the German authorities, not content with denying to persons of Jewish race in all the territories over which their barbarous rule has been extended the most elementary human rights, are now carrying into effect Hitler's oft-repeated intention to exterminate the Jewish people in Europe." Then followed what may be regarded as an official summary of the extent of anti-Semitism in Germany and countries under its influence. From all occupied countries Jews were being transported "in conditions of appalling horror and brutality" to eastern Europe, especially to Poland, which became the "principal nazi slaughterhouse." The ghettos established there were being systematically emptied of the Jews who were slowly worked to death in labour camps or left to die of exposure and starvation or deliberately massacred in mass executions. The governments "condemn in the strongest possible terms this bestial policy of cold-blooded extermination. They reaffirm their solemn resolution to insure that those responsible for the crime shall not escape retribution and to press on with the necessary practical measures to this end." (*See* also FASCISM; JEWISH RELIGIOUS LIFE; REFUGEES.)

(H. Ko.)

Anti-Tank Guns: *see* MUNITIONS OF WAR.

Antonescu, Ion (1882–), Rumanian soldier and statesman, was born in Transylvania June 2 and fought with the Rumanian armies during World War I, after which he was promoted to the rank of colonel. He later became military attaché of Rumania in London and Rome, chief of the army's general staff and war minister. He was named prime minister by King Carol Sept. 5, 1940, in the midst of the disorders that followed the partition of Rumania. Antonescu's first act was to demand the abdication of Carol. The prime minister then assumed dictatorial powers and on Sept. 14, 1940, formally promulgated a totalitarian rule.

He established working relationships with the axis by signing the German-dictated pact of Nov. 23, 1940.

After subduing the Iron Guardist anti-Semitic riots of late Jan. 1941, Antonescu tightened his grip on the government, with German backing, and decreed the death penalty for acts of terrorism and disorder. In a controlled plebiscite of early March 1941, Rumanians approved his regime by a vote of 2,490,944 to 2,816. Antonescu marched against the U.S.S.R. on the same day (June 22, 1941) that Hitler's troops crossed the Russian border. He then assumed the title of generalissimo and commander of the Rumanian armies in Bessarabia.

In Feb. 1942, Antonescu conferred with Hitler, Goering and Field Marshal Keitel. The nazi trio were reported to have demanded additional Rumanian troops for their summer offensive. Antonescu responded by decreeing "pre-military" training for boys between 17 and 21. The new demand for levies was not popular and in March 1942, Antonescu ordered drastic measures to curb anti-fascist unrest. The morale of his countrymen weakened because of heavy Rumanian casualties on the Russian front, especially around Odessa, Sevastopol and Stalingrad. In Sept. 1942 a government decree centralized all legal power in Antonescu's hands. (*See* also RUMANIA.)

Aosta, Amedeo, DUKE OF (1898–1942), Italian general and former viceroy of Italian-occupied Ethiopia, was born Oct. 21 in Turin, Italy. He was the son of Prince Emanuele Filiberto, duke of Aosta, and of Princess Helen of France. The duke was thus a cousin of King Victor Emmanuel of Italy, and was head of the house of Savoy-Aosta, second branch of the ruling family of Italy. At 17 he entered the army as a private in the artillery and saw active service at the front during World War I. He rose rapidly through the ranks, was decorated many times for valour, and enjoyed wide popularity among all classes of Italians. A thorough-going fascist, he was an admirer and close friend of Mussolini. In 1937 he was named viceroy of Ethiopia, succeeding Marshal Graziani, a move calculated to link far-flung Ethiopia with the European prestige of the house of Savoy. During the period of British attacks on Ethiopia, 1940–41, he directed the Italian forces and won promotion to general of the Italian air force. In May 1941, the duke of Aosta, with a force of 7,000, surrendered to British troops at Amba Alagi after a long siege. He died of tuberculosis while still a prisoner at Nairobi, Kenya, East Africa, March 3.

Apples. Production of commercial apples in the United States in 1942 was 127,655,000 bu. In 1941 it was 122,256,000 bu.; the ten-year (1930–39) average was 123,823,000 bu. The commercial crop includes apples for processing as well as those sold for fresh consumption. Growers in eastern and northwestern states experienced considerable difficulty in harvesting the 1942 crop because of scarcity of farm labour. The Canadian government in 1942 authorized an appropriation of $1,265,000 to be used in an agreement with the British Columbia Fruit board in guaranteeing the price of apples at $1 to $1.25 per box. All sales of apples in Canada had to be at prices authorized by the minister of agriculture.

(S. O. R.)

U.S. Apple Production in Leading States, 1942 and 1941

State	1942 bu.	1941 bu.	State	1942 bu.	1941 bu.
Washington	27,552,000	27,000,000	Maryland	2,211,000	1,905,000
New York	17,500,000	16,302,000	Idaho	2,139,000	2,442,000
Virginia	13,908,000	11,800,000	Connecticut	1,922,000	1,412,000
Pennsylvania	10,031,000	8,643,000	Colorado	1,595,000	1,510,000
Michigan	9,234,000	8,000,000	Indiana	1,392,000	2,230,000
Ohio	6,384,000	6,000,000	North Carolina	1,086,000	1,505,000
California	6,090,000	7,706,000	Missouri	1,075,000	1,504,000
West Virginia	4,686,000	4,288,000	Delaware	940,000	913,000
Massachusetts	3,400,000	2,488,000	New Hampshire	961,000	659,000
New Jersey	3,239,000	2,632,000	Kansas	754,000	406,000
Illinois	2,970,000	3,410,000	Vermont	731,000	664,000
Oregon	2,660,000	2,471,000	Maine	730,000	581,000

Applied Chemistry: *see* CHEMISTRY.

Applied Psychology: *see* PSYCHOLOGY.

Appropriations and Expenditures: *see* BUDGETS, NATIONAL.

Aquariums. Because of gasoline rationing the Marineland aquarium, near St. Augustine, Florida, was forced to close its doors until the time when such restrictions on travel might be lifted. This was the first closure of a public aquarium in the United States directly attributable to war conditions.

After the closure of the New York aquarium, an interim small collection was established in the New York Zoological park which had its public opening on Feb. 12, 1942. Research activities of the New York aquarium were continued, in part in this place and in part at the American Museum of Natural History.

Little could be learned of aquariums in other countries, but other similar institutions in the United States progressed. All were handicapped by the virtual impossibility of obtaining specimens from distant points. (C. M. Br.)

Aqueducts.

The Colorado river aqueduct, constructed by the Metropolitan Water District of Southern California at a cost of approximately $200,000,000 extends 241 mi. from Parker dam on the Colorado river to Cajalco reservoir, 12 mi. south of Riverside, Calif. This aqueduct is capable of delivering 1,000,000,000 gal. daily to Los Angeles and 12 neighbouring coastal cities. With the last of the tunnels on the distribution system completed in 1941, the entire system totalling 392 mi. was in complete operation on Aug. 18, 1941. The Delaware river aqueduct, an 85-mi. pressure tunnel, being built by the board of water supply of New York, is an important feature of the $298,000,000 Delaware project which will add 540,000,000 gal. daily to New York city's water supply, thus increasing the supply 50%. The last of the major tunnelling jobs was holed through Sept. 17, 1941, completing 83.8 mi. of the aqueduct which will carry water 300 to 1,000 ft. underground from the watersheds of the Catskill mountains to Hillview reservoir on the northern boundary of New York city. Final holing through of the entire tunnel was expected in the spring of 1943.

The All-American canal, biggest irrigation ditch in the United States, began operation of its full length during 1941. It carries water diverted from the Colorado river by Imperial dam a distance of 80 mi. into Imperial valley. With its 130-mi. Coachella branch canal, excavation for about two-thirds of which was completed in 1942, water will be supplied for 1,000,000 ac. in southern California. As a part of the Boulder canyon project, the All-American canal system was being built by the bureau of reclamation at an estimated cost of $38,500,000. The boring of a 13.1-mi. tunnel, which will carry water from the western slope through the Continental Divide to irrigate agricultural lands in northeastern Colorado was proceeding from both ends and was approximately two-thirds completed in 1942. A 9-mile section of a 40-mile aqueduct to convey water from Deer Creek reservoir in Provo Canyon to Salt Lake City was completed in 1942. On the Central Valley project in California the first 38 miles of the 46-mile Contra Costa canal were in use serving fresh water to industries, cities and farms; and the first 8 miles of the 40-mile Madera canal to carry water from Friant reservoir to thirsty lands in the San Joaquin Valley were completed. Construction of these facilities by the U. S. Bureau of Reclamation was advanced or retarded in 1942 in line with their respective importance to the war program.

A pipe line aqueduct project was put in service in 1941 bringing to Toledo, O., a supply of good water from Lake Erie to replace the old and unsatisfactory supply from the Maumee river. Construction of the Key West aqueduct, to extend from the mainland near Miami, Fla., to the tip of the Key West peninsula, a distance of 134 mi., was planned for immediate construction in Dec. 1941 to supply fresh water for the navy and the Key West civilian population. (*See* also Canals and Inland Waterways; Dams; Tunnels.) (J. C. Pa.)

Arabia.

Total area (est.) 1,000,000 sq.mi. Total pop. (est. 1937) 9,300,000; Saudi Arabia 4,500,000; Yemen 3,500,000; Oman and Muscat 500,000; Kuwait 80,000; Trucial Sheikhs 80,000. Language: Arabic; religion: Mohammedan. Rulers: Saudi Arabia, King Abd-ul-Aziz ibn Sa'ud; Yemen, Imam Yahya ibn Muhammad ibn Hamid ad-din; Oman and Muscat, Sultan Sayyid Sa'id ibn Taimur; Kuwait, Sheikh Ahmad ibn Jabir as-Subah.

THE EMIR MANSUR, sixth son of King Ibn Sa'ud of Saudi Arabia, inspecting a British guard of honour at Suez, Egypt, in 1942

History.—King Abd-ul-Aziz ibn Sa'ud continued to show an unswerving friendliness toward the United Nations. In February he broke off diplomatic relations with Italy, thus removing the last accredited representatives of the axis from his dominions Judge Bert Fish, the first United States minister to Saudi Arabia presented his letters of credence to King Abd-ul-Aziz on Feb. 4 In the course of the year a United States agricultural mission was sent, at the request of the Saudi government, to advise on the possibilities of developing water resources and agriculture; it was headed by K. S. Twitchell. In anticipation of mining or industrial developments, an elaborate decree for the protection of workers was issued in May.

Approximately 80,000 pilgrims went to Mecca in Dec. 1941, including 10,000 who travelled by sea from India and the East Indies. The government of India announced with regret, in the autumn of 1942, that owing to the presence of Japanese submarines in the Indian ocean it would not be possible to organize the sea-borne pilgrimage in that year.

Agreements were concluded in April between the government of Saudi Arabia and the British government, acting on behalf of the Sheikhdom of Kuwait; they provided for more effective checks on smuggling, and for the appointment of frontier officers to prevent raiding.

The sheikh of Bahrein, Sir Hamad ibn Isa al-khalifah, died in Feb. 1942; he was succeeded by his eldest son, Sheikh Salman. (H. By.)

Finance.—Monetary unit, Indian rupee, and in Saudi Arabia the rial. Exchange rate in 1942: 1 rial = Rs. 1 (Indian) = U.S. cents 30.12.

Trade.—With India (1939–40): Oman and Muscat, imports Rs.24,55,362; exports Rs.35,71,387; other states of Arabia, imports Rs.9,89,030; exports Rs.73,18,701. With the United Kingdom (1938): Saudi Arabia and Yemen, imports £94,960; exports £28,871; Oman and Muscat, Trucial Sheikhs and Kuwait, imports £40,262; exports £18,354. Total trade of Oman and Muscat (1938–39): imports Rs.48,76,193; exports Rs.33,31,939; Kuwait (1937–38): imports £410,812; exports £174,006. (*See* also Islam.)

Archaeology.

Western Hemisphere.—After 1930, archaeological exploration and research within the United States attained an unprecedented level. This was due to several factors. Two of the most important reasons for such a nationwide impetus given to the solution of archaeological problems were: (1) the financing of extensive state-wide archaeological programs by the federal government through such agencies as the Civil Works administration, the Work Projects administration, and Civilian Conservation corps; (2) the establishment of a diagnostic type of projectile point in direct association with extinct animal forms, namely, the Folsom horizon.

In 1942 these numerous archaeological programs were terminated as rapidly as conditions would warrant. By the end of the year all explorations within the United States ceased, while some of the laboratories and museums continued the classification, restorations and preservation of the cultural material obtained in previous years.

As a part of the government's program for the promotion of goodwill with the scientific institutions in the other American republics, archaeological explorations were sponsored under the auspices of the Office of the Co-ordinator of Inter-American Affairs and other scientific institutions from the United States.

In many of the Latin-American countries a very justifiable pride exists in their prehistoric Indian cultures. The Institute of Andean Research in co-operation with the co-ordinator of inter-American affairs directed a program consisting of 10 distinct field parties, ranging from northern Mexico to Chile. As a result of these intensive stratigraphic excavations a temporal framework was outlined which would clarify the relationship between the centres of prehistoric civilizations in Middle and South America and their possible relationship with the aboriginal cultures in North America.

In the Arica region of Chile several stratified sites revealed the development from a simple hunting peoples with a lithic culture to more sedentary agricultural groups producing pottery, woven garments and the manufacture of metal implements. Some work was in progress farther south in the vicinity of Taltal. In coastal Chile the excavations verified a preceramic culture advanced many years ago by South American archaeologists.

In the Peruvian highlands, near Lake Titicaca and Bolivia, many late and early sites were discovered, including burial towers, houses and forts. One fortress described in some of the Inca chronicles was definitely located near the temple of Pucara. Future excavations at these sites might solve temporal relationship of the two important highland cultures. Excavations were made near Cuzco which might clarify the problem of the Inca culture with the earlier highland cultures. Along the central southern coast of Peru excavations were made in the large refuse heaps accumulated by the early Inca inhabitants. The Pachacamac deposit, over 40 ft. in height, revealed an abundance of pottery types which, because of their stratigraphic position, were expected to provide an unprecedented sequence of cultural developments. In the north central highlands of Peru excavations were made at the famous Marca Huamachuco site which revealed a considerable variety of structures, carved stones and pottery types. All of these Peruvian excavations were co-ordinated with the work of the leading archaeologists in the museums and universities of Peru.

Archaeological surveys and excavations were made along the coast and the highland region of Ecuador. In Colombia a general survey was accomplished and intensive excavations were made in the Cali region on the middle Cauca river between Quimbaya and the Tierradentro regions. Several interesting burial tombs were discovered on the outside slopes of prehistoric house platforms. These tombs consist of shafts averaging about 5 ft. in diameter reaching a depth of 6–8 ft. In one tomb more than 200 pottery vessels had been placed with the deceased. No large ceremonial structures such as occur in Peru were discovered. Some of the excavations in eastern Colombia might produce the desired evidence to show a connection between the highly developed cultures to the north in Central America and those in Ecuador and Peru.

In El Salvador excavations were conducted at San Andres in the western part of this Central American country. Deep human deposits separated by a volcanic stratum, near the Quelepa site, might upon final analysis reveal an interesting sequence of prehistoric cultures.

In connection with problems relating to the influence of cultures from South America upon the West Indies, several explorations were made in middens and caves in Cuba. On the island of Trinidad evidence was found to prove the long-assumed connections between South America and the West Indies. Surveys were made and some sites were excavated along the northern coast of Venezuela up the Orinoco river and on the north shore of the Gulf of Paria.

In Mexico the work of the Institute of Andean Research was fitted into the national program of archaeological research in Mexico. Surveys and excavations were carried on in the states of Jalisco and Michoacan. Here three major ceramic complexes were revealed, two of which date from the time of the European conquest and one preceding this period. In northeastern Mexico within the state of San Luis Potosí and around Tampico, excavations revealed plaster-covered conical burial mounds with stairways, and in one instance six superimposed plastered layers. One refuse deposit 20 ft. in depth produced ceramic evidence of at least six different periods. The earliest period pottery was comparable to that at Monte Alban and the early periods found in the Maya area. At Tancol near Tampico a distinct pottery complex was discovered which is comparable to certain types in the lower Mississippi river region.

The Smithsonian Institution-National Geographic society expedition resumed its excavations at the La Venta site in northern Tabasco. Here, for the first time, a stone sarcophagus in the form of a crouching jaguar was uncovered. Some of the finest pieces of carved jade—surpassing even the specimens previously reported from Cerro de las Mesas—had been buried with the individual. Another tomb was discovered consisting of basalt columns over a burial platform which had been covered with a thick layer of cinnabar. The Direccion de Monumentos Prehispanicos of the Mexican government co-operated and assisted in most of the above projects. At the same time they continued their own program of archaeological research in various parts of Mexico. Other scientific and governmental organizations in Guatemala and the various countries in South America carried forward their programs of archaeological research.

Through the efforts of the National Research council an archaeologist was assigned to the staff in charge of building the Alaska-Canadian highway. Even though this road covered an area which could have served as a corridor for the southern migration of Folsom man, no campsites were discovered. Near the town of Ojai, Ventura county, in southern California, two superimposed burial grounds were excavated. The lower graves, of a hunting group, were dug in the reddish hard soil, while the more recent Canalinas Indians were placed in the upper black soil. The earlier hunting groups used abalone shells and bone for ornaments. A cave site in southern Nevada was excavated by the Southwest museum. This cave contained a hafted stone projectile point, dice made from split and flattened corncobs and bone, stone and bone implements, as well as Pueblo pottery and basket fragments. The National Park service conducted an archaeological survey along the Yampa and Green rivers in northwestern Colorado and eastern Utah to determine the number of caves and rock shelters that would be inundated in the event that certain proposed power dams were to be erected in the Green river. The University of Denver continued its survey and mapping of aboriginal stone enclosures in the San

Luis and Upper Rio Grande valleys in southern Colorado and northern New Mexico. In northern Illinois a prehistoric woodland site near Dixon was selected by the University of Chicago for the training of archaeological students. This consists of a group of linear and conical mounds which were to be levelled by suburban development.

Bibliography.—Several archaeological reports were published during 1942 (vol. 44, *American Anthropologist*, and vol. 8, *American Antiquity*). The two most outstanding publications for 1942 were: *Anasazi Basketry*, Basket Maker II through Pueblo III, based on specimens from cave explorations from the San Juan river country in the American southwest, by Earl H. Morris and Robert F. Burgh, pub. 533, Carnegie Institution of Washington; *An Archeological Survey of Pickwick Basin in the Adjacent Portions of the States of Alabama, Mississippi and Tennessee*, by William S. Webb and David L. DeJarnette, Bull. 129, Bureau of American Ethnology, Smithsonian Institution, Washington, 1942. (F. M. Se.)

Eastern Hemisphere.—In spite of wartime conditions, there is new archaeological material to report for the year 1942, from the eastern hemisphere. The following list cannot be assumed to be complete, since information on possible finds in the axis-occupied territories was practically non-existent in 1942, and news of archaeological activity in other parts of the old world was generally brief and tardy. Purposeful excavation was very restricted, but a good deal of information seemed to derive from finds made accidentally, often in conjunction with some wartime activity such as road building. Preliminary reports on two small but very important excavations were available, however. The publication of materials found after 1930 proceeded, and several very important volumes appeared during 1942.

What seemed to be the most important reports on excavations carried on up to the close of 1942 were two from the near east. Both operations were actually carried on during 1941, but the reports were only available in 1942. The first was that done by the Directorate of Antiquities of the Iraq government under Seton Lloyd, Sayed Fuad Sofar and Sayed Mohammad Ali Mustafa, at Tell ʻUqair, some 50 mi. south of Baghdad and about equidistant between the Tigris and the Euphrates. A temple of the Uruk period (the second of the three predynastic sequences in south Mesopotamia; *i.e.*, the el-Obeid, Uruk and Jemdet Nasr periods) was exposed in some area, and smaller soundings yielded material of all three of the predynastic sequences as well as some materials referring to historic times. The indicated stratification is, in brief, as follows: (1) the earliest or el-Obeid material, from a small sounding which reached virgin soil after proceeding through seven layers of occupation; (2) the earliest traces of a platform prepared for a temple, but for which only architectural evidence was available; (3) the Uruk period temple, on its platform, and with interior walls decorated with frescoes; (4 and 5) two successive "fillings" of the platform, from which potsherds of the nonpainted but burnished Uruk variety appeared, as they had in the painted temple; (6) a layer with no surviving buildings but with painted pottery of the Jemdet Nasr type; (7 and 8) two successive occupations of a "chapel," first with Jemdet Nasr painted ware alone, and then with a mixture of Jemdet Nasr painted ware and "scarlet ware" and with a new type of brickwork; and (9) traces of later Akkadian and Babylonian occupations on a small scale and without massive architecture.

The earliest, el-Obeid, assemblage is important in that a considerable variety of the characteristic painted pottery was recovered (actually more common in buff ware than in the supposedly most characteristic "greenish" ware) with painted motifs including representational drawings of birds and animals as well as the usual geometric repertoire. The el-Obeid assemblage also included a considerable number of baked clay tools: sickles, long "nails" with hooked points, and some very remarkable shaft-hole axes of which one type definitely recalls the "battle-axe" of Troy II type. Bone tools in bitumen hafts also appeared, as well as flint hoes and fragmentary clay figurines of the Ur el-Obeid type. Some architectural information was also available.

The painted temple of the Uruk period was found on top of an irregular platform, approached by means of three staircases asymmetrically arranged but unmistakably representing a very early form of the Mesopotamian ziggurat. The temple plan itself recalls those of Warka and Khafajah. The complex was built of *riemchen* bricks, and had the niched wall effect and cone-mosaic wall decoration known on other contemporary buildings. The inner walls of the temple were covered with frescoes, this being the earliest example of this type of architectural decoration yet recovered anywhere. The range of colours was of considerable variety save for the absence of blues and greens. Both geometric and representational motifs were executed, the latter including a scene of the "temple herd," and of men wearing the knee-length skirt of early Mesopotamian type. The frescoes were all, unfortunately, fragmentary; one of the best preserved was that of the temple altar, which seemed to have been painted in front to imitate a miniature temple and was guarded on either side by representations of leonine beasts. The ceramic of this Uruk period temple complex included "votive bowls," crooked spouts and a few burnished sherds said to be of Uruk type.

It was to be hoped that work would proceed at Tell ʻUqair, where there was every indication for the recovery of a bulk of material from an apparently uninterrupted predynastic Mesopotamian sequence. (*c.f. Illus. London News*, June 27, 1942; *J. N. E. S.*, April 1943).

The second of the two outstanding reports on excavation to appear in 1942 was that published by M. Stekelis and Dr. William F. Albright (*B.A.S.O.R.*, No. 86, April 1942) on work in caves on Mt. Carmel, in Palestine. The really interesting material comes from a cave called Mughâret Abū Uṣbaʻ, where Stekelis made some small soundings in 1941, which yielded a sequence of Levalloiso-Mousterian, Upper Natufian-like and Recent materials. The total depth of deposit in the main sounding was only 0.70 mi.; but Stekelis was able to subdivide the middle layer (that with Upper Natufian material), and it was from these middle horizons that potsherds appeared in association with flints said to be of Upper Natufian type. Such an association would mean that the Upper Natufian would have to be reclassified as Neolithic rather than Mesolithic. Dr. Albright, on the other hand, was not satisfied with such an interpretation and suggested a date between that of Jericho IX (Late Neolithic) and the Ghassulian for the published flints, and an even later date for the potsherds. In actual fact, the potsherds (of which only a few were shown) are very enigmatic and present problems involving a possibly different stem from that of Jericho IX (*i.e.*, possibly the Byblos "sea cliff" material, also enigmatic). The flint industry, as described and incompletely pictured, would seem to correspond most closely to reports of certain inadequately published material from the cave site of el-Khiam, in Palestine. The whole Abū Uṣbaʻ assemblage (when fully described) may be found to refer to a coastwise culture of somewhat different aspect from that of Jericho and Ghassul in the Jordan valley. It seemed also quite possible that this material may be at least as early as that of Jericho IX. Such material was of extreme importance, since the real beginnings of the Neolithic economy in the near east were almost entirely unaccounted for in the available excavated materials.

The Palaeolithic-Mesolithic Periods.—The Abbé Breuil wrote a short note (*Nature*, 149, p. 77; Jan. 17, '42) on his impression of the new Sidi Abderrahman terrace sequence, from the Atlantic coast of Morocco. In this area, there is a clear succession of

Pleistocene terraces with associated fauna and human artifacts. Breuil correlated the highest (90 mi.) beach with pre-Günz times, the second (60 mi.) beach with the Günz-Mindel interglacial, the third (30 mi.) beach with the Mindel-Riss interglacial, and the lowest (15 mi.) beach with the Riss-Würm interglacial. Immediately overlaying the highest beach was an extensive workshop of large, heavy quartzite and sandstone flakes of Clactonian type, "roughly worked into bifaces." An Abbevillian (Chellean) industry of bifacially worked pebbles had previously been found on the 30 mi. beach; Breuil described these as heavily rolled, and believed that they were presumably derived from an older deposit. His brief correlation table listed both Abbevillian and Clactonian types as "pre-Günz," although the evidence for the placing of the Abbevillian here was not entirely clear from the note. To date, the earliest Abbevillian and Clactonian occurrences had been those of the 40 mi. Somme terrace in France, for which Breuil postulated a Günz context. Among other things, this new Moroccan material suggested that a detailed examination of the higher Nile terraces should be made, since little work had been done above the 30 mi. terrace in that area, and the contained implements were of Abbevillian type, but mainly rolled. Following the Clactonian at Sidi Abderrahman, Breuil listed some untypical flakes, and then a sequence of two stages of Acheulean, a Micoquean, a Mousterian and an Aterian industry.

In a report on the Pleistocene of Kenya Colony, Africa, P. E. Kent described the Kanam and Kanjera beds in some detail. This would not greatly affect the matter of the human remains found by Dr. Leakey, as their exact position was not established with certainty, but the geological deposits themselves were of considerable interest. Kent classified the Kanam beds as Lower Pleistocene, the Rawe beds as Lower-Middle Pleistocene and the Kanjera beds as Later Middle Pleistocene.

D. F. W. Baden-Powell and Reid-Moir suggested a new Palaeolithic industry, the Runtonian, from materials found mainly on the Norfolk coast of England. So far, the industry was said to have been found in the Croton Sands, the Chalky Boulder Clay (Riss ?), and the Briton's Lane Gravel. The flints consist mainly of small scrapers, points and racloirs. "Resolved" flaking was prevalent, and the flints were said "in some dim way" to foreshadow the High Lodge (Clactonian III) industry.

Various other Palaeolithic finds were briefly reported from England; from the foreshore and from plowed fields in the Worthing area by Frederick W. H. Migeod, and from Yorkshire, where they were evidently deposited immediately after the retreat of the last glacier, by Gibson. New Mesolithic materials were reported by Frere and Mrs. Piggott. A urus bone, inscribed with human figures, was said to have been found in a Danish peat bog, and was dated by pollen-analysis to about 6000 B.C. (Mesolithic).

Neolithic and Later.—Urns and cremation burials from Fife, in Scotland, which refer to the Bronze Age, were published in a note by V. Gordon Childe. Ritchie reported a lake dwelling or crannog in Loch Treig in Scotland; it was of rectangular plan and had been constructed of timber, earth and stones. It was suggested that the level of the lake must have been artificially reduced, in order to build it. A complete set of Iron Age arms was reported from Shövde, in western Sweden, and closer examination of the site revealed a cemetery with 22 tombs. A grave find of Roman glass and bronzes was said to have been made by workmen in Denmark.

The Near East.—In Egypt, three shaft tombs of the IV–V dynasties were reported by their Swedish excavators; all had been plundered in antiquity, but a valuable collection of the less spectacular types of objects was recovered. Troops near Cairo were said to have uncovered a mosaic floor. In Palestine and Trans-Jordan, the archaeological survey under Dr. Nelson Glueck, sponsored by the American school in Jerusalem and the Smithsonian institution, was being continued. In Jerusalem itself, city wall foundations of 4.0 mi. thickness, and two tower foundations, were excavated by the American school in collaboration with the Hebrew university. The complex was assigned to the Third Wall, built by Agrippa, and went a long way toward solving the question of the topographical position of the Third Wall. Workmen repairing a sidewalk in the old city of Jerusalem came upon the remains of a Roman aqueduct, the flagstones of a road 9.0 mi. wide, and house walls of massive stone units. The Hebrew University museum investigated a number of ancient Jewish burial caves in and about Jerusalem, and continued (under Prof. Sukenik) its work on the Bronze Age site of Tell Jerisheh, near Tel-Aviv. In the Lebanon, ruins of buildings, Phoenician glass, and some marble coffins were encountered by workmen in the Byblos district, during the preparation of the rail-line from Haifa to Tripoli. Australian sappers recovered a massive stone statue of a wolf, traditionally supposed to have guarded the pass, from the bed of the Nahr el-Kelb (Dog river). In Syria proper, an archaeological survey of the mounds in the Jabbul plain (east of Aleppo) was published in the *Palestine Exploration Quarterly* (April 1942); evidence to tie the plain into the relative chronologies of the surrounding areas in early times was recovered.

In Iraq, as well as the brilliant results from Tell ‘Uqair described above, a Directorate of Antiquities excavation under Sayed Fuad Sofar succeeded in tracing almost the entire plan of one of the earliest existing mosques and also found traces of the palace of Hajjaj, near Hai, in south Mesopotamia. In a higher stratum, some 400 little clay figurines of men, animals and birds were said to come from a toyshop of the time of the Mongols in Iraq. For Anatolia, Hamit Koşay reported on the continuation of the Turkish republic's excavations at Alaça Hüyük. Work was concentrated mainly on the Hittite levels, and it was shown that the gate of the sphinxes belonged to the late Hittite period. The Metropolitan Museum of Art (*Bull.* 37) presented an account of the results of its last two seasons at Nishapur, in Iran. The architectural evidence resulting from the clearance of a mosque, a palace and a bath was given, as well as a description of the antiquities these contained. The site was evidently occupied from the early 9th to the early 12th centuries A.D., and the material aided in elucidating the history of Persian painting and of Seljuk architecture.

Certain important books and articles concerned with the near eastern field appeared. Dr. D. E. McCown's *Comparative Stratigraphy of Early Iran* and his article in *J.N.E.S.*, "The Material Culture of Early Iran," went far toward bringing much needed order to the excavated materials available from various early Persian sites. McCown examined the antiquities from the earliest village horizons in great detail, and offered a scheme of correlation for this material with that of Mesopotamia. McCown was also to append a note on a forthcoming article by Brigadier E. J. Ross in *J.N.E.S.*, on the site of Rhana Ghundai in Baluchistan. The Brigadier's excavations at that site yielded material which since reached Chicago, Ill., and which was unique. The most recent publication of the Oriental institute's Iraq expedition appeared during 1942, *Pre-Sargonid Temples in the Diyala Region,* by P. Delougaz and Seton Lloyd. A stratigraphic scale for late prehistoric and early historic Mesopotamia is set by these public buildings and their interlocking sequences, the architectural details and the more important objects which the buildings yielded are presented, and the religious implications are drawn. An ingenious method of checking the dates of the buildings with the historical time scale is offered. In *Belleten* V (Türk Tarih Kurumu), Dr. Senyürek re-examined the available physical anthropological material for Anatolia, giving further substantiation to Dr. Krogman's view that the place of origin of the Armenoid physical type must be sought outside of the plateau, since early Anatolian skulls are mainly dolicho- or mesocephalic.

Greece and Italy.—The *A.J.A.* for 1942 contained notes on the principal finds and publications made within the field of classical studies during the year. Mrs. Blegen reported on discoveries made by the Germans at Olympia just before the war, which included the terra-cotta body of a Zeus figure, the head of which had been recovered in 1878. The god is represented as striding forward, carrying a boy (recognized as Ganymede), and was dated by Künze to about 490 B.C. Mrs. Van Buren's note from Rome told of a variety of recent finds in the Roman area, at Ostia and Paestum, and of Prof. Amedeo Maiuri's new volume on Pompei from the period of the earthquake to the final catastrophe.

U.S.S.R.—A considerable variety of very brief notes on recent finds in European and Asiatic Russia became available during 1942; they consisted of short statements such as that the palace of Ulugh Beg, grandson of Tamerlane, was found near Samarkand, that some 400 Mongolian and Tibetan manuscripts on wood appeared in the Buryat soviet, etc. Certain of these brief notices appeared in the "Archaeological news and discussions" in the *A.J.A.* Prof. Ellis Hovell Minns had a brief note on the report of Kuftin's work in Transcaucasia, in *Nature*. A variety of painted pottery, evidently of uncertain date, was found, and some was said to be strikingly like Hallstatt pottery in form and decoration. Perhaps the most useful item concerning Russia to appear during the year was the set of three articles (*Man,* 1942, 59–60, 74) by Childe which synthesizes the Palaeolithic and Mesolithic materials of the Caucasus and of the Russian plain, and which also brings the Copper Age materials of South Russia into somewhat clearer focus. Although none of the material covered in the articles was actually excavated in 1942, many relatively unavailable sources were drawn upon.

Far East.—The Archaeological department of the Indian government reported quartzite implements and microliths from the conglomerate in a river bed in the Sabarmati valley, Baroda. A note on two caves in Ceylon was available, where P. Deraniyagala found pygmy implements for the first time in association with a larger ground stone assemblage and a variety of bone tools. He suggested that the assemblage belongs to the upper level of the Balangoda phase.

Sources used in the preparation of this article, other than those specifically mentioned: *American Journal of Archaeology* (*A.J.A.*), *Antiquaries' Journal, Antiquity, Bulletin of the American Schools of Oriental Research* (*B.A.S.O.R.*), *Geological Magazine, Geographical Journal, Illustrated London News, Journal of Near Eastern Studies* (*J.N.E.S.*), *Man, Museum News, Nature,* the *New York Times.* (R. J. B.)

Archery.

Because of travel restrictions and other conditions, due to the war, The National Archery association (N.A.A.) did not hold its championship tournament in 1942.

In January, February and March, the N.A.A. sponsored the 15th annual series of ten indoor mail matches of the Olympic Bowmen league in which nearly 400 archers took part. The Cleveland Archery club of Cleveland, Ohio won first place in this event in both the men's and women's divisions.

In May the N.A.A. sponsored the 13th annual Women's Intercollegiate Archery contest in which 104 teams (8 archers to a team) representing 70 colleges participated. The total number of individuals shooting in this event was 834. First place was won by Team 1 from University of Connecticut, Storrs, Conn., second place going to Team 1 from Los Angeles City college, Los Angeles, Calif.

In August the N.A.A. conducted a Nation-Wide Mail match in which over 1,000 archers took part. In this event tournaments were held by the various archery clubs throughout the country within a specified time period, at which the prescribed rounds were shot. The results were sent to N.A.A. headquarters for tabulation. This event was won by Carl J. Weese, Newark, N.J in the men's division, by Mrs. S. Robert Leaman, Bird-in-Hand, Pa. in the women's division, by John Mahoney of San Diego, Calif. in the boys' division and by Maryellen Bramlet, Peoria, Ill. in the girls' division. Mr. Weese turned in a score of 140–930 for the single York round and a score of 90–710 for the single American round. Mrs. Leaman's score was 72–508 for the single National round and 72–588 for the single Columbia round. John Mahoney made a double Jr. American of 179–1463 and Maryellen Bramlet turned in a score of 144–1064 for the double Columbia round.

In October the N.A.A. sponsored a Nation-Wide Flight shoot by mail which was won by Charles A. Pierson, Cincinnati, Ohio in the regular style event with a shot of 489 yds., 5 in., and by Mike Humbert, Springboro, Ohio in the Free Style event with a shot of 524 yds., 2 ft., 8 in.

The National Field Archers association conducted a series of Field Archery events by mail. (L. C. S.)

Architecture.

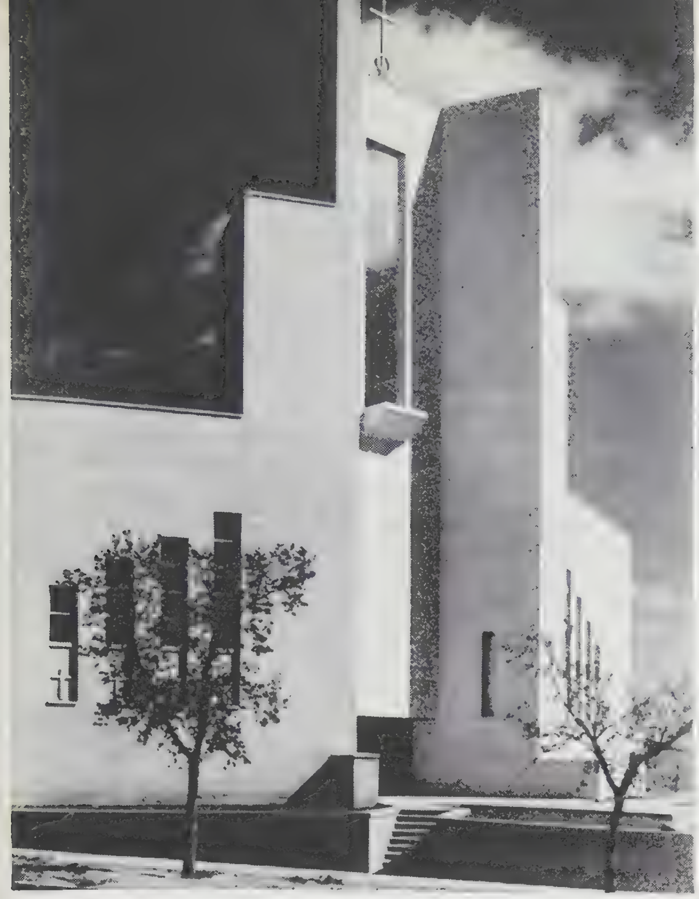
Architecture reflects the social conditions of an age. During the year 1942 civil building was completely halted and all building activities were devoted to the needs of the armed forces, the production of war materials, the housing of war workers and the most urgent requirements for the safety, health and welfare of the civilian population. Architecture became utilitarian in character. Its visual form grew out of the temporary nature of buildings designed for the duration of the war, out of shortages in materials and manpower and out of the speed and efficiency demanded by the war effort. Air-raid protections, such as camouflage and blackouts, also had their influence on architectural design. Prefabrication progressed as a means toward speedy construction and the conservation of materials. The many large projects built demanded the architectural services of large organizations or government bureaus. The work of architects with a small practice, catering to individual needs, was greatly curtailed.

Interesting developments grew out of material shortages; the rigorous conservation enforced by governmental control changed construction methods and demanded the development of substitutes. Many projects, including housing schemes, had to be held in abeyance.

Postwar planning received ever-increasing attention. The social changes, accentuated by the war, combined with the inventions which an intense period of research stored up for peacetime usage, foreshadowed the architectural developments of the future.

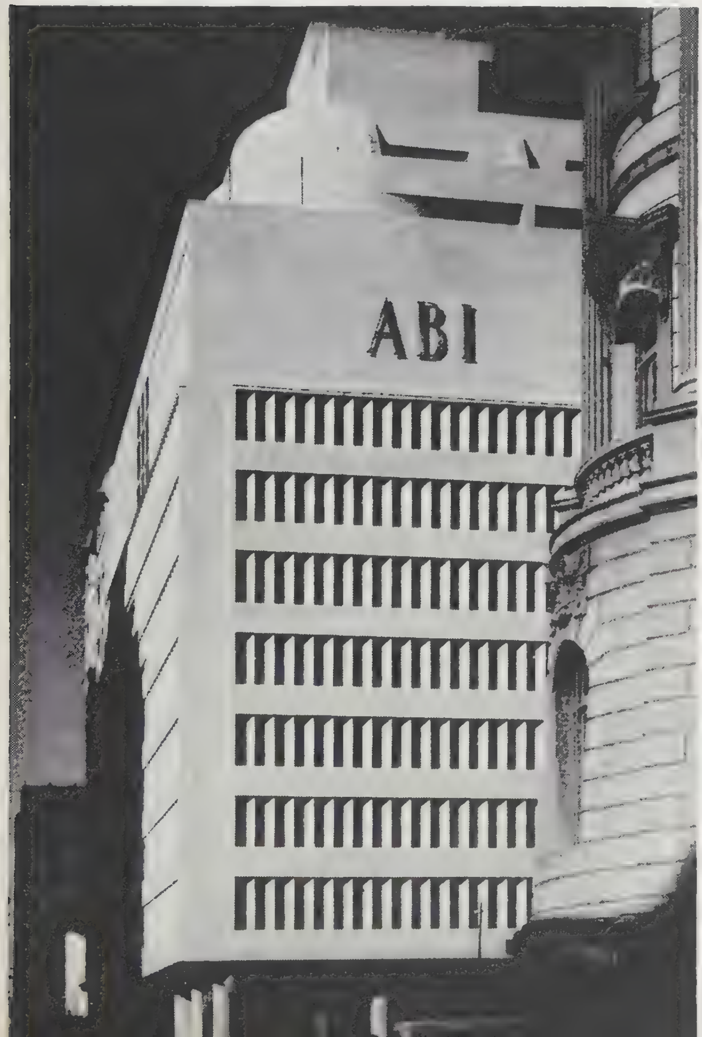
Censorship and the absence of a free international exchange of literature made a complete evaluation of architectural progress during the fourth year of World War II impossible.

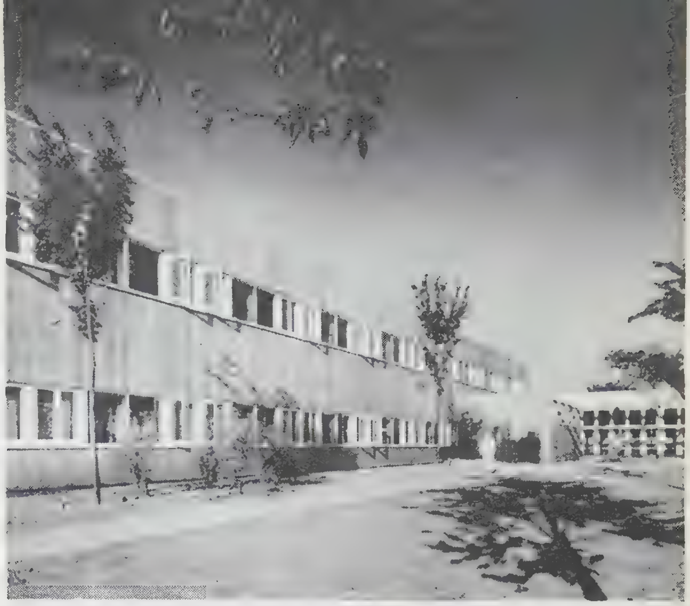
Planning and Design.—Architectural design of buildings designated to the war effort demanded expediency in the co-ordination of diverse technical problems encountered in modern planning procedure. Plans for the execution of industrial buildings had to grow out of the flawless team work of many specialists so that projects of large size could be carried out in an unusually short time. The accomplishments of large organizations in this direction, combined with the difficulties of the small practitioner to remain employed, foreshadowed changes in the profession. A questionnaire prepared by the *Architectural Record* showed that a large number of architects anticipated that additional services, such as full responsibility for structural and mechanical engineering, furnishings and landscaping, etc., would be demanded of



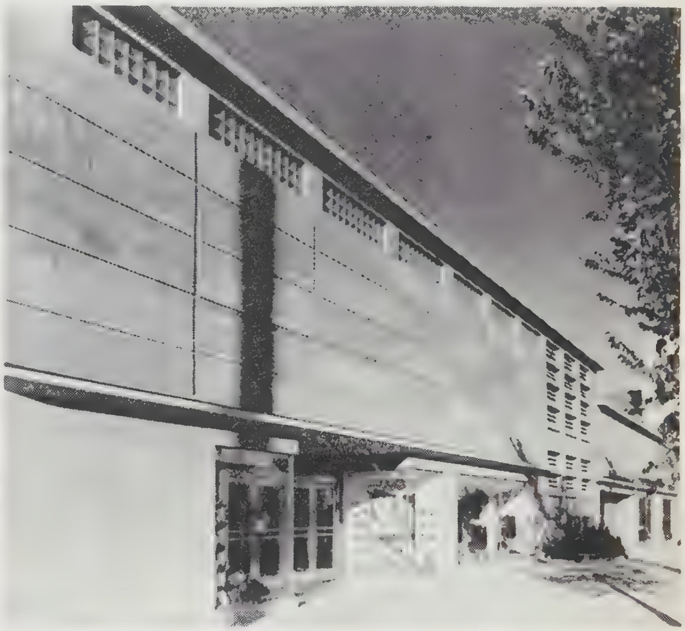
FUNCTIONAL EXTERIOR of the Church of SS. Peter and Paul, Pierre, South Dakota. Barry Byrne, architect

PRESS BUILDING in Rio de Janeiro, Brazil. The outside shutters provide soft, diffused light for the interior



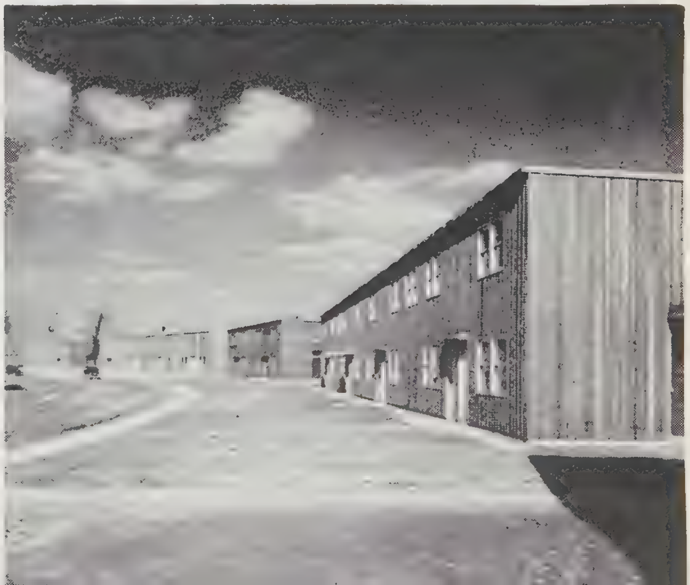


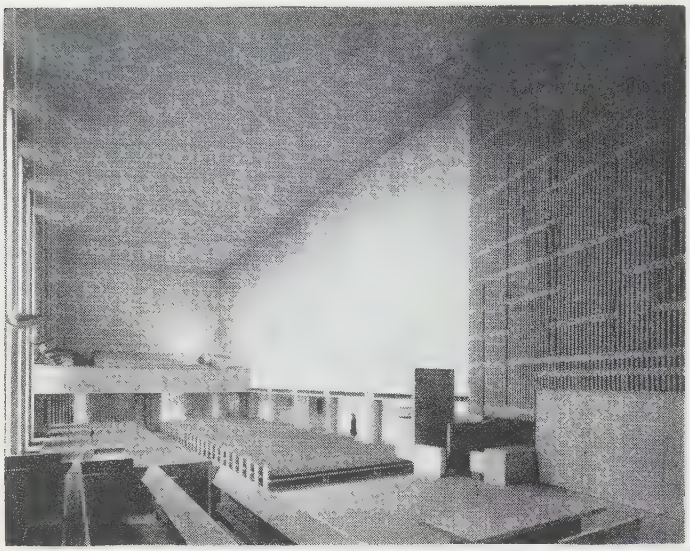
SIDE AND REAR of the reception building at the Great Lakes, Ill. Naval Training station. Skidmore, Owings & Merrill, architects



RETAIL STORE of Sears, Roebuck & Co. at Washington, D.C. The pattern of the monolithic walls was accomplished by using rough-cut lumber of random width and thickness for forms. John S. Redden, architect; John G. Raben, associate designer

KRAMER HOMES, a defense project of permanent rental units at Center Line, Michigan. Eliel and Eero Saarinen, architects; Robert F. Swanson, associate architect





INTERIOR of the Tabernacle Church of Christ, Columbus, Indiana. The architects, Eliel and Eero Saarinen, purposely avoided symmetry in the design

architects in the future.

Many architects were engaged in civilian defense, dealing with blackout provisions, camouflage, building protection against air attack and planning for evacuation in case of air raids.

In *Factory Design,* windowless, as well as daylight plants, were built, with the former gaining in favour. Enemy attack by air constituted an important factor affecting the design. Conservation of materials became a necessity. The trends established in previous years toward greater speed of construction and increasing plant efficiency, productivity and working comfort were carried forward vigorously. In column spacing, the most notable accomplishment was an increase in the span of girders. One of the aircraft plants of the United States attained an unbroken floor area of five acres, 300 ft. in width.

In *Housing,* it also became mandatory to stretch materials and manpower to the utmost. Again, all buildings had to be designed for rapid construction. In the United States, foot travel had to be considered in the site location due to the shortage of gasoline and tires. There was a shift from individual houses for married workers to dormitories for men and women.

Some 16 housing agencies of the United States government were brought together under the newly established National Housing agency. (*See* HOUSING; NATIONAL HOUSING AGENCY.)

The design for houses of the postwar period was considered in a special number of the *Architectural Forum.* It was recognized that the end of the war would bring about vast changes in daily living and would affect the habits of consumption and the methods of production, which would result in new designs. Proposals for the latter centred about systems for complete prefabricated houses or parts thereof, labour-saving devices for the home and utilization of new materials.

Postwar planning received particular attention in Great Britain where the bombings of previous years made the adoption of plans for reconstruction more urgent. The need for a centralized planning authority was understood and accepted; a ministry of reconstruction and a ministry of works and planning were set up. The vital questions of the decentralization of industry, the future of the great towns and the amount of national financial assistance toward replanning received attention. Plans for the reconstruction of bombed cities, such as London and Coventry, were made.

In the United States, the recommendations of the national committee on the housing emergency called attention to the coming era of building, which governmental and private groups, engaged in postwar economic planning studies, looked forward to as the most important source of postwar employment. New York city authorized a planning fund to launch studies and surveys for its postwar construction program. (See TOWN AND CITY PLANNING.)

Materials and Methods.—The shortages in metals caused far-reaching changes in structural design. Wood and reinforced concrete were used in place of steel; later in 1942 it became apparent in the United States that even timber had to be conserved with utmost caution. For the construction of wooden girders, plywood, laminated beams and arches or I-beams built up of timber were used. Timber frames were often pressure-treated for fire resistance. Wood also replaced steel in factory windows and miscellaneous equipment (lockers, storage bins, etc.). Many patented structural systems were brought from Europe to America because these conserved materials in a way that had hitherto been unnecessary in the United States. Asbestos and plastics were used as substitutes for metal pipes, and plywood and wallboards served in place of sheet metal. Steel replaced the scarcer brass in hardware and, also, thermoplastic materials were moulded with steel inserts for this purpose. A plastic wire-mesh window pane for steel or wood sash was advocated for greater durability. Foamglas, a newly invented type of cellular glass, came into use as an insulant in low temperature work, an insulating medium for roof construction, and for various insulating and flotation purposes by the United States navy. In place of metal flashings, saturated felt or cloth was used.

All critical materials were controlled by the governments. The War Production board of the United States issued preference ratings for the purpose of facilitating the acquisition of certain material which had to be used in the public interest and to promote the national defense. Practically no construction could be undertaken without a governmental priority rating on the critical materials involved.

Fluorescent lighting continued to be a vital factor in design. In some instances cold cathode (high tension fluorescent) lighting was used in preference to hot cathode because of the smaller amount of critical materials involved in the equipment and installation. (*See* ELECTRICAL INDUSTRIES.) The windowless plants used prefabricated and completely insulated wall panels for the exterior walls and partitions and thereby speeded construction. A trend toward wider application of air conditioning continued. White cement floors with light panels were introduced into plants where work under the wings of aeroplanes had to be performed. Recent progress in acoustical treatment demanded the development of a revised set of standards for the design of the new studios for the National Broadcasting company in New York. In prefabricated house construction in the United States 42,000 units were completed by the early summer of 1942, in contrast to 10,000 units produced between 1931 and 1940.

Examples.—In the *United States,* the volume of all construction soared to record heights due to large governmental financing of public construction; however, private building became greatly reduced over the preceding year. (*See* BUILDING INDUSTRY.) Much of the planning and design was undertaken in the offices of the armed services and the various governmental agencies. The army engineers completed in Washington, D.C., the Pentagon building with five stories connected by ramps, providing offices totalling 4,000,000 sq.ft. of floor area; it was planned and built of reinforced concrete and stone veneer in 15 months. The army engineers also completed in 60 days a total of 191 recreational buildings for the United Service organizations, which were for the most part based upon seven standard plans. The Willow Run bomber plant of the Ford Motor company in Michigan became one of the largest industrial projects hitherto undertaken. The firm of Albert Kahn, associated architects and engineers, planned this semi-blackout factory. In the southwestern part of the

United States, the Austin company built a four-motor bomber plant of gigantic dimensions. The wall and roof surfaces of this windowless factory were lined with a material which accomplished both thermal insulation and sound absorption.

Housing for war workers consisted not only of dwellings but also of community buildings for administration and recreation, stores, schools, etc. The housing project at Center Line, Mich., Eliel and Eero Saarinen, architects, Robert F. Swanson, associated architect, showed a skilful architectural expression of the rigid economies mandatory for wartime construction. An excellent school is the feature of this project. "Duration dormitories" later became the more common type of housing. The two-story plywood structures of the Farm Security administration at Vallejo, Calif., Vernon De Mars, architect, are examples. Less of the influence of war economies and expedients could be detected in the designs for the Thomas A. Larken school at Monterey, Calif., R. B. Stanton and T. B. Mulvin, architects; and the Sears, Roebuck stores in Washington, D.C., J. S. Redden, architect. Both expressed the more popular style of civilian building carried over from the end of peacetime. A noteworthy monument of modern architecture was the Tabernacle Church of Christ, at Columbus, Ind., Eliel and Eero Saarinen, architects, E. D. Piere and G. Wright, associated architects. Greatest economy in schoolhouse design was accomplished in the prefabricated schools built by the Federal Works administration at Carquinez Heights, Vallejo, Calif., and Pacific Beach, San Diego, Calif., Franklin & Kump, architects. The imaginative and ingenious system of prefabrication and construction created the aesthetic appeal of these rambling structures, consisting of one-story classrooms connected by open porches and timber arch-rib roofed auditoriums.

In *Great Britain,* plans for the reconstruction of bombed towns were made. In the case of London, attention was drawn to a master plan prepared for the rebuilding of the city by the Modern Architectural Research (M.A.R.S.) group, and, later, to pictorial illustrations accompanying the designs for the future capital of the empire by Sir Edwin Lutyens, architect, and Sir Charles Bressey, planner, prepared under the sponsorship of the Royal academy. Examples for housing schemes can be seen in the estates by G. A. Jellicoe, executed in collaboration with D. W. Plumstead and Anthony Pott. These architects were commissioned by the ministry of supply to plan seven groups of homes for factory workers in different parts of the country.

In *Canada,* the largest expenditure and the greatest activity were in industrial expansion. One of the largest aluminum plants in the world was constructed at Arvida and a large automatic gun plant was built in Toronto. With the limitations imposed on the use of metals, the aircraft plant by Carter-Halls-Aldinger Co., Ltd., D. Colville, architect, resorted to all wood construction with timber trusses and plywood walls.

In *South America,* the problem of dealing with the intense rays of the sun gave unusual design characteristics to many new buildings. In Rio de Janeiro, Brazil, office buildings had exteriors consisting of a grid of vertical and horizontal fins which shaded the windows from the east and west, as well as the north sun. A similar motive constituted the façade of a large building at the Santos Dumont airport, Rio de Janeiro; this served as a frontispiece to an unusual cantilever roofed hangar with trusses exposed on the outside. (*See* also BUILDING INDUSTRY.)

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(W. F. B.)

Archives, National.

The National Archives was established by an act of Congress approved June 19, 1934. Its primary objective is to make the experience of the American government and the American people as it is embodied in noncurrent records of the federal government available to guide and assist the government and the people in planning and conducting their activities. This is accomplished by selecting, assembling, preserving, organizing, and making available for use the noncurrent records of the United States government that have permanent value.

There were in 1942 about 500,000 cu.ft. of records in the custody of the archivist of the United States. These included approximately 80% of all federal records in the District of Columbia that are more than 50 years old, exclusive of those of the General Accounting Office. The total quantity of records accessioned during the fiscal year ending June 30, 1942, amounted to 159,774 cu.ft.

A special function of The National Archives is the daily publication of the *Federal Register,* which contains all current administrative orders, rules and regulations issued by federal agencies that have general applicability and legal effect, including many documents on priorities, the selective service, export control, and other phases of the war effort.

The Franklin D. Roosevelt Library at Hyde Park, which is administered by the archivist of the United States, was dedicated to the service of the nation by the president of the United States on June 30, 1941. The museum portions of the building were open to the public and the library continued to assemble and arrange the papers of the president and his associates. (S. J. BU.)

Arctic Exploration: *see* EXPLORATION AND DISCOVERY.

Areas and Populations of the Countries of the World.

The table that follows gives the latest available figures for the area in square miles, the population in thousands and the population per square mile of the different countries of the world.

Name of State	*Area* (in Square Miles)	*Population* (000's omitted)	*Population per Square Mile*
Afghanistan	250,965	7,000	27·9
Albania	10,811	1,064	98·4
Andorra	193	6	31·1
Argentina	1,078,377	13,318	12·4
Australia, Commonwealth of	2,974,514	7,129	2·4
Australian colonies	181,482	971	5·4
Austria	32,369	6,760	208·9
Belgian colonial empire	930,501	14,184	15·2
Belgium	11,197	8,295	740·8
Bhutan	19,305	250	13·0
Bohemia-Moravia, Protectorate of	18,880	7,380	390·9
Bolivia (adjusted area)	420,849	3,400	8·1
Brazil	3,286,097	41,357	12·6
British colonial empire	3,355,201	71,899	21·4
Bulgaria	42,741	6,676	156·2
Burma	233,591	16,824	72·0
Canada	3,694,591	11,422	3·1
Chile	286,486	5,014	17·5
China	3,783,780	406,766	107·5
Colombia	439,768	8,986	20·4
Costa Rica	19,305	656	34·0
Cuba	44,015	4,291	97·5
Czechoslovakia	54,244	14,729	271·8
Denmark (exclusive of Greenland)	17,143	3,889	226·9
Dominican Republic	19,305	1,650	85·5
Ecuador (excl. of uninhabited territory)	175,676	3,000	17·1
Egypt (excl. of uninhabited territory)	386,100	16,680	43·2
Estonia	18,340	1,122	61·2
Ethiopia	347,490	9,300	26·8
Finland	134,324	4,134	30·8
France	212,741	41,950	197·2
French colonial empire	4,671,540	71,441	15·3
Germany (1937)	262,818	90,358	343·8
Great Britain and Northern Ireland, United Kingdom of	94,517	47,880	506·6
Greece	50,193	7,201	143·5
Greenland (Danish colony)	120,849	18	0·1
Guatemala	42,471	3,284	77·3

Name of State	*Area* (in Square Miles)	*Population* (000's omitted)	*Population per Square Mile*
Haiti	10,039	2,600	259·0
Honduras	59,459	1,108	18·6
Hungary	61,892	13,644	220·4
Iceland	39,768	120	3·0
India (exclusive of Burma)	1,574,902	388,800	246·9
Iran (Persia)	634,362	15,000	23·6
Iraq	116,602	3,700	31·7
Ireland (Eire)	26,641	2,958	111·0
Italian colonial empire	999,111	3,102	3·1
Italy	124,015	45,240	364·8
Japan	147,490	73,114	495·7
Japanese empire	618,455	75,945	122·8
Latvia	25,405	1,951	76·8
Liberia	46,332	2,500	54·0
Liechtenstein	77	12	155·8
Lithuania	23,089	2,925	126·7
Luxembourg	1,004	301	299·8
Mexico	760,231	10,546	25·7
Monaco	0·77	24	31,168·8
Nepal	54,054	5,600	103·6
Netherlands	12,741	8,923	700·3
Netherlands colonial empire	795,752	70,760	88·9
Newfoundland and Labrador	162,934	296	1·8
New Zealand	105,212	1,715	16·3
Nicaragua	49,421	899	18·2
Norway (including Svalbard)	149,035	2,953	19·8
Panama (exclusive of Canal Zone)	28,958	570	19·7
Paraguay (area adjusted)	153,282	970	6·3
Peru (revised areas)	482,239	7,023	14·6
Poland	149,922	35,090	233·9
Portugal (incl. Azores and Madeira Isls.)	35,598	7,702	216·4
Portuguese colonial empire	810,424	9,930	12·3
Rumania	74,903	13,493	180·1
Salvador	13,127	1,787	136·1
San Marino	39	15	384·6
Saudi Arabia	1,003,860	7,000	7·0
Slovakia	14,710	2,654	180·4
South Africa, Union of	794,208	10,851	13·7
Spain (including Canary Isls.)	194,981	26,222	134·5
Spanish colonial empire	128,803	1,080	8·4
Sweden	173,359	6,371	36·8
Switzerland	15,830	4,257	268·9
Thailand (Siam)	200,000	15,717	78·6
Turkey	296,525	17,858	60·2
United States	3,022,387	133,965	44·3
United States territories and possessions	712,822	18,952	26·6
Uruguay	72,201	2,147	29·7
U.S.S.R. (as of 1938)	8,176,054	172,000	21·0
Vatican city	1·6	1	625·0
Venezuela	352,123	3,687	10·5
Yugoslavia	91,428	15,213	166·4
World Total	51,226,521	2,190,303	42·8

Argentina. A republic on the Atlantic coast of southern South America and second largest country of the continent; language, Spanish; capital, Buenos Aires; president in 1942: Dr. Ramón Castillo. Area, 1,079,965 sq.mi. The religion is Roman Catholic.

No official census had been taken since 1914, but official estimates placed the population at 13,518,239 as of Dec. 31, 1941. According to an estimate of 1940, native-born persons of European stock aggregated 76.9%, mixed bloods 3.2% and foreign born (almost entirely European) 19.9%. A majority of the population is of pure Spanish stock, nearly one-third is Italian or part Italian, and an estimated 250,000 are German or part German. Buenos Aires had a population of 2,515,729 (1941 municipal census), or 3,700,000 with its suburbs. Other cities (with est. pop.) include: Rosario (540,000); Avellaneda (suburb of Buenos Aires) (386,000); La Plata (248,000); Córdoba (273,852); Santa Fé (150,000); Tucumán (149,214); Bahía Blanca (115,000); Mendoza (111,279); Paraná (80,000).

History.—Argentine history in 1942 was marked by sharp controversy in domestic politics, mainly over foreign policy and the continuation of the state of siege which, with its suspension of constitutional guarantees, had allegedly curbed activities of anti-administration groups since Dec. 16, 1941. In foreign affairs, Argentina maintained a cautious neutrality, but declared adhesion to principles of American solidarity.

The confused political situation resulting from President Roberto M. Ortiz's surrender, in July 1940, of actual executive power to Vice-President Ramón Castillo, was clarified by Ortiz's resignation on June 27, 1942. Some three weeks after his official retirement Ortiz died. Meanwhile, the Conservative group supporting Acting President Castillo gained a plurality in the chamber of deputies in the elections held March 1. The Radical (*i.e.,* Liberal) party, the major opposition group, although thus deprived of the majority which it had enjoyed in 1941, could still, by combining with the other important opposition party, the Socialists, control the chamber. The strongly Conservative senate, however, could block any opposition measure.

Attacks on two Argentine ships by German submarines gave force to the opposition's bitter criticism of Castillo's neutrality. On April 17 the S.S. "Victoria" was damaged off the North American coast. After secret investigations by the foreign office, it was announced that the damage was accidental and was due to an "internal explosion of undetermined origin," but on June 17 the foreign office reported the receipt of a nazi apology for the attack upon the vessel. Five days later came notification of the sinking of the "Río Tercero," 120 mi. from New York city, and on June 26 a vigorous protest was made to Germany, calling for payment of damages, a salute to the Argentine flag and a guarantee that Argentine neutral rights would be thenceforth respected. Nevertheless, upon delivery of Germany's reply, announced July 6, the government accepted the German excuse of mistaken identity, agreed to waive the salute to the flag, and undertook to provide Germany with information on Argentine ships and sailing dates to prevent further incidents. Upon the announcement of the German blockade of eastern North America, Argentine ships were rerouted to gulf and Pacific coast ports. In the chamber of deputies, these developments brought vigorous criticism, and, before adjourning on Sept. 30, the chamber voted, although by a narrow margin, to sever relations with the axis powers. In view of the senate's Conservative composition, this action was but a gesture.

Meanwhile, within the limits of Argentine neutrality, the Castillo administration took various steps toward closer co-operation with western hemisphere nations and toward improvement of its own national security. In June the government issued various decrees to enforce economic and financial control measures recommended by the Río Conference of Foreign Ministers. With Brazil's declaration of war on Germany in August, Argentina proclaimed Brazil a nonbelligerent and stated that she would grant all facilities necessary to the defense of Brazilian interests. Throughout 1942, closer relations with other Latin-American states were encouraged.

In Oct. 1942 government action against axis agents and for hemisphere defense were accelerated by the Boston speech of United States Assistant Secretary of State Sumner Welles, who declared that the two Latin-American countries (Chile and Argentina) which had not broken relations with the axis were centres of espionage against the United Nations. Argentina protested on the grounds that she should first have been shown the evidence supporting his allegations, but when that evidence was presented, the government instituted an immediate investigation. As a result, 38 persons were arrested on charges of espionage and 6 of them jailed. Following the Anglo-U.S. invasion of North Africa in November, Foreign Minister Enrique Ruiz Guiñazú expressed, in a cable to United States Secretary of State Cordell Hull, Argentina's "solidarity" with the United States.

Meanwhile the impact of war on Argentine economy forced the adoption of measures to conserve domestic supplies of essential materials, including the rationing of automobiles, rubber products, newsprint and fuels. The continued rise in the cost of living also drew the attention of the government.

In Sept. 1942 the political tension was increased when Pres. Castillo, on his return from the Bolivian border, announced "enormous popular enthusiasm" for his policy of neutrality, while ex-

President Justo made a dramatic flight to Brazil to place himself at that country's service in its war against the axis. On Oct. 5 Pres. Castillo intervened in Corrientes province, and, on grounds of maladministration, removed the pro-Justo government. Shortly thereafter, confirming persistent rumours of an impending cabinet shakeup, Minister of War Juan N. Tonazzi, reputedly sympathetic with Justo, submitted his resignation.

Education.—Education is free and compulsory. In 1941 there were 14,059 elementary schools, with 2,005,462 enrolment; approximately 48% of these were under complete federal control, the remainder under provincial, with federal support, however. An additional 1,167 private schools (as of 1939) had an enrolment of 139,917. Secondary schools of all types numbered (as of 1940) 445, and had 75,903 pupils. One private and six national universities had enrolments totalling nearly 30,000.

Defense.—Military or naval service is compulsory. The standing army in 1941 was estimated at 45,000, with potential reserves of 281,000. The navy comprised 2 battleships, 3 cruisers, 16 destroyers and 3 submarines. Air strength was around 300 planes. Modern equipment was, however, almost entirely lacking in 1942.

Finance.—The monetary unit, the peso, had an official exchange value of 26.8 cents U.S. and an unofficial rate of approximately 23.75 cents U.S. in 1942. Budget estimates submitted to congress in Sept. called for expenditures of 1,217,000,000 pesos in 1942 and 1,204,000,000 pesos in 1943, of which about 23% was to go to education and 20% to national defense and police. Revenues (largely from customs) totalled 958,446,000 pesos in 1941 and were estimated at 988,000,000 for 1942 and 1,040,000,000 for 1943.

The public debt on June 30, 1940, totalled 7,724,535,000 pesos (national, 5,291,382,000; provincial, 1,584,408,000; municipal 848,745,000), of which 1,952,998,000 pesos, including $190,500,000 in U.S. dollar bonds, were internal. The national treasury, as of Dec. 31, 1940, had assets of 228,808,000, liabilities of 916,038,000, and a floating debt of 687,230,000 pesos.

Trade and Communication.—Argentine imports in 1941 (provisional figures) totalled 1,276,654,533 pesos, a 14.8% decline from 1940; exports were 1,464,621,550, a 2.6% gain. Principal imports in 1941 were: fuels and lubricants 17.4% (1940: 17.5%), textiles 15.8% (17.4%), chemicals and pharmaceutical products 10.9% (8.5%), foodstuffs 7.7% (7.2%), iron and iron goods 7.3% (9.2%), machinery and vehicles 6.9% (9.9%), metal goods except iron 6.7% (6%), paper goods 5.9% (5.8%). Meat and livestock products contributed 62.1% of the value of exports (1940: 49.1%). Chief export items were, in value: meats 26.4% (1940: 21.5%), wool 16.3% (13.7%), hides 10.1% (8%), wheat 10.7% (19.9%), linseed 4.5% (8.4%), quebracho extract 1.9% (2.1%), oils (except linseed) 2.8% (1.2%), mineral products 2.2% (1.5%), textiles 1.7% (0.6%).

In the first eight months of 1942, imports increased 22.1% in value; in the first seven months, exports increased 12% over the total for the same period of 1941.

In 1942, 45,780 km. of railroads (12,702 km. state-owned in 1941) were in operation. An Argentine government-financed rail line into the Bolivian oil fields (begun in 1941) was in process of construction in 1942.

Air transport by Pan American Airways, providing extensive service to all parts of America, was greatly expanded in 1942. In September, a new daily service was instituted from Buenos Aires to the United States by way of Salta and the west coast of South America. The Argentine merchant marine aggregated some 300,000 gross tons in 1941, most of it state-owned.

THE TANKER "VICTORIA" was the first Argentine ship to suffer damage in World War II. An explosion, presumably caused by a torpedo, stove in its side plates off Cape Hatteras April 17, 1942

In 1942 there were 21,456 km. of national roads, 29,143 km. of provincial roads built with national assistance, and 9,857 km. of roads leading to railway stations.

Agriculture.—Argentina's resources are principally agricultural and pastoral, with 10.8% (74,130,000 ac.) and 44.4% (306,404,000 ac.), respectively, of the country's area devoted to them in 1941. In 1942–43 the area devoted to principal crops (in hectares; 1 hectare = 2.471 ac.) was wheat 6,400,000; maize 5,000,000; linseed 2,465,000; oats 1,343,000; rye 975,000; barley 747,000; birdseed 50,000; rice 33,400 (1941–42); sugar cane 188,714 (1939–40); vineyards 137,934 (1939–40); cotton 336,600 (1940–41); sunflower seed 750,000; alfalfa 5,402,400 (1939–40); potatoes 241,800 (1940–41). Cereal and linseed acreage, which decreased in all cases, totalled 16,981,000, 12% less than in 1941–42. Tonnage produced (official estimate) was: wheat 6,200,000; linseed 1,670,000; maize 9,500,000; oats 470,000; barley 383,000; rye 160,000; birdseed 27,000; sugar cane 5,835,075 (1939–40); cotton 76,500; sunflower seed 670,000; rice 57,000 (1940–41); potatoes 1,400,000; grapes 953,866 (1939–40).

While the vast majority of animals of the pastoral industry were intended for slaughter, the Argentine dairy industry grew more important in 1941 and 1942, and in 1941, 67,428,000 pesos worth of dairy produce was exported, chiefly in the form of butter and casein.

Manufacturing.—Manufacturing underwent extensive development after 1935. Comparative figures from the 1939 and 1935 industrial censuses showed a 32.7% increase in the number of establishments (to 53,866) and 31.1% in number of workers (to 618,792). Subsequently, a probably much greater increase took place.

The chief production is in foodstuffs, textiles, forest products, paper, printing, chemicals and pharmaceuticals. Practically all manufacturing was for domestic consumption.

Mineral Production.—Argentina ranked 11th in the world production of petroleum in 1941, with a production for that year of 3,499,757 metric tons, 63% of which came from state-owned wells. Approximately 75% came from the Comodoro Rivadavia fields in Chubut territory (in southern Patagonia), the rest from Neuquén territory and Salta and Mendoza provinces, along the Andean foothills.

In 1942 a new field was discovered in Calluco.

(R. H. Sh.; C. N. G.)

Arizona. The "Apache state" lies in the southwestern part of the United States of America. It borders Mexico on the south; the Colorado river forms most of the western boundary. By federal census of 1940, the area is 113,580 sq.mi.; pop. 499,261, 65.2% rural and 34.8% urban. Native and foreign-born whites (including Mexicans) numbered 389,955 and 36,837 respectively; Negroes, 14,993; other races (mostly Indians), 57,476. The capital is Phoenix, with a population of 65,414. Chief cities are Tucson (36,818); Douglas (8,623); Mesa (7,224); Globe (6,141); Prescott (6,018); Bisbee (5,853); Yuma (5,325) and Flagstaff (5,080).

History.—The state officials in 1942 were: chief justice, Alfred C. Lockwood; governor, Sidney P. Osborn; secretary of state, Harry M. Moore; attorney-general, Joe Conway; treasurer, Joe Hunt. All were re-elected at the Nov. 1942 election except Joe Hunt, who was elected state tax commissioner; J. D. Brush was elected treasurer. Secretary of state Harry M. Moore died after the November election and was succeeded by Dan E. Garvey, appointed by the governor. A special war session of the 15th state legislature was called for April 6. Several measures were passed, including a bill providing for a civilian defense board and a defense council.

Education.—According to the report of 1940–41, the average daily attendance and the number of teachers in the public schools stood, respectively, as follows: elementary schools, 70,751 and 2,500; high schools, 18,394 and 815. In addition there were 58 private and parochial schools.

Public Welfare, Charities, Correction.—In Nov. 1942, there were 36,091 persons receiving assistance from the state department of social security and welfare, with a total state expenditure for the month of $288,899. State appropriations for 1942 were as follows: industrial school $53,920; juvenile girl offenders $50,000; pioneer home $74,830; prison $181,540; state hospital for insane $292,625 (to this was added $67,789 at the special session); school for deaf and blind $81,970.

Communication.—There were 3,473 mi. of improved state highway and 202 mi. unimproved as of Dec. 31, 1941. The total railroad mileage in the state on the same date was 2,180 mi.

Banking and Finance.—National banks in 1942 had deposits of $87,864,000; loans and discounts of $29,678,000; investments of $24,999,000. State banks had deposits of $34,665,000; loans and discounts of $11,649,000; investments of $12,229,000.

Agriculture.—To meet the labour shortage in 1942, school children, college students, women and professional men went out from town to pick cotton whenever possible.

Leading Agricultural Products of Arizona, 1942 and 1941

Crop	1942 (est.)	1941
Wheat, bu.	462,000	392,000
Oats, bu.	270,000	256,000
Sorghum grain, bu.	1,440,000	1,829,000
Corn, bu.	410,000	451,000
Cotton lint, bales	194,000	181,000
Grapefruit, boxes	2,835,000	3,450,000
Oranges, boxes	700,000	660,000
Horses, head	74,000	74,000
Cattle and calves, head	950,000	916,000
Sheep and lambs, head	767,000	763,000

Manufacturing.—Less than 10% of the population was engaged in manufacturing in 1942. The most important industries were food, textile, metal and lumber products.

Mineral Production.—The mine production of copper for 1941 was 665,500,000 lb. Production for 1942 was estimated to be higher than that of any previous year. (H. A. H.)

Arkansas. In the south-central U.S., Arkansas was the 25th state admitted to the union (1836). Its older popular name is "Bear state," the newer (by resolution of the legislature), "Wonder state." Area, 55,336 sq.mi.; pop. (1940) 1,949,387. The population is predominantly rural, although the 1940 census showed a slight movement to the cities, the urban population having increased from 20.6% in 1930 to 22.2% in 1940. The white population was 1,466,084; Negro, 482,578; other races, 725; foreign born, 7,692. Only 3,210 aliens registered in 1941 under the federal law. The capital is Little Rock (88,034). Other cities are Fort Smith (36,584); Hot Springs (21,370); Pine Bluff (21,290); North Little Rock (21,137); El Dorado (15,858); Texarkana (11,821).

History.—Homer M. Adkins, Democrat, was re-elected governor in the election of Nov. 3, 1942. The following other state officials, all Democrats, were elected to take office in Jan. 1943: J. L. Shaver, lieutenant governor; C. G. Hall, secretary of state; Guy E. Williams, attorney general; J. O. Humphrey, auditor; Earl Page, treasurer; Claude E. Rankin, land commissioner. Three new members were elected to the supreme court, Ben E. Carter, Edward F. McFaddin, R. W. Robbins. Two new members were sent to the house of representatives, J. W. Fulbright from the third district and Brooks Hays from the fifth. John L. McClellan was sent to the senate. Although about 300,000 had paid the poll tax, fewer than 100,000 went to the polls. The main reason was that the Republicans did not put out an opposition ticket. The vote was heavier in the August primaries. In the first primary there were four candidates for the senate. In the run-off J. L. McClellan defeated Jack Holt by a large majority, partly, it was believed, because the governor announced his support of the latter. Four amendments to the constitution, one referred act and one initiated act were submitted to the electors. Two amendments were adopted, one to allow counties to support hospitals by taxation and the other to "freeze" boards of state institutions and to "stagger" terms so as to make it impossible for the governor to get control. The initiated act reducing the number of signatures required to submit a local option measure was adopted. The referred "lawyers bill" to require the employment of lawyers in certain cases was defeated.

The public utilities commission ordered the Arkansas Power and Light company to refund $625,000 to its patrons in 1942. The company contested the order in the circuit court, lost, and did not appeal. The $35,000,000 24-inch oil pipe line, crossing Arkansas from the southwest to the northeast, lacked only a few miles of being completed at the close of 1942. The aluminum plant situated near Lake Catherine went into operation in 1942, making aluminum out of ore mined a few miles away. Arkansas could now produce 180,000,000 pounds a year. Sour gas from south Arkansas was being used for fuel in the aluminum plant. Arkansas secured several war industries, army camps and flying fields at a cost, according to Governor Adkins, of $350,000,000. Two colonies of Japanese who had been evacuated from the west coast, were established in Arkansas. A Negro who had been indicted by an all white grand jury secured a reversal from the state supreme court. He was then indicted by an all Negro grand jury and was convicted. The state supreme court sustained the conviction and the United States supreme court refused to review the case.

Education.—The enrolment of the public schools for 1941–42 was: grades one to eight, 329,123; grades nine to twelve, 67,777; a total of 397,369; teachers numbered 13,066; expenditures, $16,062,023. The impact of the war was felt on the teaching force, leaving 895 positions unfilled and 275 discontinued. Approximately 300 emergency permits were issued.

Public Welfare and Charities.—The total federal expenditures for relief in Arkansas from 1935 to the close of 1941 amounted to $197,600,000, of which $21,724,209.21 was spent during the fiscal year of 1941. Relief expenditures by the State Welfare department for the fiscal year ended June 30, 1942, were $4,080,095.76. The largest item was for old age assistance, $2,402,348 equally divided between state and federal funds. In addition some 60,000 persons received food stamps.

Communications.—The state had 9,289.3 mi. of highways in 1942, of which 1,242.7 were concrete, 486.8 asphalt, 1,357.1 bituminous, and 5,575.8 gravel. New construction was practically stopped by the war. The railway mileage was 4,538.

Banking and Finance.—State banks and trust companies numbered 166 in 1942; building and loan associations, 8. The resources of the former amounted to $142,710,657 as of June 30; deposits as of Dec. 31, 1942, $174,060,395; loans, $32,000,000; U.S. bonds, $47,258,578. Total resources of the latter, $3,098,005. The national banks numbered 50 with assets of $188,576,000; deposits, $175,424,000.

The state debt was reduced only $1,000,750 in 1942, bringing it down to $145,925,524. The state income tax increased 146% in 1942, the highest increase of any state in the union. The income tax paid to the nation was $8,476,000.

Agriculture.—The total farm value of 34 important Arkansas crops in 1941 was $235,192,000, compared with $169,000,000 in 1940. A preliminary survey gave a valuation of $282,423,000 for the crop of 1942.

A cattle show at Little Rock revealed great strides in that industry.

Table I.—*Leading Agricultural Products of Arkansas, 1942 and 1941*

Crop	Production	
	1942 (est.)	1941
Cotton, bales	1,600,000	1,450,000
Corn, bu.	35,785,000	46,032,000
Rice, bu.	14,204,000	10,918,000
Soybeans, bu.	3,336,000	2,854,000
Peaches, bu.	2,337,000	3,042,000

Manufacturing.—In 1939, the industries of Arkansas turned out products valued at $160,166,984 and employed 39,438 persons to whom they paid wages of $30,787,479.

Table II.—*Principal Industries of Arkansas, 1939 and 1937*

Industry	Value of Products	
	1939	1937
Sawmills and kindred works	$35,222,273	$35,963,098
Cottonseed oil, etc.	17,340,538	14,383,526
Petroleum refining	14,327,824	21,320,560
Nonalcoholic beverages	5,632,283	878,381
Household and office furniture	5,441,196	6,627,435
Bread and bakery products	4,910,418	5,384,284
Newspaper publishing and printing	3,848,381	3,661,977

Mineral Production.—In 1942 a new deposit of bauxite was discovered, estimated to be 4,000,000 to 5,000,000 tons. The war stimulated mineral production considerably. In 1940 the value was $33,705,929.

Table III.—*Principal Mineral Products of Arkansas, 1940 and 1939*

Mineral	Value, 1940	Value, 1939
Petroleum	$21,239,515	$16,931,240
Coal	4,480,713	4,103,020
Bauxite	2,804,144	2,293,455
Manganese	126,299	89,178
Natural gas	578,808	545,936
Natural gasoline	520,669	754,709

(D. Y. T.)

Armies of the World. Because of the military need for censorship, no current data, official or otherwise, is available covering the statistics of this subject. The usual article is therefore omitted for the duration of the war. (For related topics *see* AIR FORCES OF THE WORLD; MUNITIONS OF WAR; SELECTIVE SERVICE; WORLD WAR II.)

Arnold, Bion Joseph (1861–1942), U.S. electrical engineer, was born Aug. 14 at Casnovia, Mich. He received his E.E. degree from the University of Nebraska in 1897. Arnold built the "intramural railroad" at the Chicago World's fair in 1893, the first commercial application of the electric third rail to railroading in the United States. He later devised the plan to electrify all railroads running into the Grand Central station in New York City, thus eliminating much of the city's smoke nuisance. Arnold was chief consulting engineer of Chicago, 1902–07, and was in charge of construction of the city's street railways after 1907. He was president of the American Institute of Electrical Engineers, 1903–04. He died in Chicago, Ill., Jan. 29.

Arnold, Henry H. (1886–), U.S. army officer, was born June 25 in Gladwyn, Pa. He was graduated from West Point in 1907 and served in the Philippines until 1909. He set an altitude record in 1912, and was the first aviator to use radio in reporting artillery fire observed from a plane. During World War I he headed the information service of the signal corps's aviation division. Gen. Arnold led a round-trip flight of army bombers to Alaska in 1934. He was named major general, chief of the air corps, 1938. In Oct. 1940, he became the nation's first acting deputy chief of staff in charge of co-ordinating all matters pertaining to the air corps. In May 1941 Pres. Roosevelt made him a full-fledged deputy chief of staff, and on Dec. 15, 1941, the president named him for temporary promotion to the rank of lieutenant general.

In March 1942 Arnold was made commander of the air force, which was put on an equal footing with the ground forces. In July 1942 he announced the existence of a "troop carrier command," equipped to transport air-borne soldiers for offensive operations, and on Dec. 13 he asserted that the U.S. had a "secret weapon or two," which would deal paralyzing blows to the axis.

Arsenic. Production of white arsenic in the United States in 1941, including 6,123 short tons of crude and 28,661 tons of refined, totalled 34,784 tons, an increase of 49% over 1940 and a new record high. Consumption increased 28% to 40,442 tons. Increased demands indicated a shortage in 1943 unless production facilities were increased. Mexican production was reported at 9,628 metric tons in 1940 and 12,844 tons in 1941, most of which went to the United States, which would indicate an increase in the United States imports over the 9,929 tons received in 1940, although this was not shown in the 7,578 tons received in the first nine months of 1941, the agreement for the increase in Mexican deliveries not having gone into effect until September.

(G. A. Ro.)

Art: *see* AMERICAN LITERATURE; ARCHITECTURE; PAINTING; SCULPTURE; etc.

Art Exhibitions. War themes were prominent. Outstanding examples were two poster exhibits and the stirring Road to Victory (with Sandburg's text and photographs chosen by Lieutenant Commander Edward Steichen) at the Museum of Modern Art. The most significant contemporary art event of the year was the Metropolitan museum's Artists for Victory, with awards of $52,000 in purchase prizes. A number of benefit exhibitions were held for worthy causes: most important, Great Dutch Masters for the benefit of the Queen Wilhelmina fund and the American Women's Voluntary Services, seen first at Duveen's and then, with omissions and additions, at the Art Institute of Chicago. The Downtown gallery featured the work of Kuniyoshi for the benefit of United China Relief. Knoedler's showed early Flemish painting for the benefit of the Society for Aid to Belgian Seamen; Parke-Bernet's delightful display of French and English 18th century art was held for the benefit of the American Women's Voluntary Services. Particular stress was laid on the art of the Americas in several noteworthy events such as the comprehensive showing of pre-Columbian sculpture at the Santa Barbara Museum of Art and Chilean Art Today, brought to the United States by the Co-ordinator of Inter-American Affairs and seen at the Toledo Museum of Art. Folk art of the Americas was on view at New York's Downtown gallery.

Exhibitions centring around special themes included 20th Century Portraits, at the Museum of Modern Art; Renaissance in Fashion, an attempt to connect art and life, at the sedate Metropolitan; a national exhibit of Negro artists at Atlanta university, Atlanta, Ga. Harvard's Fogg Art museum put on the amusing Arts of the Theatre since 1900 and the Baltimore Museum of Art elected to introduce us to the Golden Age of the Russian Icon. Certain milestones in the development of American painting from 1930 to 1940 were marked by Worcester's Art museum. The Detroit Institute of Arts provided the opportunity to study Five Centuries of Marine Painting. In New York the Whitney Museum of Art showed the History of American Water Color Painting; the Pierre Matisse gallery showed Artists in Exile, and Peggy Guggenheim created a stir by the novel installation of her new gallery, Art of This Century.

Among the year's outstanding one-man shows, two were held at the Art Institute of Chicago: Henri Rousseau and Grant Wood, both exhibitions being highly controversial. Charles Dana Gibson staged a comeback at the Cincinnati museum. Corot was on view at Wildenstein's (for the benefit of the Salvation Army) and Cézanne at Paul Rosenberg's (for the benefit of the Fighting French and France Forever). John Flanagan's sculpture and Tchelitchew's painting were shown at the Museum of Modern Art. Bonington was given a big exhibition at the Lyman Allyn museum in New London, Conn. Rembrandt attracted crowds to the Metropolitan (all works selected from its own collection), and Paul Revere starred at the Boston Museum of Fine Arts.

Annuals were held as usual, among the best being the 3rd All-American Biennial at the Virginia Museum of Fine Arts, Richmond; the Whitney's well-chosen Annual; the Art Institute of Chicago's 53rd Annual (also hand-picked); the St. Louis City Art museum's Trends in American Painting of Today (staff-selected); the 137th Annual of the Pennsylvania Academy of the Fine Arts, half the exhibitors chosen by jury, half by invitation. In the decorative arts, the Brooklyn museum showed textiles by Dorothy Liebes, and Cooper Union, Spanish and Hispano-American fabrics. (D. O.)

Art Galleries and Art Museums. Museum officials during the year 1942 directed their activities into entirely different channels. Due to the urgent demands of war, the progressive era of intensive collecting was over because a definite proportion of the money available had to be spent for means of preserving the collections from air attacks, and in making plans for evacuating the finest objects

WAR PAINTINGS of Thomas Hart Benton on exhibit in New York city in April 1942. The picture at the left is "Exterminate"

from the seaboard to places of safety inland. Likewise buildings —many of which were old—had to be modified, as far as money would allow, to protect visitors in case of raids. Staffs had to be trained in first-aid practice and in air-raid drills. Such restrictions of usual activity did not imply a curtailment of service, for new techniques and ideas for collecting and displaying material were devised for wartime needs. Significant collections of world famous and priceless works were given to the people of the United States in 1942.

The most important gift in many a decade was that of the superb collection of Joseph E. Widener of Philadelphia given to the National gallery in Washington in memory of his father, the late Peter A. B. Widener, a selection of which was put on view in Washington on Dec. 20, 1942. Congress authorized the nation to pay the $195,000 (5%) tax of the state of Pennsylvania to secure these famous works consisting of: 100 paintings of several schools; many pieces of sculpture; fine tapestries, including those owned by Cardinal Mazarin; furniture and other works of first importance. The paintings, to mention but a few, include: The superb "Feast of the Gods" by Giovanni Bellini, the "Cowper Madonna" by Raphael, 14 paintings of the highest quality by Rembrandt, works by Titian, El Greco, Vermeer, and portraits by Van Dyck, also those of the Dutch and Flemish schools and other Italian schools. Gertrude Vanderbilt Whitney died in 1942 and left $2,500,000 to the Whitney Museum of American Art to be used without restriction. Herbert Greer French gave 800 of his finest prints from the 15th century to the present day to the Cincinnati Museum of Art. Thirty new American Rooms in Miniature by Mrs. James Ward Thorne of Chicago were presented to the Art Institute of Chicago.

Museums assumed their responsibilities for service during wartime. The Metropolitan Museum of Art, in New York, before evacuating its finest objects to places of safety, arranged several new types of displays: by gathering together in one place all of Rembrandt's works in the museum (which were usually difficult to see due to wide separation by collections) they succeeded in attracting the public in large crowds. Later a display of Renaissance in Fashion, contrasting the costumes in the paintings with present-day costume design, met with popular success. In December (in the evacuated galleries on the second floor) the largest exhibition of contemporary American art in all its phases was held with $52,000 in prize awards, called Artists for Victory. Native material in design was made available to everyone at the Metropolitan through the Index of American Design department which was to publish, exhibit and offer this rich material to the public in the study collection. These 20,000 superb plates of American design motifs were made during the six years of the WPA Federal Art Project. The Museum of Modern Art in New York contributed progressively toward aiding art in wartime by varied types of special exhibits: poster contests in the United States and in the South American republics to improve war designs; exchange exhibits with South and Central America; with a magnificent photograph display called Road to Victory—propaganda for freedom; also travelling exhibits on war themes as Camouflage and other vital subjects. The Art Institute of Chicago set aside one gallery for the duration as War Art Gallery and assisted Chicago artists during wartime by showing their work in the Room of Chicago Art.

Many benefit exhibitions were held in New York to raise money for United Nations war causes: the Great Dutch Masters Exhibit shown in New York and at the Art Institute of Chicago; an exhibit of El Greco's works for Greek Relief and several showings of the work of Cézanne for the Fighting French, and others. An exhibit of Chilean art was shown at the Toledo Museum of Art; and 218,089 persons viewed the travelling exhibitions of North American paintings which went to the South and Central American countries. Prominent museum and art school officials from South America visited U.S. museums as guests of the state department and other agencies.

The Frick Collection in New York is an example of a museum which built its own bombproof shelter on the premises (at a great cost) to house its priceless paintings in case of air raids; 64 paintings were stored there.

In England the relief from intensive bomb raids made it possible to evaluate the wisdom of the first plans made at the start of the war and to estimate the actual damage done by the enemy. It was proved that the most important initial step is to evacuate the most valuable objects at once to a place of safety. The art galleries of Glasgow, Plymouth, Southampton, Birmingham, Coventry and Hull were severely damaged, but their collections, having been evacuated, were unharmed. (L. B. Br.)

Arthritis.

According to a Swedish study, about half of the members of a group of patients with chronic arthritis had at least one near relative with arthritis. In the same group, the greatest frequency of onset was in winter and spring and the least frequent in summer and fall.

Investigations on possible cause have been devoted principally to the pleuropneumonia-like group of organisms which were found responsible for a spontaneous polyarthritis in rats in Java. Animals infected with organisms of this group frequently showed arthritis as a complication in a form which resembles suppurative arthritis rather than rheumatoid arthritis in man. Previously most investigators had emphasized its similarity to rheumatoid arthritis in man. In one series of patients, cultures were made from the genital tract, and pleuropneumonia-like organisms were found fairly frequently. The evidence suggests that they are capable of causing disease, either alone or in combination with other bacteria, and they may produce a condition similar to gonococcic infection of the joints. So far, pleuropneumonia-like organisms could not be isolated from the joints of patients with arthritis.

One study of the agglutination titer of sera of patients with rheumatoid arthritis led to the apparent conclusion that the relation of this disease to streptococci is nothing more than suggestive. In another study involving the attempted production of arthritis in animals by means of cultures of streptococci prepared in various ways and given by various routes, it was indicated that the hemolytic streptococci reached the joint membrane and presumably sensitized it. Small amounts of the same culture injected intravenously later were capable of eliciting inflammatory reaction in the joints and this was of a more chronic nature than that usually observed in control animals.

A new type of disease, involving the joints predominantly, was described. It was called palindromic rheumatism to indicate its recurring nature. It is characterized by oft-recurring multiple attacks of acute arthritis without fever, but with pain, swelling, redness and disability. The attacks appear suddenly, develop rapidly, generally last a few hours or days and then disappear completely but recur at irregularly spaced intervals. The cause was not identified and the treatment was inconclusive. The disease is a nuisance, but permanent crippling of any single joint was not recorded.

The majority of studies on treatment during 1942 were devoted to the use of gold-containing compounds. All reports continued to emphasize the hazards associated with this form of treatment, although there was considerable agreement as to the effectiveness of this form of therapy. Efforts were being made to find a form of gold salt which would not be so toxic to the patient and which would be as effective or more effective in combating the disease. Other forms of treatment which were studied included vitamin D and other vitamin and endocrine preparations, iontophoresis, using different vasodilating drugs, and fever therapy. The treatment of arthritic joints, once the disease has become established, is of great importance, and additional contributions to this subject continued to appear.

One section of a report on the psychologic approach to rheumatoid arthritis is subtitled "The Rheumatoid Personality." Here it is stated that there is a psychologic characteristic common to all persons in the group studied, involving marked emotional self-restriction and obsessional trends. The writer of that report did not, however, express any conclusions as to how far natural recovery from rheumatoid arthritis may be influenced by improvement in the life situation or in providing the patient with a new end in view.

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Arthur, Joseph Charles

(1850–1942), U.S. botanist, was born Jan. 11 at Lowville, N.Y. He discovered a remedy for pear blight and the formaldehyde treatment for the control of potato scab and oats rust. He wrote numerous books on plant rust and other plant diseases. Dr. Arthur died at Lafayette, Ind., April 30. (See *Encyclopædia Britannica.*)

Artillery: *see* Munitions of War; World War II.

Art Sales.

Ancient stone, 250 tons of it, from the William Randolph Hearst collection was sold to an anonymous purchaser for $19,000 by Gimbel Brothers (who early in 1942 set a new precedent for a department store by launching into the auction field). This Cistercian monastery, the oldest building in the western hemisphere, was packed in 10,500 cases. It was bought at a bargain price, Hearst having paid $500,000 for it. Dr. Albert C. Barnes of Merion, Pa. bought Renoir's "The Mussel Gatherers" from Durand-Ruel for $175,000, the second highest priced Renoir ever sold. It was again a record auction season in New York. Parke-Bernet announced a $4,000,000 year for the 1941–42 season. At the Plaza art galleries receipts amounted to more than $1,000,000. Estates like the Harry Payne Whitney, the Arthur Curtiss James, the Christian Holmes brought the accumulation of several generations of collecting into the market. Attendance at all sales was up. More than 900 persons paid an admission of 50 cents to the Harry Payne Whitney sale, held on the premises of the Whitney 5th avenue mansion. The auctioning off of 30 of the Whitney tapestries, including the famous Royal Beauvais and Gobelin weaves, was the occasion for buying by many museums. Donors to the Art Institute of Chicago paid $20,000 for Boucher's Beauvais tapestry, "La Pipée aux Oiseaux."

The total for tapestries and panelling of the house was $295,411.

In England the demand for works of art showed no abatement and dealers found themselves opposed by determined private buyers. Because of the press of business the principal firms were compelled to cut their usual summer vacation of three months to as many weeks. At Christie's sale of the collection of the late Andrew T. Reid, the top price, £1,995, was given by Sir Edward Mountain for Raeburn's portrait of Alexander Houstoun of Clerkington. This came out of the Major Houstoun sale in 1918 for £2,520. At Sotheby's, Mrs. E. Guy Ridpath's well-known collection of knives, forks and spoons came under the hammer, the 310 lots bringing a total of £2,678—several showing a good increase on previous auction valuations. Changing prices as a record of changing taste became evident in the sale of the property of the late Sir Edmund Davis at Christie's. In 1923 Sir Edmund gave £1,575 for Millais' "The Eve of St. Agnes." In 1942, it fetched £630. The late Walter Jones's Turner water colours also showed a marked depreciation at Christie's. (D. O.)

Arts and Sciences, American Academy of: *see* American Academy of Arts and Sciences.

Aruba: *see* Curaçao.

Asbestos.

Sales of asbestos produced in the United States increased from 20,060 short tons in 1940 to 24,39 tons in 1941, and the available supply (sales, plus imports, less exports) increased from 262,190 tons to an estimated 400,700 tons. No recent figures were published from the leading world producers—Canada, Southern Rhodesia, South Africa and Swaziland, but United States imports from Canada in 1941 increased heavily over 1940; from South Africa the increase was less, while from other sources imports declined. (G. A. Ro.)

ASCAP: *see* Performing Right Societies; Radio: *Musical Property.*

Ascension: *see* British West Africa.

Asia: *see* Afghanistan; China; India, etc.

Asphalt.

The usual detailed statistics on asphalt production in 1941 were not made public, but a heavy increase was reported in the consumption of petroleum asphalt, from 6,596,000 short tons in 1940 to 8,064,400 tons in 1941. Much of this increase seemed to have been due to the use of various types of petroleum asphalt in airport runway construction. (G. A. Ro.)

Assassinations.

The assassinations of 1942, actual or attempted, included the following:

Jan. 5	Melun, France. Body of Yves Paringaux, chief of staff of Vichy's interior ministry who directed suppression of anti-nazi activities, was found on railroad tracks.
Feb. 24	Ankara, Turkey. German Ambassador Franz von Papen and his wife narrowly escaped death when an unidentified young man set off bomb, killing himself and wounding two women.

A CAUSTIC REJOINDER, by Lewis in the *Milwaukee Journal*, to Heinrich Himmler's elegy of Reinhard Heydrich as "a character of rare beauty." Heydrich, known throughout Europe as "the hangman" died June 4, 1942, of wounds inflicted by two Czech patriots eight days before

June 2	Paris, France. Albert Clement, editor of *Le Cri du Peuple*, fascist newspaper, was shot and killed as he was leaving his office.
June 4	Prague, Bohemia. Reinhard Heydrich, reichs protector for Bohemia and Moravia, died of wounds inflicted by two assassins while he was riding in his automobile on Prague-Berlin highway, May 27.
Aug. 7	Arpajon, France. Henry Gachelin, close collaborator of French fascist leader Jacques Doriot, was shot and mortally wounded by an unidentified assailant as he was walking home from railway station.
Aug. 27	London. Yugoslav sources hinted that Hans Drosch, German consul general for Ljubljana district of Croatia, who "died suddenly" in Sion hotel in Ljubljana, was poisoned by anti-axis patriots.
Dec. 24	Algiers, Algeria. Adm. Jean Darlan, high commissioner in French North and West Africa, was assassinated at his office in Algiers by young Frenchman.

Association for the Advancement of Science, American: *see* AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

Assollant, Jean (1905–1942), French aviator, was born Sept. 26 in Versailles. After serving in the Riff war, 1925, he became pilot for the Franco-Rumanian airline. In 1928, he failed in a first attempt to fly across the Atlantic but in the following year flew from Old Orchard Beach, Me., to Santander, Spain, although he fell short of his objective —Paris—because he ran out of gasoline. He made the 3,128-mi. non-stop flight in 29 hours 52 minutes. In 1933 he made a spectacular non-stop flight from Oran, Algeria, to Karachi, India, covering 4,098 mi. in 36 hours. A Vichy dispatch on May 9 reported "unofficially" that Capt. Assollant had been killed in action while fighting against the British in Madagascar. A Vichy dispatch of Sept. 9 said his body was found in wreckage of his plane adrift off Antsirana.

Astronomy. A notable occasion for astronomy in the western hemisphere took place on Feb. 17, 1942, when President Manuel Avila Camacho of Mexico formally dedicated Mexico's new astrophysical observatory at Tonanzintla. The dedication ceremonies were attended by many distinguished scientists. The new observatory is equipped with a 27–31-in. Schmidt telescope. Since the latitude of this observatory is 19° N., it is well located for study of much of the interesting southern sky which is inaccessible to more northern observatories.

Solar System.—*The Sun.*—New results from solar eclipse photographs made in Russia at the 1936 total eclipse added valuable data on the solar corona. Menzel and Petrie measured the wave-lengths of seven new lines in the coronal spectrum. These new lines were not identified. Probably they would prove to be lines produced by well-known elements under exceptional physical conditions.

The total light emitted by the corona is difficult to measure and apparently varies considerably. Measurement of this light during the total eclipse of Sept. 21, 1941, was made by Chang and Li with very simple equipment. They used an ordinary Weston exposure meter, a 9-cm. camera lens, and a sensitive galvanometer. With this equipment they compared the light of the corona to that of the full moon. After carefully calibrating their exposure meter, they found that at this eclipse the total light of the corona was 0.39 that of the full moon.

Planetary System.—During 1942 seven comets were discovered. Five of these proved to be rediscoveries of previously known objects, one of them having been first discovered in 1867. Both of the new discoveries were made photographically by Whipple.

A composite light curve of the asteroid Eros was obtained by Roach from photoelectric observations made on six nights. He found that this observed light curve may be quite well represented by a theoretical curve based on Lambert's law of reflection, provided one assumes a geometrical figure with dimensions in the ratio 1:4:13. If an idealized case of a three-axis ellipsoid is assumed, the ellipsoid would have the dimensions 35 km., 15.6 km. and 7.2 km. However, small departures of the observed light from this theoretical curve suggest that the geometrical figure of the asteroid is irregular. This was a conclusion previously expressed, but from much less accurate data.

Stars.—*Special Stars and Stellar Structure.*—Neon, the gas frequently used in the tubes of advertising signs, was found to be far more abundant in the atmospheres of the stars than was heretofore believed. Unsöld, from a thorough study of line widths in spectra of the star Tau Scorpii, found that neon is the second most abundant element in the atmosphere of this hot star. Hydrogen is the most abundant element. The very great abundance of hydrogen in the atmospheres of the stars had long been known, but to find that neon, so rare on earth, is the next most abundant element was indeed surprising. A test of the abundance of neon in the atmospheres of other stars was awaited with great interest.

It was suggested by Lundmark, Duncan and others some 20 years previously that the well known Crab nebula in Taurus was probably the same object as the "guest-star" which was observed in the far east in A.D. 1054. Duyvendak published new translations of Chinese and Japanese records which lent support to this idea. Mayall and Oort made a careful examination of the evidence, including a study of recent observations, especially those of Baade and Duncan. They concluded that the "guest-star" or nova of 1054 was really a supernova—in fact was one of the brightest supernovae on record. Considering the observed rate of expansion of the nebula, they found that the outburst which produced it should have occurred about A.D. 1100. The discrepancy in time is not serious, since the rate of expansion need not have been constant. The position in the sky of the nebula and of the nova is approximately the same, as nearly as can be determined from the early records. Mayall and Oort concluded that a preponderance of evidence indicated that the Crab nebula is the result of the outburst of the supernova which was so conspicuous a stellar object in the year 1054.

Photographs of the Crab nebula taken by Baade in different selected regions of wave-length showed that the nebulosity consists of two distinct parts. There is an outer system of filaments, shown beautifully by the $H\alpha$ region of the spectrum, and an inner mass of amorphous structure which is shown by photographs in the blue. Baade found that the line spectrum originates in the outer filaments, whereas the continuous spectrum originates in the inner amorphous mass.

A detailed study of the spectra of planetary nebulae by Wyse added to the knowledge of these interesting objects. From his detailed investigation Wyse concluded that these nebulae are not divided into two sequences, carbon and nitrogen, like the Wolf-Rayet stars. He found that there are no important differences in chemical composition between these nebulae and the diffuse nebulae, such as the great nebula in Orion. It appeared, therefore, that an interpretation of the physical conditions in one type should apply to the other as well.

External Galaxies.—The rotation of the spiral nebula Messier 33 in Triangulum was investigated by Mayall and Aller. Radial velocity observations were made of 25 bright condensations distributed over the nebula, and of the nebulosity in the region of the nucleus. The velocity of the system was found to be −167 km.sec., and the inclination of the principal plane of the spiral to the line of sight was found to be 33°. The main body of the spiral, extending to 18′ from the centre, appears to rotate almost like a solid body, the rotational velocity increasing uniformly with distance. The outer parts of the nebula, extending between 18′ and 30′ from the centre, appear to rotate like a planetary system for the rotational velocity decreases with distance. Comparison of these results with those for the neighbourhood of the sun in our own galaxy strengthened the belief that the sun is located at a considerable distance from the centre of our own stellar system.

Phenomena Visible in 1943.—*Feb. 4–5, 1943. Total Eclipse of the Sun.*—Visible in eastern Siberia and northern Japan near sunrise on Feb. 5, most of the path of totality over the northern Pacific ocean. The total phase visible near sunset on Feb. 4 in Alaska. Partial phases of this eclipse visible from the northern Philippines, Hawaii and the entire Pacific coast of the United States.

Feb. 20, 1943. Partial Eclipse of the Moon.—Visible generally in Europe, most of Africa, the Atlantic ocean, North America, South America and the eastern Pacific ocean.

Aug. 1, 1943. Annular Eclipse of the Sun.—Visible as an annular eclipse only in the southern Indian ocean and the seas south of Australia. Partial phases visible in Madagascar, the East Indies, Australia and New Zealand.

Aug. 15, 1943. Partial Eclipse of the Moon.—Visible in the western Pacific ocean, Antarctica, Australia and New Zealand, the Indian ocean, Asia, southeastern Europe, and Africa, with the exception of the northwestern part.

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(N. L. P.)

Athletics: *see* TRACK AND FIELD SPORTS; etc.

Athlone, 1st Earl of (ALEXANDER AUGUSTUS FREDERICK WILLIAM ALFRED GEORGE CAMBRIDGE) (1874–), British statesman, was born April 14 at Kensington palace, the third son of the 1st duke of Teck. Educated at Eton and the royal military college, Sandhurst, he served in Matabeleland, Southern Rhodesia, in 1896 and saw action during the Boer war. During World War I he was mentioned twice in dispatches, and in 1917 he was created 1st earl of Athlone. He was governor general of the Union of South Africa from 1923 to 1931. In 1936 he was appointed personal aide-de-camp to the king. He was appointed 16th governor general of Canada April 3, 1940, to succeed the late Lord Tweedsmuir. In a speech on Dec. 10, 1942, he defended Britain's imperial system, asserted the independence of the self-governing dominions was "a fact and not a fiction" and urged critics to be more tolerant in their criticism of the empire.

Atholl, John George Stewart-Murray, 8TH DUKE OF (1871–1942), Scottish peer, was born Dec. 15. He headed the Murray clan of the Highland Scots and inherited the right to maintain a private army by a decree handed down to his father by Queen Victoria. He was a staff officer with the Egyptian cavalry during the Nile expedition, 1898, and served under Lord Kitchener at Khartoum; he also saw action during the Boer war. The duke was a brigadier general during World War I and was a member of the home guard during World War II. He was lord high commissioner to the Church of Scotland, 1918–20 and lord chamberlain, 1922. He died in Perthshire, Scotland, March 16.

Attlee, Clement Richard (1883–), British politician, was born Jan. 3 and was educated at Haileybury and Oxford. He was called to the bar in 1905 and from 1913 to 1923 lectured in social science at the London School of Economics. In World War I he served in Gallipoli, Mesopotamia and France. He was undersecretary of state for war in the first Labour administration (1924) and postmaster general in the second (1931). He became leader of the parliamentary Labour party in 1935. He joined Churchill's war cabinet in May 1940 and in the autumn of 1941 attended the International Labour conference in New York City. In Feb. 1942 he was appointed dominions secretary and deputy prime minister; in September he visited Newfoundland and Canada. He stated that economic questions and improvements in standards of living and nutrition in the post-war world should not be neglected through preoccupation with political problems.

Attu: *see* ALASKA; WORLD WAR II.

Auchinleck, Sir Claude John Eyre (1884–) British army officer, was born in England, the son of Col. John Claude Auchinleck. He served in India in 1902, and was stationed in Egypt and Mesopotamia during World War I. In 1933 and 1935 he fought against native tribesmen on the northwest Indian frontier. In the spring of 1940 he was made commander of the Allied forces in northern Norway. He took Narvik but was forced to evacuate the city when the Allies failed to make additional landings in the south. In the summer of 1940, after the collapse of France, Auchinleck was appointed general officer commanding the English southern command, and he organized the first defenses of England to forestall the threatened German invasion. In Dec. 1940 he returned to India as commander in chief. In July 1941 he was made commander in chief of British middle east armies, succeeding Gen. Sir Archibald Percy Wavell. Auchinleck's armies in Libya, under Gen. Sir Alan Cunningham, launched an offensive against axis forces Nov. 18, 1941, and advanced far into Libya.

After Rommel counterattacked and drove the British out of Libya in June 1942, Auchinleck took over command of the British 8th army from Gen. Neil Methuen Ritchie; on Aug. 18 it was announced that Auchinleck had been replaced by Gen. Harold R. L. G. Alexander as commander of British middle east armies.

Australia, Commonwealth of. A self-governing member of the British Commonwealth of Nations, situated in the southern hemisphere between longitudes 113°9′ E. and 153°39′ E. and latitudes 10°41′ S. and 43°39′ S.; national flag, a blue ensign, with the Union flag in the quarter and six white stars in the field. Language, English; religion, Christian (census 1933: Anglican, 2,565,118; Roman Catholic, 1,161,455; Presbyterian, 713,229; Methodist, 684,022; other Christians, 603,914). Ruler, King George VI; Governor General, the Rt. Hon. Lord Gowrie, V. C.; Premier, Rt. Hon. John Curtin.

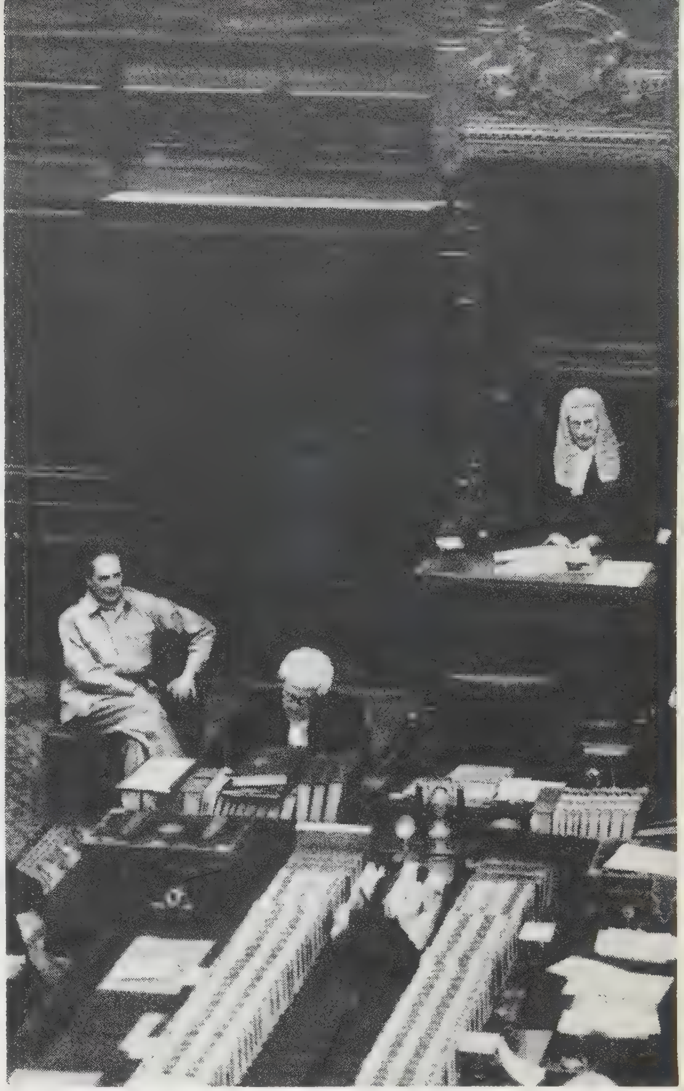
Area and Population.—Area, 2,974,581 sq.mi.; pop. (est. Dec. 31, 1941) 7,137,221. Capital, Canberra. Chief cities (pop. Dec. 31, 1940): Canberra (11,000), Sydney (1,310,530), Melbourne (1,076,000), Adelaide (330,000), Brisbane (335,520), Perth (228,000), Hobart (66,620), Newcastle (116,000).

History.—The Labour government under its prime minister, John Curtin, remained in office throughout 1942. The vigour as well as the ability with which the government had organized the nation for war and dealt with unprecedented problems had gained for it support from the opposition parties in the house of representatives and the undoubted backing of the public. The government's policy was clearly defined by Curtin when in June he explained in the house that one of the Labour party's objectives, the nationalization of banking, would not be introduced during the war. In June, leaders of the government met representatives of the trades unions in an historic conference. As a result, the unions became an integral part of the government machinery for raising production, accepting responsibility for uninterrupted war production flow, and also accepting in principle the compulsory call-up of labour for the vast defense program controlled by the allied works council.

The most controversial legislation passed during 1942 was the National Security (mobilization of services and property) regulations gazetted in February, and the Uniform Tax bills passed in June. The former empowered the minister or any person authorized by a minister to direct any person resident in Australia to (*inter alia*): (1) perform such services as were specified in the direction; (2) to place his property at the service of the commonwealth. It was not unexpected that some opposition would be shown by the house to regulations which represented so great an abrogation of personal liberties. After receiving assurances from the prime minister that such powers were necessary for the urgent prosecution of the war, and would only be used in the national interest, a motion to disallow the regulations was defeated by 54 votes to 7. In April, at a conference of commonwealth and state ministers, the prime minister submitted proposals that, for the duration of the war and one year after, the states should vacate the field of income tax. Curtin explained the government's view that a uniform tax was the only method by which the heavy burden of taxation could be equitably distributed with reasonable conformity to the principle of ability to pay. The commonwealth government was charged with the financing of the entire war effort while the states found their revenue increasing and their obligations decreasing. He suggested compensation based on the revenues received by the states over the past two years from this source and promised that his government would finance new social legislation including widows' pensions. On the grounds that the proposals struck at the sovereignty of the states and that they might never recover their power to levy income tax, the state premiers rejected the proposals. The federal government then introduced four bills providing for the imposition of a uniform tax and the transfer to the commonwealth of the trained staff and accommodation and equipment used by the states for collecting income tax. These bills passed through both houses in June. The validity of this legislation was contested by the states of Victoria, Queensland, South Australia and Western Australia. By a majority of 3 to 2 the high court upheld the validity of the acts.

In Australia, as elsewhere, questions of postwar reconstruction were exercising the minds of economists and legislators. The view of the government was that, unless the special war powers of the federal parliament derived from the national security regulations could be supplemented during the postwar period, the whole social and economic life of the nation would be in jeopardy. The attorney-general, Herbert V. Evatt, therefore introduced a bill in October to authorize a referendum on constitutional reform. The main clause sought full powers for the commonwealth to make laws for "carrying into effect the war aims and objects of Australia as one of the United Nations, including the attainment of economic security and social justice in the postwar world and postwar reconstruction generally." Specific powers sought were for such matters as repatriation, employment, production, price control, improvement of living standards, transport, health and child welfare. The bill also sought to authorize the commonwealth to implement the Atlantic Charter's four freedoms. At the end of November a constitution convention, comprising representatives of the federal government and opposition parties, state premiers and state opposition leaders, met at Canberra to consider the government's proposals. Eventually it was agreed unanimously that specific powers should be transferred voluntarily by the states for five years after the cessation of hostilities under section 51 of the constitution, instead of permanently by referendum.

In October parliament ratified the Statute of Westminster.

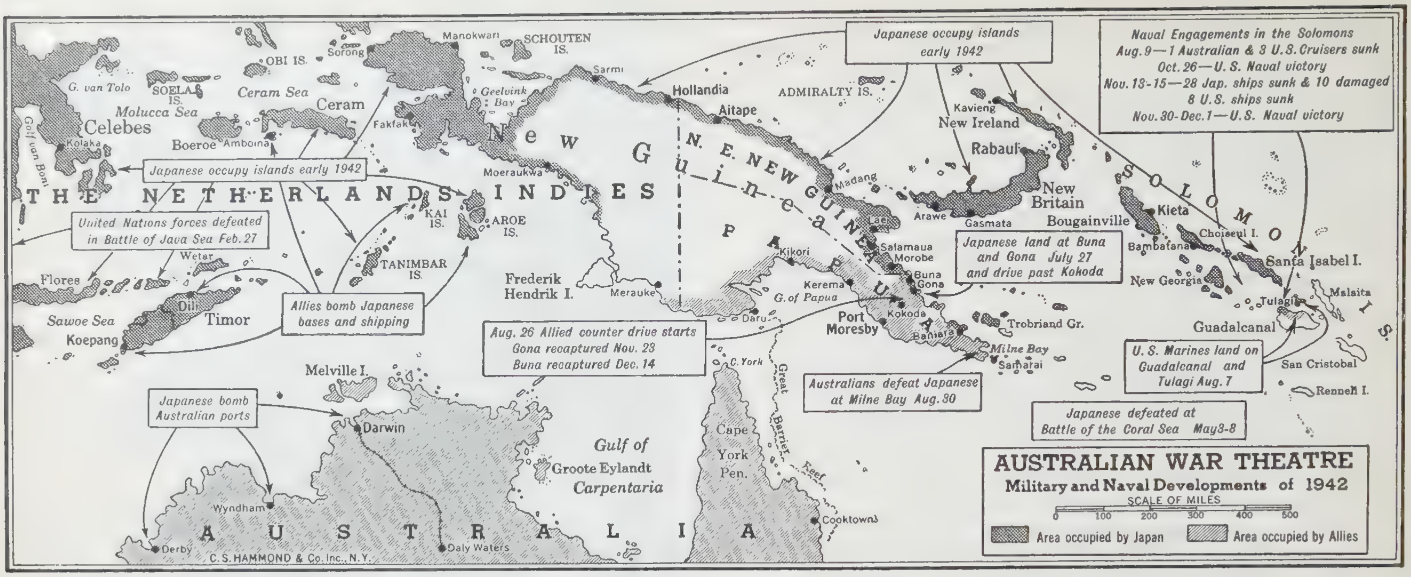


TO GEN. DOUGLAS MAC ARTHUR the Australian house of representatives extended a rare invitation March 26, 1942—to sit at the right of the house speaker

External Affairs.—On his return to Australia in August after an 11 months' trip as special representative of the government to the British war cabinet and the Pacific war council, Sir Earle Page was co-opted to the Australian advisory war council and to attend meetings of the war cabinet. During the middle of the year Dr. Evatt, the attorney-general, visited Washington and London to consult President Roosevelt and Winston Churchill. In America he took part in the formation of the Pacific war council and in the United Kingdom attended meetings of the war cabinet. On Dr. Evatt's return to Australia via Washington in June, the government appointed Stanley Bruce (the high commissioner in London) as accredited representative on the United Kingdom war cabinet and Pacific war council in London. In April Sir Owen Dixon was appointed Australian minister to Washington in succession to Casey, who had resigned on his appointment as British minister of state in the middle east; in October, William Slater became first minister to the U.S.S.R.

The government's attitude to the League of Nations was defined by the prime minister when he announced the cabinet's approval of a payment of £34,000 to the league as Australia's contribution for 1942. He said "It is of the greatest importance to keep up the framework of the league so that 20 years' accumulated experience in international co-operation and administration is not lost."

Public Finance and Economic Affairs.—During 1942 the whole economic life of the nation was dominated by the necessities of war. In prewar years approximately 500,000 factory workers were engaged in the production of peacetime needs. By the end of the year, this number had been reduced to 200,000 (despite the virtual cessation of all imports other than for war needs) while about



500,000 factory workers were engaged on war needs. The government's man-power proposals would result in 1,600,000 men (or 60% of the total male working population) being in the fighting forces or on war work by the end of 1942. Similarly, agricultural production was being planned and controlled. For the year 1942–43 the governmental man-power authorities and production executive carefully balanced the needs of the rural industries with war requirements and established definite production goals. These included 170,000,000 gal. of milk; 35,000 tons of condensed milk; 15,000 tons of dried milk; 560,000 tons of beef; 380,000 tons of mutton and 92,000 tons of dried vine fruits. The government introduced a bill for the establishment of a mortgage bank which would provide loans of from 3 to 35 years to primary producers at about 4%.

Total war expenditure for the fiscal year ended June 30, 1942 was £A.319,000,000, of which £A.108,000,000 was provided from revenue and £A.211,000,000 from loan funds. In addition to that sum, the commonwealth recovered £A.34,000,000 from other allied administrations for munitions supplies and services, so that the gross expenditure on the war effort totalled £A.353,000,000. Non-war expenditure, which amounted to £A.101,500,000, was £A.2,000,000 less than anticipated. Total revenue receipts were £A.210,000,000 against the estimate of £A.196,000,000, which included additional taxation to the extent of £A.12,000,000 imposed in Dec. 1941. Consequent upon these factors £A.108,000,000 war expenditure was met from revenue compared with £A.80,000,000 contemplated in the Nov. 1941 budget. J. B. Chifley, the Labour treasurer, introduced his budget for the fiscal year 1942–43 on Sept. 2. Expenditure on all services other than war was estimated at £A.109,492,000, an increase of £A.8,086,000. The principal increases were: Invalid and old-age pensions £A.3,143,000; widows' pensions £A.1,630,000; child endowment £A.757,000. War expenditure was estimated at £A.440,000,000, of which £A.390,000,000 was to be spent in Australia. Total estimated revenue from all sources was estimated at £A.249,000,000, excluding the sum of £A.27,000,000 imposed under the uniform taxation plan for payments to the state governments. This left the sum of £A.300,000,000 to be financed by loan, of which it was hoped to raise £A.240,000,000 from public loans and £A.60,000,000 from the sale of bonds and saving certificates. The Labour administration, Chifley said, had imposed new taxation on three separate occasions during the preceding fiscal year which, together with his new budget proposals, would bring in approximately £A.75,000,000 per annum additional revenue.

At June 30, 1942 the aggregate public debt of the commonwealth and states was £A.1,629,000,000, made up of commonwealth £A.718,000,000 and states £A.911,000,000. Two Liberty loans each of £A.35,000,000 were floated during the year, each being oversubscribed, and later in the year an "Austerity" loan of £A.100,000,000. New measures included further restrictions of sports meetings; a reduction by one-third of the production of beer and reductions in the release of wines and spirits for consumption; heavy entertainments taxes and censorship of advertising.

Banking and Finance.—Revenue (actual 1941–42), £A.209,500,000; (est. 1942–43), £A.249,000,000; expenditure (actual 1941–42), £A.209,500,000; (est. 1942–43), ordinary £A.109,492,000; defense, £A.440,000,000; public debt (June 30, 1942), £A.1,629,000,000; notes issued April 18, 1942, £A.95,900,000; gold and sterling reserve (June 30, 1941), £A.17,705,000; exchange rate, £A.125 = £100 sterling.

Trade and Communication.—Oversea trade 1940–41 (merchandise): imports, £A.136,300,000; exports, £A.136,400,000; (bullion and specie 1938–39): imports, £A.3,562,000; exports, £A.18,963,000. Communications and transport: 1939, roads, total mileage, *c.* 500,000; metalled, *c.* 200,000 mi.; railways open to traffic, 27,234 mi.; airways (1940–41), distance flown, 9,699,700 mi.; passengers carried, 150,259; goods carried, 2,114,785 lb.; mails carried, 509,200 lb.; shipping with cargo and in ballast, in net tons, entered (monthly average 1939–40), 508,000; cleared (monthly average 1939–40), 502,000; motor vehicle registrations (March 31, 1942): cars, 463,616; commercial vehicles, 259,999; cycles, 54,157; wireless receiving set licences, 1,324,124; telephones, number of lines, 534,485.

Agriculture, Manufactures, Mineral Production.—Production (in metric tons): wheat (1941–42), 4,570,000; gold (1939), 51,187 kg.; wool (1941), 508,000; cane sugar (1939–40), 943,000; coal (1940), 12,464,000; lignite (1940), 4,000,000; iron ore (metal content) (1938), 2,287,000; pig iron and ferroalloys (1938), 945,000; wine (1939–40), 675,000 hectolitres; oats (1939–40), 185,000; barley (1939–40), 305,000; maize (1939–40), 208,000; potatoes (1939–40), 328,000; butter (1940–41), 196,400; lead (smelter production) (1939), 185,000; zinc (smelter production) (1938), 70,000; copper (smelter production) (1938), 17,400; tungsten ore (1938), 540; antimony ore (1938), 900; silver (1939), 385. Labour and employment: employment in factories (1928–29 = 100), Feb. 1942, 161.4; number (average Feb. 1942) 697,000; unemployment, trade union returns (March, 1942), 1.8%; recorded material production (1939–40), £A.527,085,000.

(W. D. Ma.)

Australia, South: *see* SOUTH AUSTRALIA.

Autobiography: *see* AMERICAN LITERATURE; ENGLISH LITERATURE; etc.

Automobile: *see* AUTOMOBILE INDUSTRY IN THE WAR.

Automobile Accidents: *see* ACCIDENTS; DISASTERS; INSURANCE.

Automobile Industry in the War.

The year 1942 opened with an order from the Office of Price Administration "freezing" all retail deliveries of new passenger cars and new motor trucks. Sales to consumers remained dormant throughout January and February, with the exception of purchases which had been completed prior to Jan. 1 except for physical delivery of the vehicle.

On Jan. 21, all production of passenger cars and light commercial vehicles was ordered stopped after completion of the January quota previously allotted. Companies which on Jan. 31 still had in stock a considerable quantity of finished and semi-finished parts for assembly and could assemble a number of new vehicles without using up considerable quantities of additional raw materials were permitted to produce such units until midnight, Feb. 10.

All facilities of men and machines were then placed 100% at the disposal of the war program. Conversion of factories and equipment and training of men were vigorously carried out on a 24-hours-a-day schedule.

Other orders from the director of industry operations of the War Production board curtailing and finally discontinuing completely all civilian production of medium and heavy trucks and motor buses were put into effect. Medium motor trucks with a manufacturer's rated carrying capacity of $1\frac{1}{2}$ tons to 3 tons were discontinued April 30, while heavy civilian motor trucks with a rated capacity of 3 tons and up were discontinued May 31.

The demand for production facilities for military vehicles and the need to conserve raw materials became so great that the government found it necessary even to abandon production of such essential civilian articles as motor trucks.

For the first time in the history of the motor vehicle manufacturing industry, the production of passenger cars, motor trucks and motor buses for civilian use was completely stopped, for the industry as a whole. In previous years, of course, individual factories had been closed down for a few weeks or months while changing models, but never before had the entire industry been blacked out as far as production of new civilian vehicles was concerned.

On March 2, the rationing program for new passenger cars was inaugurated. A system of eligibility classifications had been established for the purpose of channelling the distribution of new passenger cars into the hands of those considered as having the greatest need for them. These were:

1. Doctors, veterinarians and visiting nurses.
2. Persons needing ambulances.
3. Ministers.
4. Persons engaging in fire-fighting.
5. Persons needing cars for police work.
6. Persons needing cars on public health and safety work.
7. Persons needing cars for U.S. mail service.
8. Taxicab and like service.
9. Persons needing cars for highway construction and repair.
10. Executives and workers in war plants and affiliated factories, mines, etc.
11. Federal, state and local workers on public health, safety or war work.
12. Persons lacking trucks who need cars to move farm produce.
13. Traveling salesmen selling productive machinery to farms, factories, mines, etc., or engaged in food and medical lines.
14. Persons needing cars to haul newspapers for wholesale delivery.
15. American Red Cross.

In order to obtain a vehicle, each person was required to apply to his local Price and Rationing board, set up by the Office of Price Administration, proving that he was eligible for a new car.

On March 9, a program for the distribution of the available supply of new commercial vehicles was instituted, with the following eligible classes:

1. Vehicles used by military forces in the field; police, fire-fighting, public health, mail and communication services.
2. Vehicles used on fixed military and naval posts; transportation of materials directly connected with the war effort, including farm and forest products; construction and maintenance of essential transportation facilities, defense housing projects and public utilities; and transportation of persons directly connected with the war effort.
3. Vehicles used to transport ice, and fuel for heating and power to the ultimate consumer; farm and forest products indirectly connected with the war program, essential repair services, waste and scrap materials; persons in business and industry indirectly connected with the war program and in the service of public and private schools.
4. Vehicles used to transport persons or goods not connected with the war program, including all forms of retail delivery except fuel and ice.
5. Vehicles used for non-essential functions.

Before applying for a new vehicle, applicant must exhaust possibilities of renting, pooling, repairing, salvaging, revising schedules, buying used vehicles.

The administration of the rationing order was handled jointly by the Office of Defense Transportation and the War Production board. The ODT, charged with the responsibility of maintaining the transportation system, promulgated the regulations and classifications governing eligibility and made recommendations on specific applications for purchases of new commercial vehicles to the automotive branch of the War Production Board, which carried the final responsibility of rationing the new commercial vehicles to the user.

An inventory of new passenger cars in the hands of dealers, distributors and manufacturers on Feb. 28, 1942, showed a total of 381,325 vehicles, which had been produced and shipped to retail outlets prior to Jan. 16, 1942. In addition, there were 139,468 new passenger cars produced between Jan. 16 and Feb. 10, 1942, inclusive, which were earmarked as a governmental pool of cars to be distributed after March 1, 1943, giving a total of 520,793 new cars to last for the duration of the war. It was estimated that 245,454 new cars were released to consumers between March 2 and Dec. 1, 1942. This left a total of 135,871 vehicles to be rationed between December 1, 1942 and March 1, 1943, with a total of 139,468 reserved for essential users after March 1, 1943.

At the beginning of the rationing program for commercial vehicles, it was estimated by the Office of Defense Transportation that there were approximately 190,000 new commercial cars and trucks in the hands of dealers, distributors and manufacturers. Between March 9, 1942 and Dec. 19, 1942, there were released to the public and the government a total of 21,677 light trucks under $1\frac{1}{2}$ tons capacity, 50,872 medium trucks from $1\frac{1}{2}$ tons up to 3 tons capacity, and 11,592 heavy trucks with a rated capacity of 3 tons and up, or a total of 84,141 new trucks. This would leave 105,859 new trucks on hand for rationing during the remainder of the war, not including 4,000 heavy trucks allotted to a selected group of truck manufacturers for production during the latter part of 1942 and the first part of 1943.

Between Jan. 1 and Feb. 10, 1942, when all-out conversion began, 215,545 new passenger cars were produced. It had been expected that when factories closed down completely for conversion to 100% war work, there would result an immediate lay-off of several hundred thousand workers, and that a heavy load would be placed on relief agencies. Fortunately the anticipations were not realized, since the low point in employment reached in February dropped only $12\frac{1}{2}\%$ below December, followed by a much more rapid increase than had been looked for, so that by Dec. 1942 an estimated total of 960,000 wage earners were engaged in war production in the automotive industry (including motor vehicle, parts, and tool and die companies), an increase of 55% above the low point of 620,000 in February, and a gain of 26% above the 1941 peak employment.

DRAFTING DEPARTMENT of Willow Run, huge bomber plant built by Henry Ford and completed in 1942

On Dec. 7, 1941, when Pearl Harbor was attacked, the industry held approximately $4,850,000,000 in war orders. In the succeeding few weeks, war orders doubled and then tripled. By Nov. 1, 1942, the industry backlog stood at approximately $14,000,000,000. This was distributed among various categories of armaments as follows:

Complete aircraft, aircraft engines, propellers, and miscellaneous aircraft products	43.4%
Military vehicles and parts	26.3%
Tanks and parts	13.3%
Artillery, machine guns and parts	5.7%
Ammunition	3.6%
Marine equipment	6.0%
All other war products	1.7%
	100.0%

Principal war assignments consisted of:

Complete aircraft
Airframes
Fuselage and wing parts
Propellers
Control equipment
Landing gears
Gliders
Medium and light tanks
Amphibian tanks
Marine tractors
Aircraft cannon
Anti-aircraft cannon
Machine guns
Carbines
Shells, cartridges and other ammunition
Torpedoes
Large variety of military vehicles and armoured cars
Tank destroyers
Engines for surface and submarine vessels
Machine tools
Jigs and fixtures
Electrical control equipment for aircraft, artillery and other purposes
Tractors
Trailers
Radios
Bayonet scabbards
Batteries
Field kitchens
Armour plate
Forgings
Castings
Magnesium
Sirens
Searchlight reflectors
Gyroscopes

Besides these and other major units, there were several hundred parts and components of these armaments that were produced by subcontractors in the industry.

The engineers met the challenge of turning out new products by devising shortcuts in manufacturing technique; developing substitutes for scarce materials and thereby releasing thousands of tons of strategic metals to other more important uses in the war program; and, without sacrificing quality, reduced the quantity of scarce materials originally specified per unit in a large number of other items. Through a combination of these factors they cut the costs per unit by large percentages, resulting in aggregate savings to the government running into billions of dollars.

Soon after Pearl Harbor, the automotive industry organized the Automotive Council for War Production, in order to expedite the manufacture of armaments by the industry. Its purpose was to foster the complete interchange of mass-production information, time-saving techniques, product improvements, tooling shortcuts and developments in all war products assigned to the industry.

To assist manufacturers in the most rapid conversion of peacetime facilities to the production of armaments, the council established a service which listed machine tools and equipment, idle after the stoppage of car production, for sale to anyone needing them in war work. Some of the machines even found their niche in factories located in China, Great Britain and Russia.

Another activity, the Tooling Information service, consisted of listing facilities available for tooling up factories and listing firms seeking work for their own equipment in the tooling program.

Information on factory facilities available for subcontracts, as well as work to be parcelled out, was developed as a means of bringing together small factories with facilities but no contracts, and companies with large contracts needing additional facilities to speed up the production of the finished article.

A traffic division was established to facilitate the shipment of armaments from the factories to their destination, and the expeditious handling of incoming raw materials and parts.

For the purpose of pooling and exchanging ideas among the production experts of the industry, a products division was set up. Committees were arranged for each product classification, such as tanks, engines, ammunition, artillery, motor vehicles, for the purpose of dealing with specific problems. Meetings generally took place at the factories which had developed some new method of solving a difficult problem so others could see the work, take notes and make sketches.

Because of the large volume of military vehicles produced, a separate Military Vehicles division was established, to exchange ideas on production, engineering, packaging and shipping.

A number of other activities facilitating armaments production were also undertaken by the council.

The close of the year 1942 found the industry had turned out an actual production of $4,665,000,000 worth of war goods during the calendar year 1942, and was operating at a rate of $7,000,000,000 a year. The $4,665,000,000 figure was 14% above the civilian production of the best previous year.

It was expected that the calendar year 1943 would have an output approximately double that of 1942.

Indicating the significant role which the automotive industry played in the total war effort of the nation, Donald M. Nelson, head of the War Production board, in mid-year 1942 stated that when the automotive industry and the nation as a whole reached their manufacturing peak, the automotive industry would be producing at the rate of $12,000,000,000 a year, and turn out approximately one-sixth of the entire war program.

Significant statistics on other phases of the automotive industry during the calendar year 1942 are shown in the following tabulation. (*See* also BUSINESS REVIEW.)

1942 Automobile Facts and Figures

Preliminary statistics of the automobile industry compiled by Automobile Manufacturers Association

MOTOR VEHICLE REGISTRATIONS

	1941	1942
Motor Vehicles Registered in U.S.		
Passenger cars	29,507,113	27,400,000
Commercial vehicles	4,876,054	4,600,000
Total	34,383,167	32,000,000

(These figures represent cumulative total of vehicles registered during the year including those retired from service after registration.)

RURAL TRAFFIC VOLUME

1942 Traffic Volume on Rural Roads based on traffic counts on several hundred selected main highways—per cent change from same month in 1941.

January	+ 1.0%	July	−31.3%
February	− 7.6%	August	−35.0%
March	−11.3%	September	−29.0%
April	−15.8%	October	−29.7%
May	−21.6%	November	*
June	−26.5%	December (est.)	−35% to −40%

*—Not Available

MOTOR VEHICLE USER TAXES

	1941	1942
Total Motor Vehicle User Taxes	$2,150,305,000	$2,004,645.000
Federal		
Excise taxes	562,962,000	425,121,000
Use taxes	——	209,200,000
State		
Registration receipts	511,242,000	465,230,000
State gasoline taxes	947.101,000	786,094,000
Municipal, County, Personal Property and Tolls	129,000,000	119,000,000

MOTOR TRUCKS AND BUSES

Motor trucks in use	4,600,000
Motor buses in use	150,000
Number of communities served only by motor vehicles	54,000
Number of children carried to school daily by buses	4,200,000
Per cent of trucks privately owned and operated	88%
Per cent of trucks on farms	26%
Per cent of livestock tonnage hauled to market by truck	67%

PASSENGER CAR USE

Number of U.S. cities without local mass transportation, dependent on passenger cars	2,320
Per cent of passenger cars on farms	15%
Per cent of passenger cars in rural non-farm areas	14%

(O. P. P.)

Automobile Insurance: *see* INSURANCE.

Automobile Racing.

With rubber and gasoline both rationed and with manpower being utilized on the war production line, automobile racing marked time for the duration. For the first time in its history, the annual Memorial Day 500-mile Indianapolis classic was scratched from the American sports calendar. Similarly, auto racing at Langhorne, Pa., Union, N.J., Milwaukee, Wis., Syracuse, N.Y., and other race centres, both in the U.S. and abroad, was idle during the year and would remain so until the war was over.

Thus the honours attained in 1941 still stood on the records: Mauri Rose of Indianapolis and Floyd Davis of Springfield, Ill., remained as the last champions of the Indianapolis race, having won the 1941 classic with the speed of 115.117 miles per hour to win $29,985.

Davis, famed dirt track contestant, started the race in the winning machine owned by Lou Moore, retired Indianapolis driver. Rose, one of the most consistent finishers in speedway competition, relieved Davis at 177½ miles after Rose's own car, of which Moore was the manager, was forced out at the 152-mile mark by carburettor trouble.

Other records set during the 1941 season, which would continue to be recognized until automobile racing was resumed were the following:

Harley Taylor of Atlanta, Georgia, set a record for 50 miles in a stock car on a dirt track by doing 100 laps on the half-mile Southern States fair grounds track at Charlotte, N.C., in 59.43.3. Ray Hall of the same city, won the 200-mile stock car auto race at the Langhorne, Pa., speedway, averaging 69 miles per hour.

Among the leaders of feature events in the midget class was Mike Joseph who set a new record for 20 laps at the New York coliseum in 3.37.42. Another winner was Lloyd Christofer of Miami, Fla., who won the Union, N.J., 25-lap midget feature in 5.47.85.

Mays, with his second at Indianapolis and firsts at Milwaukee, Wis., and Syracuse, N.Y., retained the American Automobile association national point championship. He was credited with 1,225 tallies. (T. J. D.)

Aviation, Civil.

Military requirements completely dominated civil aviation activities throughout the world during 1942. What private flying remained was chiefly in the United States. This virtually ceased during the early months of 1942 as the majority of the nations in the western hemisphere joined the rest of the world at war. Civilian flying schools in the U.S. continued and expanded under private operation, but nearly all operations were conducted under contract with the government or geared directly to war needs. U.S. foreign and domestic commercial airlines remained under private ownership and expanded to establish new records in all categories.

International Transport.—Pan American Airways system expanded its routes to every continent of the earth and dominated the field of international air transport. Although continuing under private ownership and direction, certain equipment and facilities of the organization were devoted to serving the war effort of the United Nations and all operations co-ordinated with the U.S. army. Virtually all passenger, mail and cargo traffic out of the U.S. moved under government priorities, but on some routes, whenever space was available, the general public was served as usual.

Pan American's Pacific division lost some equipment and bases during the initial Jap onslaughts, but within a few days re-established service on a wartime basis. During the year the division flew approximately 1,000,000 ton-mi. of cargo, 1,225,000 ton-mi. of mail and carried 5,000 passengers 14,500,000 passenger miles.

The operation of this division was on a strict war-time basis. However, new heights of operational efficiency were achieved. Before the war the division operated its clippers an average of 5.08

hours per day. The average for 1942 was more than 10 hours per day.

China National Airlines, Pan American affiliate in the Orient, played an important role in the evacuation of refugees from combat zones. Operating usually at night and frequently in weather so severe that Jap fighters could not attack, more than 5,000 persons were carried to safety; sometimes as many as 60 and 70 passengers were carried in 21-place Douglas DC-3 transports.

Pan American Airways-Africa, Ltd., which operated across the South Atlantic to various bases in Africa and thence to India and China, flew over 6,000,000 mi. up to Oct. 21, 1942, when this service was taken over by the military.

Pan American's transatlantic operations broke all records, with 3,000,000 mi. flown as compared with 1,519,307 in 1941. A total of 23,000 passengers were carried 55,638,000 passenger miles, increases of 140% and 150%, respectively, over 1941. Air express made phenomenal gains from 16,500 lb. in 1941 to 3,135,000 lb. in 1942. Volume of mail nearly doubled; 1,224,000 lb. carried in 1942 as compared with 673,000 the preceding year.

High point of stepped up transatlantic operations was a 48-hour period when 12 clippers shuttled in and out of New York's LaGuardia field marine base to average an arrival and departure every four hours. By the end of 1942, clippers had made a total of 1,219 crossings since service started May 20, 1939.

In the Caribbean and Central and South American areas Pan American's activities also increased. A new service was inaugurated in October across the Caribbean between Miami and La Guaira, port of entry for Caracas, capital of Venezuela.

The year 1942 saw a tremendous expansion in the Miami express department. At the end of the year more air freight was being transported in and out of Miami in a single month than during the entire year preceding. The eastern division, operating from Miami to the south, flew approximately 9,000,000 mi. as compared with 5,816,163 in 1941.

Under the program initiated by the U.S. and Latin American governments, Pan American effectively replaced some 30,000 mi. of axis-controlled air services in South America formerly operated under the auspices of Germany, Italy and Vichy France.

Panair do Brasil, Pan American affiliate operating in Brazil, increased route mileage from 5,800 in 1941 to over 13,000 in 1942.

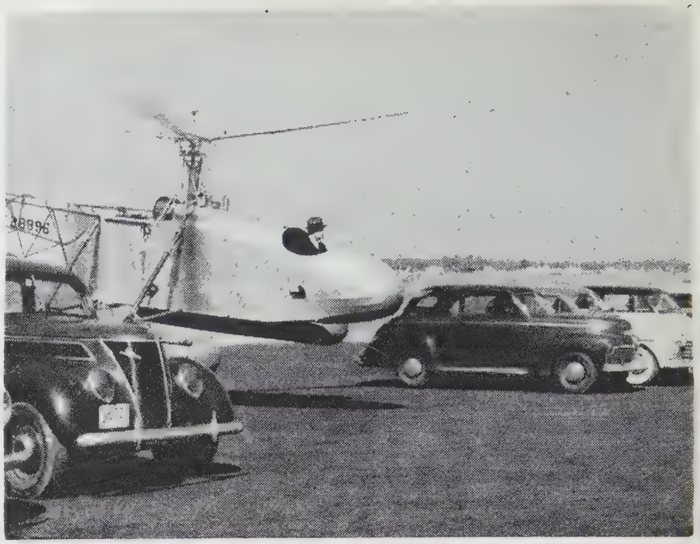
The school operated by Pan American at the University of Miami for the training of U.S. army and British royal air force cadets in celestial navigation was expanded and speeded up to a 7-day basis.

What is believed the first actual all-cargo airline in the western hemisphere was inaugurated in midyear by Pan American Grace Airways, a Pan American affiliate. It ran from Balboa in the Canal Zone to Lima, Peru.

The entire Pan American Airways system, including foreign affiliates, showed substantial gains in all categories, particularly in express carried and passenger miles flown. Totals for 1942 are estimates based on latest available figures. Miles flown in 1942, 27,554,227, as compared with 24,358,346 in 1941; passengers carried in 1942, 470,716, as compared with 375,732 in 1941; passenger miles flown in 1942, 343,087,980 compared with 227,638,738 in 1941; and express carried in 1942 was 24,752,806 lb. as against 15,638,738 lb. in 1941. Total route mileage was just under 100,000, unchanged materially from the previous year.

In the summer of 1942 American Export Airlines inaugurated transatlantic passenger and express service between New York and Foynes, Ireland, with a small fleet of Vought-Sikorsky flying boats.

In Canada, Trans-Canada Air Lines broke all previous traffic records, flying 22,790 mi. a day over 4,857 mi. of routes. In 1942, the line carried 2,260,000 lb. of mail, 63% more than in 1941; 396,000 lb. of air express, an increase of 128% and 106,000 passengers, an increase of 24%. An important extension to Newfoundland was added and Trans-Canada crews participated in flights across the Atlantic and overhauled and maintained transoceanic transports as part of the war effort. Women comprised 30% of the line's personnel.


IGOR SIKORSKY "parking" his baby helicopter between two cars in Stratford, Conn. This amphibian machine, demonstrated in 1942, descends as slowly as one foot a minute, can stop in mid-air, back up, go sideways, or travel forward at 80 miles per hour

British Overseas Airways maintained its empire routes from England to the middle east, India, Australia and other points in the old world. No figures regarding these operations have been released by the British, but expansion could not have been great for it was not until the fall of 1942 that a public announcement was made to the effect that B.O.A.C. was to receive sorely needed new equipment.

The Netherlands airlines, K.L.M. and K.N.I.L.M., were knocked out early in 1942 when the East Indian colonies fell to the Jap invaders. Much of the equipment and personnel was saved, however, and removed to Australia.

The German Lufthansa, Finnish O.Y., Hungarian Malert and Rumanian Lares operations were all incorporated in the nazi military machine. Three French airlines, Air France, Aeromaritime and Air France Trans-atlantique, maintained limited operations early in 1942, but were finally forced to cease operations because of shortages of fuel, pilots and equipment, except for a few infrequent schedules to serve nazi and Vichy bigwigs.

Swissair was still operating a single line from Zurich, Switzerland to Berlin, via Stuttgart. The Swedish ABA line maintained a nonstop night airmail service from Stockholm to Great Britain. Danish airlines' operations were limited, but more passengers were carried than in the year preceding.

Domestic Air Transport in the U.S.—Activities of U.S. domestic airlines in 1942 fell into two main categories; regular commercial scheduled air transportation and numerous special flying and ground services conducted for the U.S. army air forces.

In the former category, few new services were added—in some instances least essential routes and schedules were curtailed in order to utilize available equipment more efficiently. On May 1, 1942, domestic airlines were operating 324 aircraft. They then began releasing equipment to the government to meet needs of the military services and lend-lease commitments. By the end of 1942 only 166 aeroplanes remained in operation, yet by virtue of more efficient utilization, particularly in faster maintenance and increased load factors, airlines were moving a volume of traffic comparable to that of the preceding year.

Approximately 3,752,000 passengers were carried in 1942 as compared with 4,060,545 in 1941. Plane miles flown decreased from 133,022,679 mi. in 1941 to approximately 105,000,000 in 1942. Passenger miles flown were 1,483,544,417 as compared with 1,491,734,671 in 1941. Air express increased phenomenally from 10,485,058,005 lb.-miles in 1941 to approximately 22,043,748,000 in 1942.

Early in the year a system of priorities for airline passengers was established, under control of the military. However, priority passengers were kept to a reasonable minimum, and throughout the year ordinary civilians were generally able to obtain seats except during brief temporary periods of congestion on certain routes.

All applications to the Civil Aeronautics board for new routes were held in abeyance unless hearings were requested by army, navy or state department for strategic reasons. One such exception was the new route opened by American Airlines in early fall to Monterrey and Mexico City. This provided direct connections from both east and west coasts of the U.S. to the neighbouring republic.

Major airlines greatly expanded training facilities for both flight crews and ground personnel. In many instances these schools trained airmen for the army and navy aviation branches in addition to those required for the airlines' own operations.

The second category of airline activities comprised contract operations under control and direction of the air transport command of the army air forces. Although strictly a military project, it is pertinent to any discussion of civil aviation by virtue of its postwar implications.

A majority of the aeroplanes requisitioned from the domestic airlines were employed for this purpose, plus whole fleets of new transports produced and delivered during the year. Various airlines were assigned specific routes and provided with equipment to handle schedules. Largely cargo operations, the significant point is that they were conducted by civilian airline management and personnel.

The scope of operations can be told only in general terms. Routes extended from terminals in the U.S. to Dutch Harbor, Nome and other points in Alaska; to Pacific island bases, New Zealand and Australia; to England, Scotland, Ireland and intermediate bases; to Central and South America, Africa, Russia and India.

Thus, at year's end American commercial airlines had achieved a scope of world cargo and passenger operations, under pressure of war needs, which even the most farsighted proponents of air transport had not expected to see for many years to come.

The fleets of aircraft so used to transport troops, weapons, ammunition, supplies and parts to allied units in all parts of the world numbered many hundreds. Flying equipment comprised Douglas DC-3s and their military counterparts, with gross weights from 25,000 to 30,000 lb.; giant 4-engine Douglas C-54 Skymasters with gross weights of 52,000 lb.; Lockheed C-60 Lodestars, 17,500 lb. gross; Curtiss C-46 Commandos grossing 50,000 lb.; and the Consolidated C-87s, transport versions of the famous long range 4-engine Liberator bombers. There were also many old Boeing 247s, first modern, all-metal twin-engine design, still doing yeoman duty after many years of service on the airlines.

With over 20% of all U.S. multi-engine aircraft produced in 1943 scheduled to be cargo planes, the aerial supply trains shuttling over the U.S.'s world network inevitably would number many thousands before the end of that year.

Civilian Flying in the U.S.—Outstanding development in civilian flying, other than airline operations, was the achievement of the civil air patrol (C.A.P.), a nation-wide volunteer organization set up under the Office of Civilian Defense. Squadrons and flights, organized under state wing commands, comprised over 65,000 civilian volunteers with units at more than 1,000 airports.

Rigorous flight and ground training programs were established in co-operation with the army air forces to prepare members for many types of special missions important to the war effort. Thousands of members contributed their services on long missions for expense money merely sufficient to cover bare living expenses, and plane owners contributed their equipment for a moderate hourly rental for the time actually spent in the air.

C.A.P. coastal patrols were established. They maintained constant watch for enemy submarines along U.S. shores. Submarines spotted by these patrols were sunk. On occasions, subs about to attack vessels crash-dived at the approach of C.A.P. planes. Vessels in distress were assisted and hundreds of survivors of torpedoings were located for rescue by surface ships.

Such work was done under command of C.A.P.'s own volunteer officers under the general supervision of the army air forces. Most of the pilots were ineligible for military service. Many were flyers in World War I, but too old for combat service in World War II. Thousands of other members went out of the C.A.P. to the armed services, the air transport command, the airlines and pilot training schools, better prepared by reason of their C.A.P. training and experience.

Second in importance only to the coastal patrols were the courier services operated for the army. These consisted of flying officers, dispatches and rush shipments between military posts and production centres. Other missions included aerial target towing, reconnaissance and inspection flights, searchlight and gunnery tracking and forest patrol. In natural disasters, such as floods and tornadoes, local units turned out for rescue flights, carrying doctors, nurses and medical supplies.

In these ways private pilots and plane owners were enabled to continue their flying activities, at the same time contributing directly to the war effort. Another important factor was that local interest in flying was maintained at a high pitch in communities throughout the country.

Civil flying other than C.A.P. and airline was prohibited in zones extending along borders and coastlines and strictly controlled in the interior.

Production of Civil Planes.—In 1942 there were no planes produced for purely civilian purposes other than for training or transport. All production figures were restricted except for the 48,000 total of all aircraft produced announced by the president. This compared with an overall total of approximately 28,000 planes produced in 1941. It is interesting to note that a large proportion of the aircraft produced, however, was equivalent to types which would be classified as civil in peacetime. This was particularly true of transport aircraft and light planes in the 65–125 h.p. category.

In the latter case, such planes were destined for preliminary and primary training, and for observation and liaison missions in co-operation with ground forces of the army.

Technical Developments.—There were no radically new types of civil aircraft or engines introduced in 1942. There were, however, numerous developments in the science of aeronautics which would be applicable to civil aircraft after the war.

Most of these could not be described in detail because of military secrecy.

The Lockheed C-69 Constellation, originally designed as a 57-passenger transport for airlines, was modified to serve as a cargo plane and the prototype successfully completed its first flight early in 1943. It was a 4-engine landplane with tricycle landing gear, boasting greater power, speed and load carrying capacity than any other U.S. transport in service.

The Douglas C-54 Skymaster, originally designated the DC-4 and designed to specifications of U.S. airlines, was redesigned as a military transport and got into quantity production in 1942.

Design of the Curtiss C-76 Caravan was completed in 1942 and preparations made for large-scale production. It is a high-wing twin-engine design, constructed largely of wood and plastic bonded plywood. Its structure incorporates a maximum of non-strategic materials and its design is aimed at utilizing woodworking and other production facilities unsuited to manufacture of conventional metal aircraft. Its fuselage, unusually wide and deep, is rectangular in cross-section. The entire nose section swings open to provide an unobstructed loading door near ground level.

Powerplants of all types were vastly improved. Air-cooled radial engines with outputs far in excess of 2,000 h.p. were known to be in production. Liquid-cooled engines reached new heights of efficiency and reliability and were produced in unprecedented numbers. Power output of light-plane engines was likewise increased.

Plastic bonded plywood, moulded to form under heat and pressure, came into wide use for trainers and smaller aircraft to conserve critical metals for combat craft. Even so, the transport mentioned and certain combat craft were planned to utilize the same method of construction. Possible applications of the light metal, magnesium, in aircraft were greatly expanded with the development of "Heliarc" welding, a process utilizing helium to weld magnesium alloys easily and quickly, hitherto a well-nigh impossible task.

Development of superchargers and pressure cabins for high altitude flight was accelerated. The automotive industry achieved a remarkable conversion to production of aircraft and aircraft engines, the full force of which would not be felt until 1943. New production techniques evolved by both industries materially reduced the time and labour required to build a given aeroplane. Much helicopter and other experimentation was conducted in strictest secrecy, but Igor Sikorsky's successful helicopter was brought to a stage of development which gave high promise of military and commercial feasibility in the immediate future.

(*See* also AIR FORCES OF THE WORLD; AIRPORTS AND FLYING FIELDS; MEDICINE; PETROLEUM; POST OFFICE; PSYCHOLOGY.)

(C. B. F. M.)

Aviation, Military: *see* AIR FORCES OF THE WORLD; BLOCKADE; GLIDING; MUNITIONS OF WAR; PSYCHOLOGY; WORLD WAR II; *see* also under various countries.

Avila Camacho Manuel (1897–), president of Mexico, was born at Teziutlan in the state of Puebla on April 24. After completing a course of commercial studies in his native town, he joined the successful revolution against Victoriano Huerta in 1914 and advanced to the rank of general of division. In the cabinet of President Rodriguez he was minister of war and navy. President Cárdenas later appointed him secretary of national defense and personally selected him as successor to the presidency. He was elected president July 7, 1940, by 2,476,641 votes to 151,101 for his opponent, Gen. Juan Andreu Almazán, according to tabulations of the Mexican congress. The new president was inaugurated Dec. 1, 1940.

During 1941 he negotiated a settlement of the oil-expropriation controversy with the United States. He consistently stressed hemispheric solidarity in defense and on May 22, 1942, three weeks after a German submarine had sunk a Mexican ship, Avila Camacho called for war against the axis The congress unanimously approved his demand and on June 2 he signed the declaration of war against Germany, Italy and Japan (which was made retroactive to May 22) and Mexico joined the United Nations. (*See* also MEXICO.)

Ayala, Eusebio (1875–1942), Paraguayan statesman, was born Aug. 14 of French parents in Barrero Grande, Paraguay. He received his degrees of doctor of law and social sciences from Asunción university in 1900 and later taught philosophy, political law and sociology. Ayala was elected senator three times from Asunción and was president of the chamber of deputies in 1910. He held a number of portfolios in the cabinet and was provisional president from 1921 to 1923. He was minister to Washington in 1925, and again in 1931, when he tried to enlist the services of the United States as mediator in the Gran Chaco dispute. In 1932, Ayala became president of Paraguay. A year later Paraguay declared war on Bolivia, a conflict that lasted for three years. The discontent arising in Paraguay over the peace terms led to open revolt in 1936. Ayala was ousted and fled to Argentina, where he lived until his death in Buenos Aires, June 4.

Azores, The: *see* PORTUGUESE COLONIAL EMPIRE.

Bacon. Reports of bacon production in the United States, normally printed in considerable detail, disappeared from trade publications in 1942, and even the usually well informed American Meat institute had no figures on the output for 1942. Bacon was a staple in the ration of United States military forces. It was said that publication of data on bacon might, indirectly, be the means of giving information to the enemy. Lend-lease shipments of Wiltshire sides, which are roughly a British equivalent of bacon, were reported by the Agricultural Marketing administration as 149,465,000 lb. from March 1941 to Jan. 1943. The Canadian Bacon board and the British government made a new contract in Oct. 1942, calling for an increase in shipments of bacon and pork cuts from 600,000,000 lb. to 675,000,000 lb. The price for grade A Wiltshire sides was increased from $19.77 to $21.75 per cwt. (*See* also HOGS; MEAT.) (S. O. R.)

Bacteriology. The progress of bacteriology during 1942 showed a gratifying correlation of technical discovery, microbiological study and medical practice. Study of bacterial metabolism, perhaps regarded by the too practical minded as a subject fit only for academic pure bacteriology, by discovering the nutritive requirements of bacteria, also revealed their vulnerability. The work of Wood illustrates this in his conclusion that "Sulphonamide drugs . . . exert their bacteriostatic effect by competing with the essential metabolite, p-aminobenzoic acid, for an important enzyme site on the bacterial cell." The sulphonamides are antiseptics with little germicidal activity. Their bacteriostatic effects may be neutralized by p-aminobenzoic acid and similar compounds. Since such compounds are found in purulent exudates, the discovery has clinical implications. Nevertheless, the topical use of sulphonamide powders was proving of immense value in the treatment of war wounds.

In previous decades the public and the medical profession tended to evaluate antiseptics almost wholly by their germicidal activity. It appeared in 1942 that some antiseptics which are highly bacteriostatic and less germicidal may be none-the-less valuable prophylactic or therapeutic agents. Bacterial cells, notably the sporulating anaerobes, thought to have been killed by mercurial and silver compounds, are found to be viable in Brewer's thioglycollate medium which not only neutralizes the mercurial or silver antiseptic but also supports growth of aerobic and anaerobic bacteria. Such a medium was being recommended in 1942 by the U.S. Food and Drug administration for testing the sterility of biologicals and other ampule preparations.

Bacteriologists of experience, whether working with pathogenic or nonpathogenic bacteria, frequently noted that certain bacteria did not survive in mixed culture with other microorganisms: the phenomenon of microbial antagonism. It was also reported of viruses. This phenomenon also gives promise of therapeutic usefulness.

Progress was made in the discovery and isolation of these antibacterial products in relative purity from fungi, actinomycetes and bacteria. Waksman and Woodruff presented a good review of the subject.

Brucellosis continued to inspire sensational popular magazine articles, the interest of scientific investigators and the attention of practicing physicians and veterinarians. It probably deserved neither the fear inspired by popular authors nor the disregard of the lay public.

Huddleson recently presented a sobering appraisal of immunity in Brucellosis which should help to place this infection in truer perspective.

Considerable attention was given to a group of minute, pleomorphic, gram-negative, micro-aerophilic organisms resembling that causing pleuropneumonia in cattle. It appeared that such organisms are commonly harboured by rats and may infect man. Brown and Nunemaker presented evidence that many cases of rat-bite fever (probably identical with Haverhill fever), hitherto thought to be caused by a spiral organism, may be caused by *Streptobacillus moniliformis* (probably an illegitimate name), the systematic position of which was doubtful.

The possibility of more adequate study and classification of spirochetes was opened by Wichelhausen and Wichelhausen who reported the cultivation of these organisms as colonies in and on blood agar plates.

Following the work of Lancefield, the serological grouping of haemolytic streptococci appeared to be of immense importance as a guide to diagnosis, epidemiology and therapy. It is gratifying to report that Solowey made a beginning with a similar grouping of viridans streptococci. (*See* also EPIDEMICS AND PUBLIC HEALTH CONTROL.)

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Badminton.

David Guthrie Freeman of Pasadena, Calif., one of the finest racket players of all time, became a four-time national champion with his easy victory in the annual 1942 badminton tournament. The blond, 21-year-old Californian, who also is outstanding at lawn and table tennis, again defeated Carl Loveday of Montclair, N.J., in the final, 15–5, 15–10.

Freeman teamed with Chester Goss, also of Pasadena, to annex the men's doubles title.

Evelyn Boldrick of San Diego won the singles championship and teamed with Janet Wright of San Francisco to take the doubles. Miss Boldrick defeated Miss Wright in the singles final, 12–10, 12–3, and then paired with the defeated finalist to score a 17–15, 15–10 victory over Mrs. Roy Bergman, Westport, Conn., and Helen Gibson, Stamford, Conn., in the doubles final.

Sam Leland Gustavson, Westport, and F. N. Hinds, New York city, captured the national men's veteran doubles championship. They defeated F. Don Richardson of Brookline, Mass., and Phil Richardson of Boston, 15–5, 5–15, 17–15, in the final. (M. P. W).

DAVE FREEMAN won his fourth straight U.S. badminton singles championship at Montclair, N.J., April 4, 1942. Here he is shown making a save while lying on his side

Bahamas.

A British colony and island group lying east and southeast of Florida, with an appointed governor and legislative council, and an elected assembly. Area, 4,404 sq.mi.; pop. (1940 est.): 66,219 (1931 census: 59,828); capital, Nassau (on New Providence island), pop. 19,756; governor in 1942: H.R.H. the duke of Windsor.

History.—Bahaman development during 1942 was more acutely affected by war conditions than in 1941, owing to United States participation in hostilities. The war was felt in shortages of goods owing to lack of shipping and in a rising cost of living. Declining tourist trade forced an early closing of many hotels. On the night of May 31, serious rioting broke out in New Providence, the outgrowth of a labour dispute. Two of the 88 rioters were killed.

Education.—In 1940 there were 64 non-sectarian (9,944 enrolment) and 57 aided schools (2,981 enrolment), an industrial school (101 enrolment), and 46 denominational and private schools (2,761 enrolment). Government outlay for education in 1940 was £31,344.

Finance.—The monetary unit is the pound sterling (value in 1942 about $4.03½). Government revenues for 1942 were estimated at £394,690, expenditures £439,889.

Trade.—No very recent trade totals were available in 1942. In 1940, imports totalled £1,284,417 value, exports £229,140. Both imports and exports increased in value in 1941. The principal imports are foodstuffs; liquors, wines and tobacco; and manufactured goods, provided largely by Great Britain, Canada and the United States. The chief exports are fresh tomatoes (to Canada), timber, bark, and marine products, mostly to the United States and Canada.

Resources.—The tourist trade is normally the backbone of the colony's economy. During 1941, 25,000 tourists were estimated to have spent $4,000,000 in the colony. Tourist trade fell off sharply in 1942, however. Sponges formerly constituted a major export, but owing to prevalence of disease, all sponging grounds were closed during 1941 and 1942. Sisal development in the Outer Islands was greatly stimulated in 1942 by an agreement on the part of the United States to buy all the output. A 10-year contract for export of Bahaman spices (chili peppers, dill, fennel, ginger, paprika, pimientos, sesame seed, thyme and turmeric) to the United States was likewise made.

Communication.—External communication is by air, with five to seven flights weekly from Miami to Nassau in 1942, and by boat. Under war conditions, sea traffic during 1942 was almost entirely by small boats. (*See* also West Indies, British.)

Bibliography.—*West Indies Year Book, 1941–1942; Canada-West Indies Magazine* (Montreal, monthly); *Crown Colonist* (London, monthly); *West India Committee Circular* (London, fortnightly); *Colonial Review* (London, quarterly).

Bahrein Islands: *see* British Empire.

Bailey, Vernon (1864–1942), U.S. biologist, was born June 21 in Manchester, Mich. He retired from the department of agriculture's biological survey bureau in 1933, but had continued to serve as consultant on special projects. He had designed the widely used "foothold" trap and the beaver trap providing more humane treatment for animals than had earlier traps. He was the author of a number of books on mammals, birds and plants. He died in Washington, D.C., April 20. (See *Encyclopædia Britannica.*)

Baillet-Latour, Count Henry de (1876–1942), Belgian sportsman, was born March 1 and studied at the University of Louvain. He became connected with the Olympic games in 1903 when he was made head of the Belgian Olympic committee. In 1925, he became president of the International Olympic committee, succeeding Baron Pierre de Coubertin. Count Baillet-Latour was the centre of much controversy when it was announced that the Olympic games would take place in Berlin in 1936. U.S. sport circles opposed this selection, charging that Germany violated the spirit of the Olympic games by discriminating against Jews and non-nazi athletes. Baillet-Latour won assurances that the reich would remove all anti-Semitic signs throughout the country during the games, and the meeting was opened on schedule with U.S. athletes participating. He died at his home in Brussels, according to a broadcast from Berlin, Jan. 7.

Baltic States: *see* Estonia; Latvia; Lithuania.

Baltimore. Seventh largest city of the United States, Baltimore, Md. had a population by the 1940 federal census of 859,100. White population 692,705, non-white 166,395, mainly Negro (19.4%). Area, 78.5 sq.mi. plus 13.35 sq.mi. of water. Mayor (Jan. 1, 1943) Howard W. Jackson.

Adjustments to booming war industries constituted the main problems of 1942. Migration after 1940 caused by the demand for workers in war plants increased the city's population rapidly in 1942 and caused housing and transportation shortages. A Defense Housing bureau was established, and the Maryland Committee on Wartime Transportation put a plan in operation for staggering working and school hours to relieve transportation congestion.

The gross funded debt as of Aug. 31, 1942 was $172,822,079.50; the net general debt (Aug. 31, 1942), $89,445,773. The tax rate remained unchanged at $2.65 per hundred. A bond issue for $32,000,000 to extend water facilities was defeated by a 3 to 1 vote in 1942.

Business activities for 1942 broke all records in Baltimore. The Baltimore Transit company reported an increase in revenue passengers of 39.6% over 1941. Electricity sales increased 13.8% for the first 11 months of 1942 and gas sales 8.1%. Bank clearings in 1942 were $6,346,265,211, an increase of $918,553,431 over 1941. Bank deposits also increased. War industries and steel plants accelerated operations to the fullest extent of available materials and workers. Shipbuilding and aircraft plants maintained or exceeded schedules. Sixteen new industries and expansions in 90 plants were announced. More than 50,000 additional workers were employed in new plants during 1942, making a total of approximately 260,000 employed in Baltimore industries. (C. B. S.)

Bananas. Unusual expedients were adopted in 1942 for relief of banana growers in the western hemisphere, where wartime lack of marine shipping had severely restricted the banana trade. In addition further inroads of the sigatoka plant disease seriously affected certain areas and was apparently wiping out the once prosperous banana business in Mexico.

The U.S. Board of Economic Welfare and the Defense Supplies corporation (a subsidiary of the RFC) reported in Nov., 1942, that contracts had been made with the United Fruit Co. to put 40,000 acres of abandoned banana land into cultivation of abaca, the source of Manila hemp, in Panama, Costa Rica and Guatemala. Employment was given more than 1,000 banana workers in Honduras by co-operative effort of the Institute of Inter-American Affairs and the Honduras government in the construction of a highway from Poterillos to Lake Yojoa.

It was estimated Mexico would ship 2,800,000 bunches of bananas to the United States in 1942. In 1937, the peak year, Mexico exported 14,750,000 stems to the United States. The next year the sigatoka disease began making rapid inroads and production steadily declined, being only 4,400,000 stems in 1941. In 1942 about 75% of the exports went by rail, owing to shortage of marine shipping. Formerly 80% of the exports were by water. The one optimistic note in the banana industry in 1942 came from Palestine, where production of 10,000 tons from 2,250 ac. was reported. Only 750 ac. of bananas were planted in Palestine in 1939. (S. O. R.)

Bankers Association, American: *see* American Bankers Association.

Bank for International Settlements. The broadening scope of World War II, both as to area involved and populations affected, as well as the intensification of its economic and financial aspects, resulted in further curtailment in 1942 of the volume of business transacted by the Bank for International Settlements. Nevertheless, central banks and monetary institutions throughout the world continued to co-operate with the bank.

President Thomas H. McKittrick, reporting at the annual meeting June 8, 1942, at Basle, Switzerland, declared that the bank had consistently adhered to the principles of scrupulous neutrality which it had laid down for itself in the autumn of 1939, avoiding all transactions whereby any question could possibly arise of conferring economic or financial advantages on any belligerent nation to the detriment of another.

For the 12th fiscal year, ending March 31, 1942, net profits after provision for contingencies, amounted to 5,185,686 Swiss gold francs, compared with a profit of 5,293,909 Swiss gold francs for the previous year. After required allotment to the legal reserve of a sum equal to 5% of net profits, amounting in 1942 to 259,284 Swiss gold francs, there remained available for dividend payment 4,926,401 Swiss gold francs, equal to nearly 4% of the paid-up capital. The special reserve fund was drawn upon to the extent of 2,573,589 Swiss gold francs in order to permit distribution of the usual 6% dividend.

The balance sheet total declined 19,200,000 Swiss gold francs during the fiscal year, standing at 476,600,000 Swiss gold francs on March 31, 1942. The drop was attributed to reductions in various categories of deposits. There was a spurt to 484,788,967 by June 30, but on Aug. 31 the balance sheet total stood at only 472,554,469 Swiss gold francs. Earmarked gold not entered in the balance sheet totalled 51,600,000 Swiss gold francs on March 31, 1942, compared with 65,100,000 at the end of the previous fiscal year.

Although its usefulness in financing international trade was practically stopped by the war, the bank was of great value as banker for the international Red Cross organizations operating from Switzerland.

Banking.

The requirements of total war governed banking in the U.S. during 1942. The great increase in government borrowing was facilitated by the 14,773 Commercial and Savings banks of the country not only by purchases for their own portfolios but by active selling campaigns among their customers, culminating in the sale of more than $12,000,000,000 in government bonds in the single month of December. Deposits of all banks grew rapidly to an all-time high of $72,382,000,000. Loans and investments increased to new high levels of $25,078,000,000 and $38,897,000,000 respectively on June 30.

Membership in the federal reserve system increased to 6,647 banks with deposits on Sept. 24, 1942, of $54,381,000,000, up more than $4,000,000,000 from September 1941. Member bank excess reserve balances with the Federal Reserve banks continued their decline from the peak of $7,000,000,000 in 1940 to a low point in Sept. 1942 of $1,690,000,000, largely as a result of increased deposits and a steady growth in the volume of money in circulation to more than $15,000,000,000, up from $11,160,000,000 on Dec. 31, 1941. The principal offsetting influence was the open market purchases of U.S. government securities for federal reserve system account which grew to substantial proportions toward the end of the year. Under an amendment to the Federal Reserve act, the board reduced reserve requirements of banks in the two reserve cities, New York and Chicago, from 26% to 20%, the same level as reserve city banks. This adjustment was made necessary by the fact that the government raised more funds in New York and Chicago by taxation and borrowing than it spent there, resulting in a drain of funds to meet payments in widely scattered war-industry centres.

Loans expanded moderately, and the proportion of war loans to non-war loans increased during 1942. An executive order authorized the war and navy departments and the Maritime commission to guarantee commercial banks against loss on loans made to finance the performance of war orders under a provision known as Regulation V. Such loans were used by many corporations engaged in war work. Regulation W was amended to further discourage credit and instalment buying, and cash instalment loans of lending institutions were subjected to the regulation. Consumer instalment credit declined substantially from its peak in the summer of 1941. (*See* also CONSUMER CREDIT.)

Investments of member banks expanded mainly in U.S. government obligations, which accounted for $24,098,000,000 of a total of $29,872,000,000 of investments held June 30. Long term interest rates were relatively stable but short and medium term rates firmed up materially during the year. Gross earnings of banks were somewhat higher but expenses increased nearly as much. Service charges and trust department earnings continued to contribute substantially to total income. The influence of the Federal Deposit Insurance corporation (*q.v.*) was felt in building up from earnings the capital funds of the banks in keeping with increased deposit liabilities. In addition to treasury orders affecting foreign funds, the Alien Property Custodian required the filing of returns covering all accounts of enemy aliens. Banking personnel contributed liberally to the armed forces and as a result women employees were taken on to a greater extent than ever before.

With the prospect that widespread rationing of commodities would be introduced on a national scale, "ration banking" was begun as an experiment and the American Bankers association prepared plans for further development of this method of facilitating the use of ration coupons. The banking system would thus accept deposits of ration coupons from retailers who would then draw drafts in favour of the wholesalers. (*See* also BUSINESS REVIEW; LAW; RATIONING.)

Canada.—World War II continued to govern banking in Canada during 1942 as all business concentrated on production for war uses. Net deposits of the ten chartered banks expanded nearly half a billion dollars to $3,486,000,000 during the year ended Sept. 30, 1942. At the same time holdings of securities, chiefly dominion and provincial, increased $600,000,000 to a new high of $2,340,000,000, but current loans receded $183,000,000 to $1,050,000,000. Reduced revenue from loans and increased taxes in some cases caused a reduction in dividends to stockholders. In spite of the increased demand for banking services for the armed forces, industry and the public, it became necessary to close many branches. As manpower was drawn to the armed forces and war industry, banking services faced curtailment and the proportion of women employees rose from less than 22% at the start of the war to more than 52%. Farm production and war industry reached new peaks, and although civilian production was severely reduced, the national income was at a new high. Taxes were again increased to aid in financing the war effort. The Bank of Canada more than doubled its holdings of dominion and provincial securities and on October 31 held nearly $1,000,000,000 of these issues. Note circulation increased from $448,900,000 to $657,600,000.

Great Britain.—Wartime banking continued to follow the pattern set in previous years as the entire economy of the country was devoted to war activities. The eleven London clearing banks reported deposits at the new high level of £3,358,000,000, while loans fell off slightly to £785,000,000 and holdings of securities, chiefly government issues, reached a new peak of £1,097,000,000 at the end of September 1942. Open market interest rates remained at the same low levels of the previous year. The banks were urged to close more branches, reduce services to the public and all non-essential activities and adapt themselves completely to wartime working methods. The Bank of England reported a new high in British bank note circulation at £870,000,000 on Nov. 27, 1942. (*See* also BANK OF ENGLAND.)

Europe.—Banking on the continent of Europe during 1942 was entirely under the domination of Germany, with the minor exceptions of Portugal, Spain, Sweden and Switzerland. The Reichsbank reported increased deposits, and note circulation expanded more than 5,000,000,000 reichsmarks under the burdens of war to a total of 21,344,000,000 during the year ended July 31, 1942. Interest rates were said to remain stable under strict government control. Information available to the outside world on commercial banking operations was non-existent. The Bank of France reported note circulation increased by 62,000,000,000 francs to a total of 304,379,000,000 francs, while advances to the government to cover the costs of the German army of occupation grew to a total of 181,000,000,000 francs by June 11, 1942. The Bank for International Settlements (*q.v.*) at Basle, Switzerland continued to function but on a greatly reduced scale and mainly to collect interest on routine transactions.

Investment Banking.—Coincident with an unprecedented volume of financing by the United States government for war purposes, the volume of corporate and municipal financing fell to the lowest level in several years. For the eleven months ending Dec. 1, 1942, such issues totalled $1,977,413,000 as compared with $5,301,007,000 for the like period in 1941. Refunding issues accounted for nearly half the total volume, new capital representing only $1,045,447,000. A trend was noted toward financing municipal acquisitions of utilities by the issuance of bonds secured only by the revenues of such utilities. Corporate financing for the month of November fell to $18,209,000, the lowest level since January 1935, and all but 3% was sold privately, a practice developed during the year. Corporations needing additional capital for the most part availed themselves of bank loans. Municipal finances were relieved by the improved employment situation, but certain other effects of the war produced maladjustments, such as changes in industrial areas and reduced collections on gasoline and automobile licence taxes and bridge tolls. Of the new municipal issues, more than one-third represented refunding of outstanding bonds.

Decreased activity in investment banking led to further mergers of banking houses, and an increasing number of partners and employees found opportunities to serve the country in the armed forces, in government service or in war industries. As war financing progressed, the investment banking community threw its organization into the campaign to sell government bonds to the general public as distinguished from the commercial banks, to minimize the dangers of inflation. Government borrowing monopolized the investment markets during the year, offering $49,830,332,000 in bonds, notes and bills during the first 11 months, of which $12,366,857,000 represented refundings of maturing issues. In addition, the December campaign accounted for over $12,000,000,000 in a program offering several different types and maturities of bonds, certificates of indebtedness and tax anticipation notes designed to suit every variety of investor. The banking system absorbed about 40% of the total, the rest going to individuals and institutions. The government stressed the desirability of absorbing part of the increased purchasing power of the public by the sale of series E savings bonds through payroll deduction. Nearly $7,000,000,000 of this issue alone had been sold in 1942, and redemptions totalled only 3%. (E. B. L.)

War Savings Bond Sales.—The entry of the United States into World War II in December 1941, brought with it inevitable changes in the savings habits of the U.S. people. A patriotic desire to make a personal contribution to the war effort caused many depositors to divert their accumulated savings to the purchase of war savings bonds. For sales of war savings bonds of the various issues, see the accompanying table.

Sales of War Savings Bonds, 1941-42

(In Millions of Dollars)

Month	Amount outstanding at end of month	Funds received from sales during month			
		All Series	Series E	Series F	Series G
1941—November . . .	5,620	234	110	19	105
December . . .	6,140	529	341	33	154
1942—January	7,198	1,061	667	78	316
February	7,893	703	398	52	253
March	8,436	558	338	41	179
April	8,951	531	327	40	164
May	9,569	634	422	43	170
June	10,188	634	433	41	160
July	11,078	901	508	74	319
August	11,751	697	454	52	191
September . . .	12,479	755	510	61	184
October	13,381	935	665	61	210

Special club accounts, generally called Victory accounts, were made available by the savings banks for individuals who wished to save regularly to purchase war savings bonds. Payroll allotment plans under which authorized deductions are made from employees' wages and salaries to buy bonds have been set up to assist employers who are not equipped to handle the details of such plans in their own organizations.

Mutual Savings Banks.—After the United States had been in the war a few months, the first excitement subsided and current deposits in mutual savings banks again exceeded current withdrawals. Total assets on July 1, 1942, were $11,677,000,000 and deposits credited to 15,674,831 accounts totalled $10,354,000,000. The combined surplus was $1,282,000,000 or 12.39% of deposits. Dividends averaged 1.88% in 1942, a slight decline from the average of 1.90% paid in 1941. Two banks were absorbed by merger during the year ending July 1, 1942, and one bank was absorbed after that date, so that the total number of mutual savings banks was reduced to 535 at the end of the year.

Mutual savings banks were from the first ardent supporters of the program for financing defense. By Dec. 1, 1941 there were 506 mutual savings banks qualified as issuing agents for U.S. defense savings bonds series E. In the preceding seven months period the savings banks had distributed $119,056,650 par value of defense bonds, of which $91,237,588 were series E, $5,023,940 were series F, $21,645,486 were series G and $1,149,656 were defense savings stamps.

After the United States entered the war, several changes were made in the original financing program to meet the needs of a country at war. In May 1942, the defense savings bonds became war savings bonds, and as of Dec. 1, 1942, the series F and series G bonds became simply U.S. savings bonds. With this latter change the active promotion of series F and series G bonds was transferred from the War Savings staffs to the Victory committees, who promoted also the sale of other issues intended for every type of large investor. The War Savings staff concentrated chiefly on series E bonds, and in this effort they had the active co-operation of the mutual savings banks. In the 11 months ending Nov. 1, 1942 the mutual savings banks distributed $529,666,969 par value of war savings bonds and stamps of which $429,748,682 were series E, $17,738,926 were series F, $71,502,752 were series G and $10,676,609 were stamps. Many savings banks purchased series F or series G bonds for their own portfolios to the full limit allowed of $100,000 per year.

Savings Bank Life Insurance.—When the sale of savings bank life insurance was legalized in Connecticut in 1941, the number of banks which were eligible to establish this service was increased to nearly three-fourths of the mutual savings banks in the United States. Connecticut, Massachusetts and New York together had 395 savings banks in 1942 with deposits of $8,350,000,000 credited to 12,000,000 accounts. One million dollars of savings bank life insurance was sold in Connecticut in the first 10 months of operation. The total insurance in force on Oct. 31, 1942, was $1,013,950, representing 1,147 policies.

In New York state, which established savings bank life insurance in 1938, there were 26 issuing banks and 18 agency banks on Oct. 31, 1942, an increase of four issuing banks and one agency bank during the year. On Oct. 31, 1942, there was $28,083,000 of insurance in force, representing 33,472 policies, an increase of $10,258,000 in insurance in force and of 11,532 policies since Oct. 31, 1941. In Massachusetts there were 30 issuing banks and 110 agency banks on Oct. 31, 1942. The total insurance in force was $223,063,000, representing 246,606 policies.

British Savings Banks.—The fiscal year for Trustee Savings banks in Great Britain ends on Nov. 20. The August 31st statement, formerly published in the *Trustee Savings Bank Gazette,* official organ of the Trustee Savings Banks association, was omitted in 1942, hence the figures for Nov. 20, 1941 were the last official data received. Balances in trustee savings banks were £385,585,458 on Nov. 20, 1941 an increase of £53,248,121 for the year ending that date as compared with a gain of £39,706,000 for the previous year.

In addition to investing all of these new deposits in government securities, either directly or through the National Debt commissioners, the trustee savings banks aided in the distribution of special war securities. These four special securities, similar to the issues making up U.S. war financing program, were national savings certificates, defense bonds, savings bonds and war bonds. (He. Br.)

Bank of England.

During 1942 the bank continued to carry out its duties as agent and adviser of the British government on all matters coming within its province. The only major changes in the bank's own conditions were the two increases in the fiduciary issue of £50,000,000 each,—in April and July. The fiduciary issue grew from £300,000,000 before the war to £580,000,000 in Sept. 1939, £730,000,000 in Aug. 1941 and £880,000,000 in July 1942.

The first and biggest war increase was mainly the offset to the transfer of the Bank of England's gold reserve to the exchange equalization account. Subsequent increases arose entirely from the public's growing demand for currency, mainly due to increased employment and higher earnings and wages. Actually the quantity of coin and notes held by the public and excluding the banks' till-money rose during the war from £465,000,000 to £787,000,000—an increase of £322,000,000, compared with the war expansion of £300,000,000 in the fiduciary issue.

The bank continued its routine work in connection with the issue of government loans. Thus in May 1942, the former issue of 3% savings bonds, 1955–65, gave way to a new issue of 3% savings bonds, 1960–70. The weekly offer of treasury bills, made by the bank as agent to the government, remained at £75,000,000 until the beginning of October, when it was temporarily raised first to £80,000,000 and then to £85,000,000. This change was expected to provide the banks with more maturities early in 1943 which would assist them in connection with the heavy tax payments then due by their customers.

During the summer, the government decided to permit the conversion of industrial debentures carrying interest at over 4%, provided that the terms of issue of such debentures permitted conversion. The bank had the task of arranging the terms and dates of such conversions, in order to ensure their orderly appearance without any sudden overloading of the market. It was also decided that there should be no "underwriting" in connection with such conversions. Instead, steps were taken to ensure that any of the new stock not taken up by converters should be held by strong hands.

The bank gave advice and helped to institute the scheme whereby the British banks transferred clothing coupons between retailers, wholesalers and manufacturers. This scheme worked very smoothly.

Early in 1942 the bank had to play its part in the vesting of certain Canadian government and Canadian National railway securities. This step accompanied the generous granting by the Canadian government of an interest-free loan of $700,000,000 to the British government. The stock so vested was taken over by the Canadian authorities, the former British holders receiving sterling in exchange.

Bank of England
(£ million)

1942	Jan. 7	Apr. 22	Aug. 12	Sept. 16	Oct. 7
Issue dept.					
Note circulation . .	749.8	767.1	834.5	831.1	843.2
Fiduciary issue . . .	780.0	830.0	880.0	880.0	880.0
Banking dept.					
Public deposits . . .	9.6	7.4	19.6	8.1	5.8
Bankers' deposits . .	155.7	128.7	126.1	138.0	138.2
Other deposits . . .	54.8	51.0	46.6	47.4	50.2
Govt. securities . .	176.9	110.1	136.0	136.0	148.4
Discounts & advances	6.4	8.6	7.4	4.0	3.4
Other securities . . .	24.1	22.4	19.7	21.3	21.7
Reserve	30.7	63.6	47.1	50.3	38.3

Various steps were taken by the bank to adapt the system of exchange control to the changing needs of the war, *e.g.* arrangements were made with the U.S. army in the United Kingdom to make dollars and sterling interchangeable for all official military purposes at 4.03½ free of all charges. A new and simpler rate of exchange of 4/10*d.* per United States dollar notes and coin was fixed for individuals including the personal needs of U.S. troops, and simultaneously the former commission charged by the banks on all such exchanges of currency was abolished. (N. E. C.)

Bankruptcy: *see* BUSINESS REVIEW; LAW.
Banks: *see* BANKING.

Baptist Church.

The Baptist conventions of 1942 were held under the distinct consciousness of the U.S. involvement in World War II. There was evident, however, markedly different attitudes between those of 1942 and those of 1917. In the 1942 assemblies a deep sense of guilt and obligation found constant expression. A resolution of the Northern convention reads: "We repent of our sin in not making Christ's way more effective throughout the world . . . we express our willingness to do anything for the welfare of our country, regardless of personal cost or sacrifice, which lies within the full sanction of our individual consciences."

Both conventions, Northern and Southern, defended the right of the conscientious objector and apportioned funds to support those in need. The Southern body listed 147 objectors registered with its executive committee. Each expressed concern over the difficulty of providing its quota of chaplains for the armed forces as also for the churches left pastorless. Each gave serious consideration to a post-war program, affirming that permanent peace and world justice, upon which it depends, must be founded upon the Christian principles of love, reconciliation and good will.

There was special rejoicing over increased gifts to the annual convention budgets, missions, education and new objectives due to war needs. To the normal budget of $2,500,000 the Northern Baptist convention had added an emergency fund of $600,000; but the total received from the churches exceeded the combined amount by $133,795.

The Southern convention gave particular attention to Negro education and the war requirements of their great hospital in New Orleans, third in rank among the 275 denominational hospitals of the United States.

The total number of Baptists reported in the United States for 1942 was 11,021,159. Northern, 1,468,043; Southern, 4,949,174; Negro, 4,073,252; other churches, 530,690. World total, 12,986,897. (R. E. E. H.)

Bar Association, American: *see* AMERICAN BAR ASSOCIATION.
Barbados: *see* WEST INDIES, BRITISH.

Barium Minerals.

Statistics were lacking on baryte production in the United States, but indications available did not point to any appreciable increase over the 1940 level. Small outputs were developing in Canada, Cuba and South Africa. (G. A. Ro.)

Barley.

A new high mark in barley production in the United States, 426,150,000 bu., was registered in 1942 from the largest acreage on record, 16,782,000 ac. The 1942 crop was 18% more than the previous record crop of 1941, when 362,082,000 bu. were harvested from 14,220,000 ac. The 10-year average (1930–39) production was 226,460,000 bu. from 10,732,000 ac. The yield in 1942 was 25.4 bu. per acre, or one-tenth of a bushel less than the 1941 yield. The 10-year average was 20.7 bu. per

U.S. Production of Barley by Leading States, 1942 and 1941

State	1942 bu.	1941 bu.	State	1942 bu.	1941 bu.
North Dakota .	67,454,000	45,425,000	Pennsylvania. .	4,098,000	3,753,000
South Dakota .	59,364,000	38,228,000	Illinois. . . .	3,465,000	4,630,000
Minnesota . . .	50,327,000	43,875,000	New York . .	3,300,000	2,925,000
California . . .	43,819,000	25,529,000	Kentucky . . .	3,105,000	2,340,000
Nebraska . . .	38,258,000	48,832,000	Missouri. . . .	2,890,000	3,780,000
Kansas	17,186,000	26,520,000	Wyoming . . .	2,650,000	2,581,000
Colorado. . . .	15,816,000	16,632,000	Maryland . . .	2,365,000	2,028,000
Wisconsin . . .	15,648,000	16,833,000	Indiana	2,256,000	2,156,000
Idaho	14,280,000	11,400,000	Tennessee . . .	2,200,000	1,600,000
Washington . .	12,560,000	5,402,000	Virginia . . .	2,120,000	1,800,000
Montana . . .	12,330,000	6,020,000	Arizona	1,856,000	1,408,000
Oklahoma . . .	10,625,000	9,216,000	Ohio	1,428,000	1,140,000
Oregon	10,075,000	6,688,000	North Carolina .	966,000	634,000
Michigan . . .	7,293,000	6,520,000	Nevada	828,000	819,000
Utah . . .	5,586,000	5,310,000	New Mexico . .	812,000	609,000
Texas	4,818,000	8,775,000	West Virginia. .	312,000	258,000
Iowa	4,818,000	7,315,000	New Jersey . .	270,000	216,000

acre. Except along the Canadian border, the yields in most states in 1942 were below those of 1941, especially in Iowa, Nebraska and Kansas.

In the Dakotas the crop broke all records. In the northern plains states the crop was damaged by rust, scab and wet weather. Canadian production in 1942 was 259,234,000 bu. compared to 110,566,000 bu. in 1941. (S. O. R.)

Barrymore, John Blythe (1882–1942), U.S. actor and star of stage, screen and radio, was born Feb. 15 in Philadelphia, the son of Maurice and Georgie (Drew) Barrymore. Talented and versatile, he studied art in his youth, and before he was 20 he had worked on two metropolitan newspapers as a cartoonist and illustrator. In 1903 he made his stage debut in a small part in Hermann Sudermann's *Magda.* Thirteen years later he gained his place in serious drama for his notable performance in Galsworthy's *Justice.* From then on he skyrocketed to fame, reaching the peak of his stage career with his interpretation of Hamlet, which won plaudits not only from New York audiences but also from London critics, generally hostile to U.S. actors in Shakespearean roles. Following his success in London, Barrymore returned to the United States and gained screen fame in *Beau Brummel* and *Don Juan,* two box-office successes which earned him the sobriquets of "The Great Profile" and "The Great Lover." The youngest member of the Barrymore "Royal Family," he frequently co-starred with his brother Lionel in motion pictures and appeared with both Lionel and his sister, Ethel, in the film *Rasputin.* In the late 1930s, he slipped to the status of featured player in trivial comedies. In 1939, he made a sensational come-back in a stage comedy, *My Dear Children,* convulsing audiences with his *ad lib* and off-stage remarks. Barrymore then starred in a weekly radio program, lampooning his own name and fame. He died in Hollywood, Calif., May 29.

Basalt: *see* STONE.

Baseball. Professional baseball's program for 1942 had its outlines established by the so-called "Green-Light Letter" from the president to Hon. Kenesaw M. Landis, ruling head of organized baseball, which comprises the two major leagues and (in normal years) some 40-odd minor leagues representing about 300 cities throughout the United States and in Canada.

In 1942, a full schedule of games to decide league championships was played in the major leagues—the National and the American—and in 26 minors. Five minor leagues which began play in spring suspended their schedules early in the season because of war economies, the depletion of playing ranks and, in the case of two coastal circuits, army dimout regulations precluded play under arc lights.

The national game became a part of the military programs of training camps and naval bases. Every sizeable base had its own team playing outside games. Every camp or base, large or small, had ball games for service men in recreation periods, so that as a by-product of the mobilization process, facilities for playing baseball were available to a greater number of persons than perhaps any previous year in American history. Professional baseball participated in this trend through its Baseball Equipment fund (*see* below). Because of the far fronts of war operations, the game had a greater geographical scope than ever in its history.

The commander-in-chief's message on baseball was as follows:

THE WHITE HOUSE
Washington

January 15, 1942

My dear Judge:—

Thank you for yours of January fourteenth. As you will, of course, realize, the final decision about the baseball season must rest with you and the Baseball club owners—so what I am going to say is solely a personal and not an official point of view.

I honestly feel that it would be best for the country to keep baseball going. There will be fewer people unemployed and everybody will work longer hours and harder than ever before.

And that means that they ought to have a chance for recreation and for taking their minds off their work even more than before.

Baseball provides a recreation which does not last over two hours or two hours and a half, and which can be got for very little cost. And, incidentally, I hope that night games can be extended because it gives an opportunity to the day shift to see a game occasionally.

As to the players themselves, I know you agree with me that individual players who are of active military or naval age should go, without question, into the services. Even if the actual quality of the teams is lowered by the greater use of older players, this will not dampen the popularity of the sport. Of course, if any individual has some particular aptitude in a trade or profession, he ought to serve the government. That, however, is a matter which I know you can handle with complete justice.

Here is another way of looking at it—if 300 teams use 5,000 or 6,000 players, these players are a definite recreational asset to at least 20,000,000 of their fellow citizens—and that in my judgment is thoroughly worthwhile.

With every best wish,

Very sincerely yours,
(Signed) Franklin D. Roosevelt

Hon. Kenesaw M. Landis,
333 North Michigan Avenue,
Chicago,
Illinois.

The team-of-the-year was the St. Louis Cardinals, who came from far behind, as of mid-August, to win the National league pennant on the last day of the playing season, then overthrew the mighty New York Yankees in the world series, winning four straight games after losing the opening contest. The Yankees had been unbeaten in world series play since 1926, when an earlier St. Louis club vanquished them. In the intervening years they had won the American league pennant eight times and every time had carried through to the world championship, five times by winning four straight games without allowing their National league cotitlists even a single game.

Short-wave radio carried the world series to American armed forces in Alaska, the Canal Zone, Hawaii, Australia, the British Isles, Africa and the near east, in some cases the play-by-play with every ball pitched, in all cases the scores and high lights.

The world series set a new attendance record for a five game series—276,717, gross receipts $1,105,249, of which $362,926 were turned over to the United Service Organizations. The total of direct financial contribution by the two major leagues to various war funds during the year thereby mounted to approximately $1,315,000. The Army Emergency relief, the Navy Relief society and the Baseball Equipment fund were the other chief recipients.

The report of Judge William G. Bramham, president of the National Association of Professional Baseball Leagues, showed that the minor leagues as a whole raised a total of $232,474 for the war funds in 1942.

Sixteen special games, one each on the home grounds of the 16 major league clubs, yielded a total of $523,229 for Army and

THE CHICAGO PUBLIC LIBRA

Navy Relief. The two major league All-Star games, the first played in New York July 6 and the second in Cleveland July 7, provided about $161,000, of which $100,000 went to the Baseball Equipment fund (Ball and Bat fund) and the remainder to the service relief organizations.

The remainder of the B.E.F.'s fund for the year of $133,359 was contributed by the Baseball Writers' Association of America and the treasuries of Commissioner Landis, the two major leagues and of the National Association of Professional Baseball Leagues. All-Star games played by the International league and the Pacific Coast league netted further contributions to the B.E.F. A total of 5,306 "kits" were distributed through army and navy headquarters to camps and bases in 43 states and to units in England, Iceland, Puerto Rico, Bermuda, Trinidad, B.W.I., Canal Zone, Hawaii, Alaska, Australia and Africa, with 2,300 additional kits ready for distribution with the start of the 1943 playing season.

The B.E.F. also arranged with J. G. Taylor Spink, publisher of the *Sporting News*, baseball's weekly newspaper, for the distribution of its paper in camp libraries, ships at sea and oversea units and U.S.O. clubs (about 3,150 weekly).

Supplementing the B.E.F. work of supplying bats, balls and catchers' equipment packed in kits, the two major leagues shipped approximately 1,000 dozen used baseballs to camps and bases during the season. These were foul balls, baseballs driven into the stands and bleachers and returned to the field of play for this purpose. In America in 1942 the foul ball into the stands, formerly the fan's pet souvenir of the ball game, was thrown back to the playing field for the foul ball pool or passed direct to a service man seated near by.

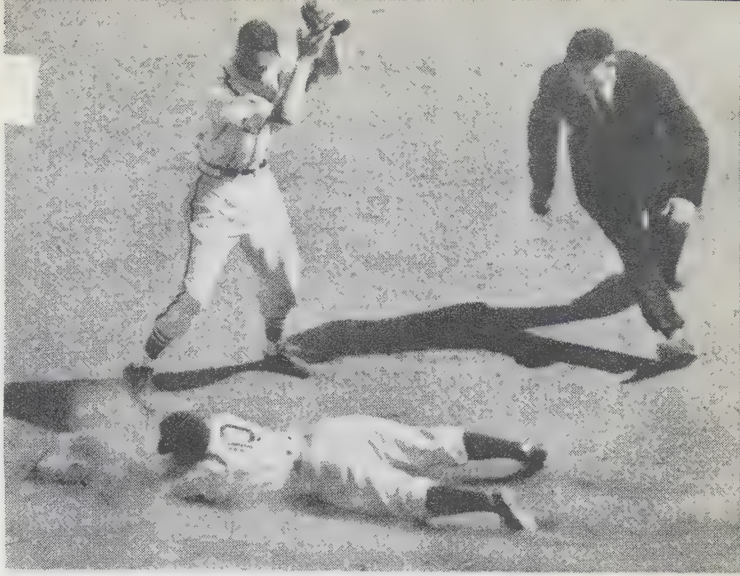
All the clubs in all the leagues made special arrangements for service men on their days off, free tickets, canteen refreshments, etc. Each ball club in its community was a leader in war-civilian activities, holding drives for scrap metal and rubber, signing up fans in the stands as donors for blood banks, establishing booths in the ball parks for sales of war bonds and stamps, etc.

The Associated Press survey of baseball attendance showed a drop of about 8% from 1941 totals in the major leagues, but concluded that "the figures fail to show evidence of a first-class losing trend." The National league attendance topped that of the American for the first time in several years, 4,724,961 to 4,685,614, but both were below 1941, when both passed the 5,000,000 mark.

The 1942 attendance figures, compared with 1941:

	1942	1941	Difference
NATIONAL LEAGUE			
Brooklyn	1,087,860	1,215,772	−127,912
New York	867,614	827,046	+ 40,568
Chicago	591,000	550,000	+ 41,000
St. Louis	571,297	646,190	− 74,893
Pittsburgh	513,285	505,845	+ 7,440
Cincinnati	470,582	654,456	−183,874
Boston	346,249	350,000	− 3,751
Philadelphia	277,074	280,380	− 3,306
Total	4,724,961	5,029,689	−304,728
AMERICAN LEAGUE			
New York	991,314	964,722	+ 26,592
Boston	741,026	760,000	− 18,974
Detroit	630,845	712,257	− 81,412
Cleveland	550,000	850,000	−300,000
Philadelphia	540,038	641,629	−101,591
Washington	525,530	420,000	+105,530
Chicago	426,874	678,911	−252,037
St. Louis	279,987	193,000	+ 86,987
Total	4,685,614	5,220,519	−534,905

Although fewer minor leagues operated, some showed increases. The American association, enrolling Columbus, Milwaukee, Kansas City, Louisville, Minneapolis, Toledo, Indianapolis and St. Paul, recorded a total attendance of 1,669,401, a bulge of about 7.5% over 1941. The Southern association, listing Atlanta, Birmingham, New Orleans, Memphis, Little Rock, Chattanooga, Nashville and Knoxville, reported 743,385, an increase of 59,717 over the previous year. The Canadian-American league, with teams in Utica, Gloversville-Johnstown, Quebec city, Amsterdam, Pittsfield, Oneonta, Three Rivers and Rome, hit a new all-time high of 344,587, which was 16,014 ahead of 1941.



PHIL RIZZUTO of the New York Yankees stealing second base in the second game of the 1942 world series at St. Louis. The St. Louis Cardinals won this game, 4 to 3, and the series, 4 games to 1

The Season.—St. Louis' great team, young compared to its National league cocontender, Brooklyn, and its world series opponent, the Yankees, featured daring base running, backed up by courage under stress, which caught the fancy of the baseball world in their pennant race and world championship finals.

Though chosen as pennant favourite by 46 of the 74 ballots in a preseason poll of baseball writers conducted by the Associated Press, the Cardinals in mid-August were nine and one-half games behind Brooklyn, 1941 champions and runaway pacemakers in spring and early summer, whose rate of victories was only slightly less than the National league's all-time first-half record, set by the New York Giants in 1912.

The Cardinals, in midseason, were a poor second, but in late August and September they turned on all their batting power and base-running speed. Backed up by excellent pitching and brilliant, if sometimes erratic, defensive play, they won 41 of their last 48 games, and clinched the pennant in the middle of Sunday afternoon, Sept. 27, the last day of the season, by winning the first game of their double-header with the Chicago Cubs.

Brooklyn, which as champion had won exactly 100 games in 1941, won 104 in 1942, an all-time high for a Brooklyn team. The Cardinals totalled 106. Only once before in National league history did two clubs reach 100 in the same season, 1909 (Pitts-

NATIONAL LEAGUE

Final Standings

	Won	Lost	Pct.	G.B.
St. Louis	106	48	.688	....
Brooklyn	104	50	.675	2
New York	85	67	.559	20
Cincinnati	76	76	.500	29
Pittsburgh	66	81	.449	36½
Chicago	68	86	.442	38
Boston	59	89	.399	44
Philadelphia	42	109	.278	62½

AMERICAN LEAGUE

Final Standings

	Won	Lost	Pct.	G.B.
New York	103	51	.669	....
Boston	93	59	.612	9
St. Louis	82	69	.543	19½
Cleveland	75	79	.487	28
Detroit	73	81	.474	30
Chicago	66	82	.446	34
Washington	62	89	.411	39½
Philadelphia	55	99	.357	48

burgh 110—Chicago 104); once also in the American League (1915: Boston 101—Detroit 100).

The Yankees swept to their 13th pennant, the American league record, not quite so overwhelmingly as in 1941, when they set an all-time record for early clinching of a league championship, but decisively enough to make them top-heavy favourites for the world series. As late as the middle of the last inning of the opening game of the world series in St. Louis Sept. 30, leading 7 to 0, the picture of Yankee supremacy in world series play held intact. In an unbroken string, 1927, 1928, 1932, 1936, 1937, 1938, 1939 and 1941, they had won every world series for which they qualified.

This picture blew up when the young Redbirds exploded a 9th inning rally, scored four runs, had the bases filled and the potential tying run at bat before the Yanks made the third out. This last-ditch rally sounded the keynote for the series. Starting the following afternoon, the Cardinals served the Yanks their own medicine, four straight defeats. (Scores of the five games: First Game: New York 7; St. Louis 4. Second Game: St. Louis 4; New York 3. Third Game: St. Louis 2; New York 0. Fourth Game: St. Louis 9; New York 6. Fifth Game: St. Louis 4; New York 2.)

In each game the ruling pattern was that of the young Cardinals ever and again teetering on the brink of ruin, but just at the last moment catching hold and flashing brilliant baseball to win the day, a formula entering their series triumph in the all-time gallery of great baseball exploits.

Morton Cooper was Cardinal pitching ace during the pennant race, beating Brooklyn 5 times, totalling 22 triumphs, earning the award of National league's most-valuable-player of the year in the annual Baseball Writers' Association of America balloting. In the world series the Cardinal mound hero was John Beazley, first-year recruit from New Orleans, of the Southern association. Beazley's 21 victories against only 6 defeats during the league season and his 2 world series victories made him the greatest first-year pitcher in National league history since Grover Alexander won 28 and lost 13 in 1911.

In the series second game Beazley shut out the Yankees until the 8th inning, when Charlie Keller's home run with 2 on base tied the score, 3 to 3. Instead of crumbling, however, the Cardinals regained the lead in their half of the 8th on brilliant base running by Enos Slaughter, then, when the Yanks started the 9th with a pair of hits, the same Slaughter nullified the effort by a great throw from his right-field position to third base, shooting down the Yankee base runner carrying the potential tying run.

The scene shifted to Yankee stadium, New York, for the 3rd game, in which Ernie White, St. Louis southpaw, won a 2-0 shut out. This broke another mighty Yankee streak. They had not been shut out in a world series game since Oct. 5, 1926, when a St. Louis pitcher of another generation, Jess Haines, was their master. They had played 40 world series games between those two dates. It was, too, the first time since 1926 they had been defeated in two successive games of a world series.

The Sunday game was attended by a crowd whose numbers set a new all-time high attendance record for a world series game, 69,902. This fourth game combined all the features of all the three former thrillers. The Yankees took the lead, as in the first game. The Cardinals rallied and rolled six runs across the plate in a tempestuous 4th inning, setting up a 6-1 lead. The Yanks put on a furious burst of scoring in the 6th. Keller hit a thunderous home run with two on bases, as in the second game, and the rally tied the score 6 to 6.

And again, as in the second game, the Cardinals, instead of cracking up after their commanding lead was shot from under them, promptly surged out in front, then marshalled shut out southpaw pitching by Max Lanier of the sort furnished by White the day before, holding the winning lead 9 to 6.

In the last game the Cardinals made their triumph complete by using the Yankees' own favourite weapon, the home run. Early in the game Slaughter hit one and with one on base in the 9th Whitey Kurowski, St. Louis third baseman, homered to break the 2-2 tie and crown the Cardinals world champions. Beazley's pitching again baffled the heavy-hitting Yankees throughout the game.

All-Star Games.—American league power was supreme, however, in the 1942 All-Star game between the picked teams of the major leagues, played at the Polo grounds, New York, July 6. In the first inning Lou Boudreau, Cleveland's shortstop manager, and Rudy York, Detroit first baseman, hit home runs to left and right, which scored 3 runs for a 3–1 American league victory, the seventh in ten All-Star games played, starting in 1933. The winning team defeated an All-Star line-up of Service baseball players in Cleveland the following night. The New York attendance of 33,694 was below expectations, but in Cleveland, with an impressive program of military and naval pageantry, the attendance was 62,094.

The Service team, commanded by Lieut. Gordon S. (Mickey) Cochrane, former American league star and manager of Detroit's 1935 world champions, enrolled several major league stars in its line-up, notably Chief Boatswain's Mate Bob Feller, great young Cleveland pitcher, but proved no match for the mighty American League All-Stars, who won 5 to 0.

Individual Achievements.—Joe Gordon, Yankees' second baseman and 1941 world series hero, was voted the American league's most-valuable-player, matching Morton Cooper, receiver of the National league's no. 1 player award. Gordon's all-around play, his batting and fielding, was the chief factor powering the Yankees in the 1942 pennant campaign.

League Leaders

BATTING

First Five in Each League

Player, club	G.	AB.	R.	H.	Pct.
Williams, Red Sox	150	522	141	186	.356
Pesky, Red Sox	147	620	105	205	.331
Lombardi, Braves	105	308	31	102	.331
Spence, Senators	149	629	94	203	.323
Gordon, Yankees	147	539	88	173	.321
Slaughter, Cardinals	152	591	100	188	.318
Case, Senators	125	515	100	164	.318
Musial, Cardinals	140	467	87	147	.315
Reiser, Dodgers	125	480	90	149	.310
Mize, Giants	142	541	97	165	.305

HOME RUNS

American League		National League	
Williams, Boston	36	Ott, New York	30
Laabs, St. Louis	27	Mize, New York	26
Keller, New York	26	Camilli, Brooklyn	26
York, Detroit	21	Nicholson, Chicago	21
DiMaggio, New York	21	West, Boston	16

RUNS BATTED IN

American League		National League	
Williams, Boston	137	Mize, New York	110
DiMaggio, New York	113	Camilli, Brooklyn	109
Keller, New York	110	Slaughter, St. Louis	99
Gordon, New York	103	Medwick, Brooklyn	96
Doerr, Boston	102	Ott, New York	94

Only very exceptional performance ever qualifies a pitcher for the most-valuable-player award. Cooper was the National league's leading pitcher with an earned-run average of 1.77. Since 1919 only once in either of the major leagues has this record been equalled or bettered (Carl Hubbell, 1.66 in 1933). Cooper's record of ten shut outs also tied Hubbell's ten in 1933. This is the closest approach to the major league all-time record of 16 by any National league pitcher since the record was set by Grover Alexander in 1916. Cooper also led his league in victories, with 22 against 7 defeats, and his victory percentage was surpassed only by his junior partner, Beazley, 21 and 6.

The batting champions were Boston players in both leagues, Ted Williams of the Red Sox for the American League, and catcher Ernie Lombardi of the Braves in the National, the second batting crown for each. Williams repeated his 1941 triple exploit of leading his league in batting, home runs and runs batted in. Lombardi was batting champion for Cincinnati in 1938, when he was voted the league's most-valuable-player.

John Mize, New York first baseman, shaded Brooklyn's first baseman, Dolph Camilli, 110 to 109, for the run-driving title in the National. Mel Ott, in his first year as Giants' manager, led the league in home runs, his specialty, since he holds the lifetime home run record for his league.

Tex Hughson of Boston was top winner among American league pitchers, with 22 while losing 6. In percentage, the leader was Ernie Bonham of the Yankees, 21 and 6. Bonham's 6 shut outs led in this department.

The king of American league pitchers for the year was Ted Lyons, the oldest major league pitcher in point of continuous service, whose earned-run average was 2.10, a figure which had been bettered only once in the American league since 1919 (Lefty Grove, 1931, 2.05).

Minor Leagues.—The Junior world series, the class AA playoff between the American association and the International league, was won by the junior partners of the St. Louis Cardinals, the Columbus Redbirds, 4 games to 2. In 1941 Columbus defeated Montreal. In 1942 Syracuse was the International representative.

For the third straight year the Nashville Vols won for the Southern association the honours in the Dixie series, annually played with the Texas league for class A-1 supremacy. It made the fourth straight year in which the Vols represented the Southern, all under the management of Larry Gilbert, former New Orleans player and manager. After losing the 1939 Dixie series to Fort Worth, Gilbert's Vols defeated Houston in 1940, Dallas in 1941 and Shreveport in 1942.

In only seven of the 22 leagues which held play-off rounds among the first-division clubs did the pennant-winning team take play-off honours.

Columbus and Syracuse finished third in the pennant races, while Nashville and Shreveport were second.

The pennant winners in the AA circuits were Kansas City for the American association, Newark for the International and Sacramento in the Pacific Coast league, the third-place Seattle Rainiers capturing play-off honours in the last-named organization. Nashville finished second to Little Rock in the playing season while Beaumont stood ahead of Shreveport in the Texas league.

The seven pennant-winners who swept their play-offs were Greensboro, in the Piedmont league, Cedar Rapids, Indiana-Illinois-Iowa league, Montgomery, Southeastern league, Pulaski, Virginia league, Bristol, Appalachian league, Jamestown, Pennsylvania-Ontario-New York league, and Sheboygan, Wisconsin State league.

Including the Southern and Texas, there were six leagues in which the runner-up won the play-offs. Scranton won in the Eastern league after Albany took the pennant; Macon was play-off winner after Charleston topped the South Atlantic league race; Hagerstown won the Interstate flag, but bowed to Wilmington in the play-offs; Winnipeg took the play-off prize in the Northern league, though Eau Claire finished first in the playing season.

There were three third-place play-off winners, besides Seattle, Columbus and Syracuse; viz., Waycross, in the Georgia-Florida league, in which Valdosta won the pennant; Rocky Mount, Bi-State, whose pennant was won by Wilson; Thomasville, play-off king of the North Carolina State league though the bunting belonged to Concord.

Fourth place play-off winners were Oneonta in the Canadian-American league, Erie in the Middle Atlantic, and Ashland in the Mountain State, with Amsterdam, Charleston and Huntington the respective pennant winners.

Four leagues played split season, winners of the two halves to meet for the pennant. The Appalachian league was the only one in which the same club won both halves, Bristol not only achieving this exploit but winning the play-off round as well.

Boise, second half winner, defeated Pocatello for the Pioneer league pennant. Second half winner won in the Pennsylvania State association, too, Butler defeating Johnstown. It was the first half winner's turn in the Western association, Fort Smith besting Topeka.

The Western International, the only league without a play-off, crowned Vancouver its champion. The final play-off round in the Northern league was cancelled when Wausau, one of the two winners in the preliminary play-offs, disbanded and forfeited to Winnipeg.

Five leagues which started the season suspended before the finish. The Florida East Coast league, with Orlando leading, stopped May 14. On May 30 the Evangeline league suspended, with Natchez in front. The Kentucky-Tennessee league closed its score books June 19, with Fulton ahead. June 28 the California league terminated operations, Santa Barbara in the lead. On July 5 the West Texas-New Mexico league discontinued.

(W. E. Bt.)

Basketball.

The west, as represented by Stanford university and the Denver American Legion, dominated 1942 basketball. Stanford won the National Collegiate Athletic association championship with a 53–38 victory over Dartmouth in the intersectional final. The Denver Legion team emerged from the National A.A.U. championship with the amateur title after defeating Phillips 66 of Bartlesville, Okla., in the tourney final.

On the collegiate front, Dartmouth dominated the east for the fifth consecutive time. Duke continued its hold on the Southern conference, while Kentucky and Georgia shared honours in the Southeastern conference. Illinois dominated midwestern play. Other major conference leaders were: Southwest, Arkansas and Rice; Missouri Valley, Creighton and Oklahoma A. and M.; Big Six, Kansas and Oklahoma; Big Seven, Colorado; Pacific Coast, Stanford (southern division), Oregon State (northern division); New England, Rhode Island.

Basketball, from a spectator standpoint, continued to flourish in the metropolitan areas. Crowds of 18,000 were not uncommon in New York and Chicago, while other sports centres drew smaller, but capacity, gatherings. The National Invitation tournament at Madison Square Gardens, attended by near-capacity crowds at each session, was won by West Virginia. The West Virginians, seeded last, defeated Western Kentucky State, 47 to 45, in the final.

The Women's National A.A.U. championship was won by the Davenport, Ia., American Institute of Commerce. The business college girls defeated Little Rock, 42 to 25, in the final. Chicago's Division Street Clippers won their second straight international Y.M.C.A. championship.

Professional basketball brought league action to the east and middle west during 1942. The eastern circuit, known as the American league, was won by Wilmington, Del., while the National league title went to Oshkosh, Wis. Oshkosh, winner of the annual professional basketball tournament in Chicago, was defeated by a team of college all-stars, 61 to 55, in the exhibition which launched the 1942–43 season.

Service teams took an active part in 1942 basketball and were preparing for an even greater year in 1943. The Great Lakes

IN THE SEMIFINALS of the annual National Invitation College Basketball tournament at New York city in March 1942 Western Kentucky State Teachers' college defeated Creighton university, 49 to 36. In the finals, however, Western Kentucky State lost to West Virginia university, 47 to 45

naval training station unofficially was acclaimed the outstanding service basketball team of the year. (M. P. W.)

Basutoland: *see* British South African Protectorates.
Bataan: *see* Philippines, Commonwealth of the; World War II.

Batt, William Loren

(1887?–), U.S. government official and industrialist, was one of the key men in the War Production board during 1942. Born in Salem, Ind., he learned the machinist trade in his youth and graduated from Purdue university in 1907 with a degree in engineering. He rose rapidly in his field, helped in the research and installation of the first ball bearings ever used in locomotives, and became president of the S.K.F. Industries, a Swedish-owned ball-bearings firm. He was deputy commissioner of the National Defense Advisory committee raw materials division in 1940. In Jan. 1941 he became deputy director of the Office of Production Management's production division, later becoming director of the OPM materials division. When Donald M. Nelson organized the War Production board in Jan. 1942, he made Mr. Batt head of the agency's requirements committee as well as director of the materials division. Batt also was chairman of the joint U.S.-Canada materials co-ordinating committee, and was appointed by President Roosevelt to serve with Harry L. Hopkins and Adm. Emory S. Land as U.S. representatives on a joint U.S.-British board supervising a munitions, shipping and raw materials pool. Batt resigned from the WPB materials division in May 1942 to devote more time to his other posts.

Baudrillart, Henri Marie Alfred

(1859–1942), French cardinal, was born Jan. 6 in Paris, the son of Henri Baudrillart, economist. He entered the École Normale Superieure in Paris in 1878, taught afterwards at the University of Paris, and was ordained in the church in 1893. He was vicar general of Paris and rector of the Catholic institute and held the titular ranks of bishop and archbishop. In 1935, he was proclaimed cardinal priest. Cardinal Baudrillart was elected to the French academy in 1918 and twice received the academy award for his books. He was the author of numerous historical and religious publications, the best known of which was *Philippe V and the Court of France,* 5 vols. (1890–1900). After the occupation of Paris in June 1940, he was kept under surveillance by the German authorities. He died in Paris, May 18.

Bauxite.

World bauxite production was forced to expand rapidly, in order to meet the rising demand for aluminum. Most of the outputs reported in the accompanying table for 1940 and 1941 are estimates. Great Britain and Canada draw on British Guiana, while the United States supplements its domestic output by imports from Surinam; the axis powers control the outputs of Greece, Hungary, Italy, Yugoslavia and France.

World Production of Bauxite

(Metric tons)

	1929	1938	1939	1940	1941
Br. Guiana . .	220,119	382,400	483,700	550,000	900,000
France	666,348	682,400	680,000	700,000	500,000
Greece	. .	179,900	186,900	180,000	?
Hungary . . .	389,152	540,700	570,200	560,000	600,000
Italy	192,774	360,800	483,965	380,000	380.000
Neth. E. Indies	. .	245,400	230,700	274,375	100,000
Surinam . . .	219,603	377,200	511,600	615,434	1,100,000
U.S.S.R. . . .	. .	250,000?	250,000?	270,000?	?
United States .	371,648	315,900	381,300	445,958	900,000
Yugoslavia . .	103,366	396,400	318,800	260,000	400,000
World Total	2,185,000	3,850,000	4,370,000	4,500,000	5,500,000

Production in the United States in 1940 increased only 17% over the preceding year, but in 1941 the increase was 105%, with a total of 899,500 long tons, as compared with 438,913 tons in 1940. Even this increase was far from sufficient to meet the demand, and imports were increased in a similar proportion. The net total (imports less exports) rose from about 510,000 tons in 1940 to 590,000 tons in the first nine months of 1941. Demands for 1942 were much greater, as the consumption of metal was constantly increasing. Bauxite consumption in 1943 was expected to be of the order of 3,000,000 tons, against something like 1,700,000 tons in 1941. (G. A. Ro.)

Bayard, Thomas Francis

(1868–1942), U.S. senator, was born June 4 in Wilmington, Del. He was a member of the senate from 1922 to 1929, the fifth member of his family to sit in the upper house. He was a member of the senate committees on foreign relations, appropriations, territories and insular possessions and claims. He died in Wilmington, July 12. (See *Encyclopædia Britannica.*)

Beans, Dry. The 1942 crop of dry beans in the United States made another high record, 20,962,000 bags (100-lb. bags, uncleaned), as estimated by the department of agriculture Nov. 1. The previous record crop was 18,226,000 bags, in 1941. The yield per acre was 944.7 lb. in 1942. In 1941 it was 901 lb.

U.S. Production of Dry Beans in Leading States, 1942 and 1941
(in 100 lb. bags)

State	1942	1941	State	1942	1941
Michigan	6,406,000	6,163,000	New York	1,507,000	1,256,000
California	5,508,000	5,332,000	New Mexico	1,255,000	791,000
Idaho	2,102,000	1,914,000	Wyoming	1,092,000	649,000
Colorado	1,862,000	1,460,000	Montana	300,000	250,000

(S.O.R.)

HIGH SCHOOL BOYS were recruited to help harvest the U.S. bean crop of 1942

Beaux, Cecilia (1863–1942), U.S. portrait painter, was born in Philadelphia. Returning home from study at the Julien academy in Paris, Miss Beaux won immediate recognition in Philadelphia art circles and later exhibited at the salons in Paris. In 1919 she was commissioned by the U.S. government to paint official war portraits, and she was honoured by art academies and institutes throughout the United States. Her best-known works are "A New England Woman," Pennsylvania academy; "After the Meeting," Toledo Art museum; "Ernesta," Metropolitan museum, New York city; "The Dancing Lesson," Art institute, Chicago; "Sita and Sarita," Corcoran gallery, Washington, D.C.; "Portrait of Mrs. Dupont," Boston museum; "Girl with the Cat," Luxembourg museum, Paris; and a self-portrait at the Uffizi gallery in Florence. Her autobiography, *Background with Figures,* was published in 1931. She died at Gloucester, Mass., Sept. 17. (See *Encyclopædia Britannica.*)

Beaverbrook, William Maxwell Aitken, 1ST BARON (1879–), British publisher and statesman, was born May 25, the third son of a Scotch Presbyterian minister stationed at Newcastle, N.B., Canada. Educated in the public schools of Newcastle while he peddled newspapers, he entered business and formed a successful merger that earned him a fortune. He went to London, entered politics and was elected member of parliament in 1910. He was with the Canadian expeditionary force in France in 1915 and later was officer in charge of Canadian war records. In 1918 he was appointed chancellor of the duchy of Lancaster and minister of information. Meanwhile, in 1917, he had purchased control of the London *Daily Express,* a failing newspaper which by the 1930s he had converted into the largest daily in the world, with a circulation in excess of 2,500,000. Lord Beaverbrook, as he was known after 1917, also became publisher of the *Sunday Express* and the *Evening Standard.* On May 14, 1940, he was named by Winston Churchill minister of aircraft production, and on Aug. 2 he was admitted to the war cabinet.

On May 1, 1941, Churchill removed him from the ministry of aircraft and appointed him minister of state. In a further effort to speed up the production of British arms, Churchill appointed him minister of supply June 29, 1941. He represented Britain at the three-power (U.S.-British-Russian) conference which opened in Moscow Sept. 29, 1941, and in the following December, Beaverbrook accompanied Churchill to the United States. He was named to the newly-created ministry of production, Feb. 5, 1942, served 15 days, and then left for "reasons of health." Beaverbrook then took up the cudgel for aid to Russia and in several speeches appealed to the Allies to open a second front, which he declared would result in the quick downfall of Hitler. (*See* also *Encyclopædia Britannica.*)

Bechuanaland Protectorate: *see* BRITISH SOUTH AFRICAN PROTECTORATES.

Bee-keeping. The price received by U.S. producers of honey in Nov. 1942 was practically double that received in Nov. 1941. In the interval, national rationing of sugar had become effective, and a number of industries that formerly had not used honey at all, or only in inconsequential quantities, endeavoured to buy all available supplies as a substitute for sugar. Such industries included bakers, ice cream, soft drink and chocolate syrup manufacturers. In March and April 1942, the War Production board placed restrictions on the sale of honey and extracted honey. No restrictions were placed on comb honey. Honey production in the U.S. in 1942 was estimated by the department of agriculture in Sept. as 180,000,000 lbs.

WOMEN APICULTURISTS working at hives in 1942. Many women volunteered for work in U.S. apiaries during the year to replace male workers who had gone into the army or into war plants

Since 1930 the trend in honey production had tended downward, partly because of low prices, droughts and reduction in buckwheat bee pasture. In addition to broader use of honey in foods, the U.S. department of agriculture's *Marketing Activities,* vol. 5, no. 11, p. 14, recited that a California beauty parlor was reported as buying 60,000 lbs. of honey annually to use in facials.

(S. O. R.)

Beer: *see* Brewing and Beer.

Belgian Colonial Empire.

The accompanying table gives material relative to the colonial and mandated territories administered by Belgium (*q.v.*). Total area 948,000 sq.mi.; total population (est. Dec. 31, 1939) 14,131,000.

History.—The loss of Allied possessions in the far east in 1942 considerably increased the economic importance of the Belgian Congo. The Belgian colony reached first rank for radium, and second rank for tin production. An agreement concluded between the British and Belgian governments placed at the disposal of Great Britain, in 1942, 144,000 tons of copper, its entire production of tin, 30,000 tons of ground-nuts, 90,000 tons of palm nuts, and all metals necessary for steel production. Congo exports to South Africa were also considerably increased—particularly timber.

After their co-operation in the Ethiopian campaign, the Belgian colonial forces were strengthened and reorganized. Hubert Pierlot, the Belgian prime minister, paid a visit to the colony during the summer of 1942 and Albert de Vleeschauwer, minister for colonies, spent several months in Africa and, in close co-operation with the governor general, took a series of measures in order to stimulate further the Congo's war effort.

(E. Ca.)

Belgian Congo: *see* Belgian Colonial Empire.

Belgium.

A kingdom of western Europe, bounded N. by the Netherlands and the North sea, S. and W. by France and E. by Germany and Luxembourg; occupied by Germany in May 1940. Area 11,775 sq.mi.; pop. (est. Dec. 31, 1939), 8,396,276; chief towns (pop. Dec. 31, 1938): Brussels and suburbs (cap. 912,774); Antwerp (273,317); Ghent (162,858); Liége (162,229). Ruler: King Leopold III; prime minister (1942): Hubert Pierlot; languages: French and Flemish; religion: Christian (mainly Roman Catholic).

History.—The year 1942 marked a further increase in the oppression and exploitation of occupied Belgium by the German invaders, and the corresponding resistance of the Belgian people.

Realizing that all attempts to induce King Leopold to depart from the attitude he adopted in May 1940, or to persuade the people to join the small band of "collaborationists" (Rexists or Flemish nationalists), the nazis dropped the mask and endeavoured to obtain by force what they had failed to obtain by persuasion. Their efforts to utilize Belgian industry met with little success, as shown by the notable decrease in production (except in the coal mines) and by the increasing number of unemployed workers who were compelled to leave the country (200,000 to 250,000, according to German statements). The failure to break opposition and pro-Allied activities through terrorism was still more remarkable, the number of crimes growing in proportion with the severity of the penalties inflicted. Capital executions could be estimated roughly at two or three per week.

Patriotic resistance was strengthened by the irreconcilable attitude of the church led by Cardinal Van Roey who, in several public pronouncements, condemned nazi doctrines and affirmed the duty of all Catholics to remain loyal to king and country.

This resistance was based on the hope of an early deliverance, because the Belgians realized that the prolongation of the war, without any alleviation to the blockade, would unavoidably bring about famine. During the last months of 1942 the food situation grew much worse, and several essential items on the ration list, such as potatoes, became unobtainable. The deficit in the population caused by starvation was estimated at 60,000 to 70,000 in 1941, the spread of tuberculosis being one of the main reasons for the rapid increase in the death-rate. It appeared evident that unless the war came to a speedy end or some means could be found to alleviate the hardships caused by the occupation and the blockade, the worst consequences of famine could not be avoided.

In London, the Belgian government pursued its various activities in conjunction with the Council of the United Nations, and in close co-operation with Great Britain and the United States.

Belgian Colonial Empire

Colony and Area sq. miles (approx.)	Population (000's omitted) (est. Dec. 31, 1939)	Capital, Status, Governors, Premiers, etc.	Principal Products 1939 (in metric tons)	Imports and Exports 1939 (in thousand francs)	Road, Rail 1939	Revenue and Expenditure (in thousand francs)
Belgian Congo, 927,000	10,356	Leopoldville, colony, *Governor General:* M. Pierre Ryckmans	copper ore (metal content) 122,600 gold (1940) 19,239 kg. coffee (1940) 24,000 coal 31,000	(1938) imp. 1,022,637 exp. 1,897,154	(1940) rds. open to traffic, 47,641 mi. rly. 3,106 mi.	(est. 1941) rev. 920,564 exp. 806,715
Ruanda and Urundi, 21,200	3,775	Nianza (Ruanda), Kitega (Urundi), mandated territory united administratively with the Belgian Congo	coffee (export) 4,950 tons tin (export) 1,556 tons	imp. 55,041 exp. 83,855	roads open to traffic, 1,747 mi.	United administratively with the Belgian Congo

Progress was made in the organization of the air force and in the mechanization of the army. (E. CA.)

Education.—(1938) Primary schools 8,712; scholars 955,038; higher schools 273; scholars 86,279; universities (1937–38) 4; students 10,776.

Banking and Finance.—Revenue, ordinary (est. 1941) 12,159,600,000 francs; expenditure, ordinary (est. 1941) 12,003,000,000 francs; public debt (Dec. 31, 1939) 59,318,300,000 francs; notes in circulation (July 31, 1942) 58,537,000,000 francs; gold reserve (July 31, 1942) 21,677,000,000 francs; exchange rate (average 1940): belga = 16.88 U.S. cents.

Trade and Communication.—External trade (merchandise): imports (1939) 19,426,000,000 francs; exports (1939) 21,580,000,000 francs. Communication and transport: roads, suitable for motor traffic (1939) 6,571 mi.; railways, open to traffic, main (1939) 3,190 mi.; airways (1938), distance travelled 1,457,050 mi.; passenger mileage 8,255,980 mi.; baggage mileage 156,762 ton mi.; mail mileage 78,412 ton mi.; newspapers 52,504 ton mi. Shipping (July 1, 1939) 408,418 gross tons; tonnage launched (July 1938–June 1939) 27,600 gross tons; vessels entered, in net tons, (monthly average 1938) 2,497,000; (July 1939) 2,801,000; cleared (monthly average 1938) 2,502,000; (July 1939) 2,803,000; motor vehicles licensed (Dec. 31, 1938): 155,174 cars; 77,600 commercial; 67,016 cycles; wireless receiving set licenses (1938) 1,082,200; telephone subscribers, local (1938) 287,323.

Agriculture, Manufacturing, Mineral Production.—Production 1939 (in metric tons); wheat 349,000; oats 724,200; rye 349,400; potatoes 3,323,200; coal (1940) 25,605,000; pig iron and ferro-alloys 3,059,000; steel 3,104,000; beet sugar (1940) 231,000; barley 51,000; butter 61,000; margarine 60,700; artificial silk 5,900. Industry and labour: industrial production (1929 = 100) average (1939) 83.3; (Jan. 1940) 79.1; number wholly unemployed (average 1939) 195,211; (March 1940) 163,598. (*See* also BELGIAN COLONIAL EMPIRE.)

Benefactions: *see* DONATIONS AND BEQUESTS.

Bennett, Henry Gordon

(1887–), Australian army officer, was born April 15 in Balwyn, Victoria, Australia. He studied at Hawthorne college, Victoria, became a public accountant and businessman, and was president of the Association of Chambers of Manufacturers of Australia, 1933–34. He served in World War I, 1915–18, was decorated several times, and was a lieutenant colonel and brigade commander in the Australian imperial forces. He was in command of the 2nd division of the Australian army, 1926–31, and was promoted to major general in 1931. Gen. Bennett was in command of the Australian forces in the disastrous Malayan campaign in World War II and remained with his men until Gen. Percival, the British commander-in-chief, surrendered Singapore on Feb. 15, 1942. After Gen. Bennett completed the formalities of surrendering his own forces, he and a group of British imperial officers escaped from Singapore in a Chinese sampan and reached Batavia. The Australian war cabinet approved his conduct in the Malayan battles with a vote of confidence on March 2, 1942. Two days later Gen. Bennett frankly acknowledged that the British and Australians had underestimated the strength of the Jap army.

Bentonite.

The production of bentonite in the United States increased from 251,032 short tons in 1940 to 354,028 tons in 1941, of which 34% went into foundry and core sands, 33% in oil refining, and 17% in oil-well drilling. A new plant at Winnipeg was prepared to supply 200 tons monthly from the Morden district of Manitoba. (*See* also FULLER'S EARTH; MICA.) (G. A. RO.)

Bequests, Philanthropic: *see* DONATIONS AND BEQUESTS.

Berchtold von und zu Ungarschitz, Count Leopold

(1863–1942), Austro-Hungarian statesman, was born April 18, in Vienna. Count Berchtold, who was foreign minister for the Austro-Hungarian empire at the outbreak of World War I, was the author of the "fatal" ultimatum to Serbia that started the conflict in 1914. After the war, Count Berchtold retired from politics and lived in virtual seclusion. A Berne dispatch of Nov. 21 said he died on his estate in Sopron, Hungary, but the date of his death was not given. (See *Encyclopædia Britannica.*)

Berlin.

The residence of Hohenzollern electors, kings and emperors from 1442 to 1918, and capital of the German reich after 1871, Berlin is the largest and most important city of Germany. Reorganized in 1920 to include several suburbs, greater Berlin in 1939 had an area of 332 sq.mi., and a population of 4,332,000. Its favourable situation in north Germany on the River Spree, between the Elbe and the Oder rivers, affords it cheap water transportation through Germany's wide-reaching system of rivers and canals. It is also the centre of Germany's network of railways, motor highways and commercial air lines. Politically important as the seat of the Prussian and German governments, it grew rapidly after 1860 as an industrial and banking centre. In World War II it became the focal point of the vast nazi organization for the economic exploitation of Europe. British bombing during 1940–41 destroyed the interior of the opera house and many other buildings, but during 1942 the city was spared, except for a few bombs dropped by Russians. To lessen the danger from air attacks, important landmarks were camouflaged with a great network of foliage. (S. B. F.)

Bermuda.

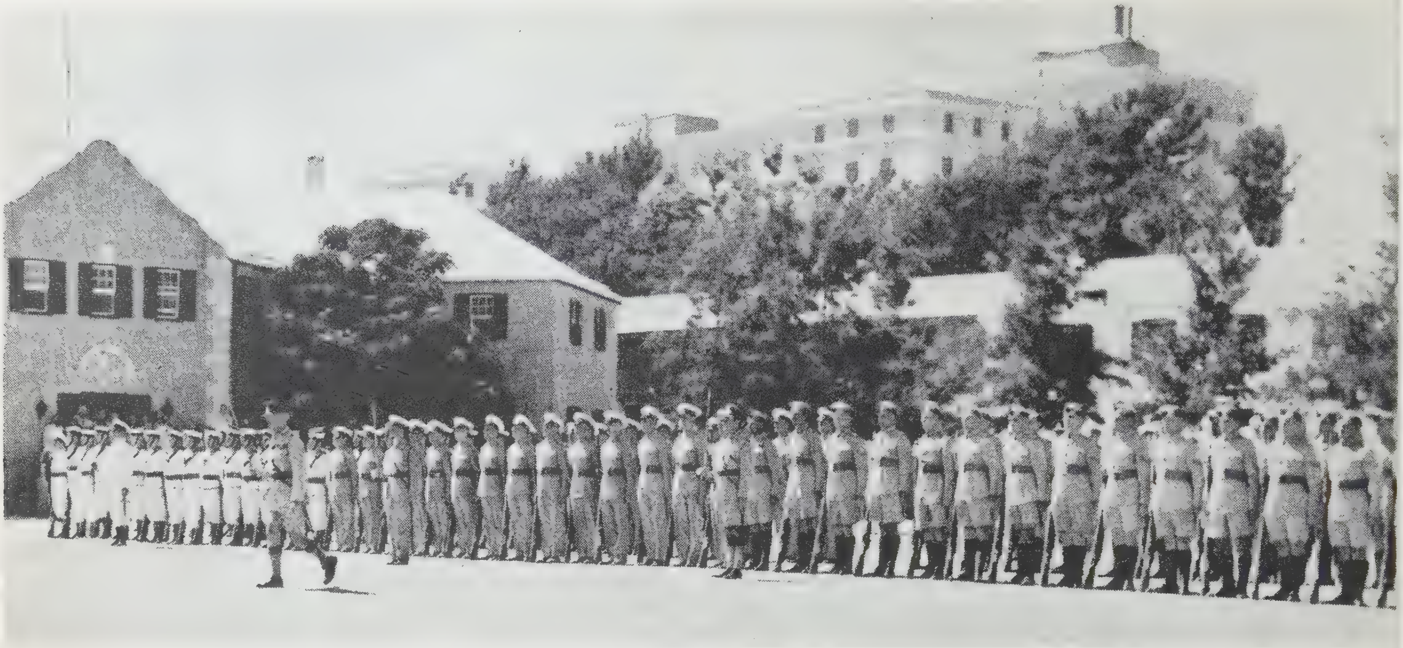
An island group and British colony 580 mi. east of Cape Hatteras, with an appointed governor and an elected representative assembly. Area, 19¼ sq.mi. The population by the Mar. 26, 1939, census (adjusted) was 31,481, and was officially estimated as of Dec. 31, 1941, at 32,451, not including members of the armed services of the United Nations, United States naval and army base personnel, and 772 Imperial Censorship employees. The capital is Hamilton (pop. 3,217). The governor in 1942 was Viscount Knollys.

History.—The effects of World War II continued to be felt strongly in Bermuda throughout 1942. Shipping shortage and, especially, the need of supplying military and naval personnel stationed in the islands necessitated some rationing of food. Despite poor crop conditions and the cessation of normal tourist trade, long the colony's economic backbone, Bermuda continued prosperous largely as a result of defense development in connection with the United States naval and air bases.

Education.—Bermuda in 1941 had 29 government schools with an average weekly attendance of 4,363. During 1942 the colonial assembly approved a long-range educational "blueprint" involving an increase in the school-leaving age from 13 to 14 years, manual training and a girls' domestic training system, agricultural education, and generally improved teaching standards and requirements.

Finance.—The monetary unit is the pound sterling (value in 1942, approx. $4.03½).

Trade and Resources.—In 1941 imports, comprising chiefly foodstuffs and manufactured goods, totalled £2,422,106 in value (1940: £1,469,504; 1939: £1,750,536), with the United States supplying 47.6% (1940: 40.8%), Canada 23.2% (1940: 24.2%), Great Britain 17.7% (1940: 22.7%). The heavy increases in value and volume were due largely to war conditions.



BRITISH SAILORS, marines and soldiers on the parade grounds of their barracks at Hamilton, Bermuda

Exports for 1941 were officially reported at £125,000 value (1940: £83,608) and included principally lily bulbs (£16,901 value), onions (£12,525), carrots (£7,423), and miscellaneous re-exports, notably empty containers (£24,788). The disparity between exports and imports is offset by tourist spending and by military and naval outlay in furtherance of the war effort. The tourist trade, normally involving 75,000 visitors annually, was almost nil in 1942, but losses were partially balanced by heavy transatlantic air travel, which promised to exceed the 1941 all-time record of 5,911 persons.

Communication.—Bermuda is a main station on the direct transatlantic air route to Europe. Private internal communication was entirely by boat and horse-drawn vehicle until 1942, when a legislative act granted permission for motor car use by doctors. Government automotive transportation had been permitted since the outbreak of World War II.

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Bernacchi, Louis Charles (1876–1942), British scientist and explorer, was born in Tasmania and educated at Melbourne university (Observatory branch). He served as physicist on the Southern Cross Antarctic expedition, 1898, and the National Antarctic expedition under Capt. Robert F. Scott, 1901–04. He wrote *To the South Polar Regions* (1901), *Saga of the "Discovery"* (1938), and numerous articles on the scientific results of the Southern Cross expedition and on terrestrial magnetism, meteorology, seismology, gravity and atmospheric electricity. Bernacchi died in London, April 24.

Berry, Martha McChesney (1866–1942), U.S. educator, was born Oct. 7 near Rome, Ga. She was reared in the tradition of southern aristocracy, but renounced the "birthright" of a southern belle to bring "book larnin' " to poor mountain children in northern Georgia. She built a two-story log structure with a dormitory on her own land and thus in Jan. 1902, the Berry school made a humble start with five pupils and two teachers. Her school taught useful arts and crafts and required that all students earn their tuition by raising cattle, farming and performing other tasks. The school grew until, in 1942, it included four branches in outlying counties and 125 buildings stretching over 35,000 ac. Miss Berry's educational system became the pattern for programs in Georgia and neighbouring states. She died in Atlanta, Ga., Feb. 27.

Beryllium. As in 1940, there was a continued substantial advance in the demand for beryllium in 1941. In addition to the standard master alloy of copper with 4% beryllium, other alloys were attracting more attention, especially those with aluminum and nickel, and a ternary mixture made by the addition of cobalt to the standard copper alloy.

Imports of ore into the United States during the first nine months of 1941 reached 1,635 short tons—942 tons from Brazil and 693 tons from Argentina, against a total of 805 tons in 1940, of which 422 tons was from Argentina and 377 tons from Brazil. Due to demand in excess of supply, the War Production board on July 1, 1942, placed beryllium under complete allocation control.

(G. A. Ro.)

Besier, Rudolf (1878–1942), British dramatist, born July 2 in Java, was educated at Elizabeth college, Guernsey, and at Heidelberg. He wrote his first play, *The Virgin Goddess* in 1906. Two of his later dramas were written in collaboration with H. G. Wells and Hugh Walpole. His most successful play, *The Barretts of Wimpole Street,* was first produced at the Malvern festival, England, in 1930. The manuscript had been twice rejected in London and in the United States was turned down by 27 New York producers and players before it was accepted by Katharine Cornell. She toured the country, giving over 700 performances in the role of Elizabeth Barrett. Besier died at his home in Surrey, England, June 15.

Bessarabia: *see* RUMANIA.
Best Sellers: *see* PUBLISHING (BOOK): *Best Sellers.*
Betatron: *see* CANCER.

Beveridge, Sir William Henry (1879–), British economist, was born

March 5 in Rangpur, Bengal. One of Britain's leading economists, Sir William served the government during World War I in the capacity of economics adviser on various ministerial boards. During the post-war era, he was director of the London School of Economics and Political Science, 1919–37, and was a member of the government committees on coal and food rationing. In 1940, he was appointed adviser on manpower and industrial capacity in the ministry of labour and a year later was made an undersecretary in the ministry. In June 1941, he was made chairman of the inter-departmental committee on social insurance and allied services with a view toward reform.

On Dec. 1, 1942, he submitted a 100,000-word document on his findings and recommendations to parliament. This document, called the "Beveridge Plan," outlined a new social security system which, if accepted by parliament, would change the face of post-war Britain. Its outstanding recommendations included: unemployment insurance for all, free medical and hospital treatment, child benefits, old age pensions, marriage and death grants. Some conservative elements in parliament were hostile to the plan as "too radical."

The Labour party generally hailed it as a broad step forward to socialization.

Beveridge Report: *see* SOCIAL SECURITY.

Bevin, Ernest (1884–), British labour leader and statesman. In his youth he was a truck driver in the vicinity of Bristol; later he became interested in trade unions and was elected general secretary of the Transport and General Workers' union. In 1937 he was appointed chairman of the General Council of Trades Union congress. On May 13, 1940 Churchill named him minister of labour and national service, and he was promoted to the war cabinet on Oct. 3. In these offices he showed great energy in helping to stiffen Britain's war effort by securing the collaboration of the working classes.

When the government set up three "executive" groups for production, imports and postwar policy Jan. 6, 1941, Bevin was assigned to head the production division. In July 1941 he announced the formation of joint labour-employer boards in war industries. In Nov. 1941 he warned that wartime shortages in Britain would require the drafting of 1,000,000 married women to work in munitions factories. Bevin retained his post during the cabinet shakeup of Feb. 22, 1942 and was given broader powers to mobilize all British manpower for war industries. On May 21, he declared that 22,000,000 out of 33,000,000 Britons between the ages of 14 and 64 had been mobilized in either the armed forces or in war industries.

BEW: *see* ECONOMIC WARFARE, BOARD OF.
Bible Society, American: *see* AMERICAN BIBLE SOCIETY.
Bicycling: *see* CYCLING.

Biddle, Francis (1886–), 58th attorney general of the U.S. and great-great-grandson of Edmund Randolph, the first U.S. attorney general, was born May 9 in Paris. A scion of the Philadelphia Biddles, he attended Groton and then Harvard, where he received his law degree *cum laude* in 1911. Biddle was admitted to the Pennsylvania bar in 1912. He stumped for Theodore Roosevelt in the 1912 and 1916 campaigns, and ran, unsuccessfully, for the senate in 1914. An ardent New Dealer, he was appointed chairman of the National Labor Relations board in 1934. He was judge of the third U.S. circuit court of appeals, 1939–40, and was called from that post to become acting attorney general in June 1941 and was appointed attorney general by Pres. Roosevelt on Aug. 25, 1941. A staunch defender of civil liberties, Biddle frequently warned against mob hysteria in fighting the fifth column, adding that aliens should be treated without "malice or race hatred."

In Oct. 1942, he announced that the 600,000 Italian citizens living in the United States would no longer be treated or regarded as enemy aliens.

Billiards. Once again Willie Hoppe, veteran New Yorker, 55 years old, led all the rest in billiards. Hoppe, who at one time or another has held every billiard title, easily carried off the three-cushion championship of the world for the third year in a row. A heavy favourite from the start, Hoppe met with no difficulty in the tournament held in Chicago.

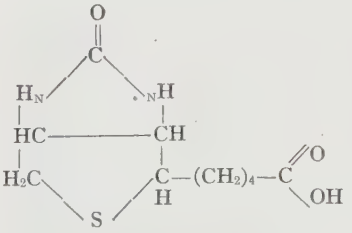
True, he was beaten once, but every other man in the big field suffered at least three setbacks and Hoppe, with a record of eight victories in nine matches, successfully defended his crown with ease. Welker Cochran of San Francisco, himself a former champion, was the runner-up, followed by Joe Chamaco of Sonora, Mex., and Ralph Greenleaf of New York, who tied for third place. Greenleaf's high finish was somewhat of a surprise, since his fame was achieved as a pocket billiard player and not at three-cushions.

However, in the six-man field at Detroit in December, at pockets, Greenleaf could finish no higher than fifth, virtually tied for last place with Erwin Rudolph of Chardon, O. The competition, in which every man was a former titleholder, was won by 29-year-old Willie Mosconi. The former Philadelphian won nine out of ten matches. Andrew Ponzi of Philadelphia was second.

Earlier in the year, Irving Crane, youthful star from Livonia, N.Y., triumphed over Rudolph in a challenge match. This event, contested at Rochester, N.Y., in May, saw Crane dethrone Rudolph, five-time champion, 900–744. Crane's reign, however, was short-lived. He wound up third in the Detroit tournament. (L. EF.)

Billington, Rose Ann (1859?–1942), U.S. suffragist, was born in Bootle, England, and went to the United States with her husband to make her home in Jersey City, N.J. In her crusade for women's suffrage, Mrs. Billington appealed to four presidents, McKinley, Taft, Theodore Roosevelt and Wilson, to give U.S. women the right to vote. During a suffragist demonstration before the White House, she gained an audience with President Wilson and was credited with having persuaded the president to urge senate approval of the 19th amendment—the suffrage amendment. After it became law, she was appointed to the Democratic national committee from New Jersey, the only woman from New Jersey to hold such a post. She died in Jersey City, Oct. 12.

Biochemistry. **Vitamins.**—The structural formula of biotin (vitamin H) was definitely established and its value for human nutrition was demonstrated. With the view of elucidating the chemical mechanisms by which vitamins act, numerous studies were reported on the chemical changes following vitamin deficiency or administration with tissue slices and extracts *in vitro*, purified enzymes, as well as intact animals. Diphosphothiamin was found to be a necessary factor in the action of a new cell-free decarboxylating enzyme from animal tissues, which converts pyruvic acid into acetoin $+CO_2$, and has similar actions on α-ketoglutaric and α-ketobutyric acids.

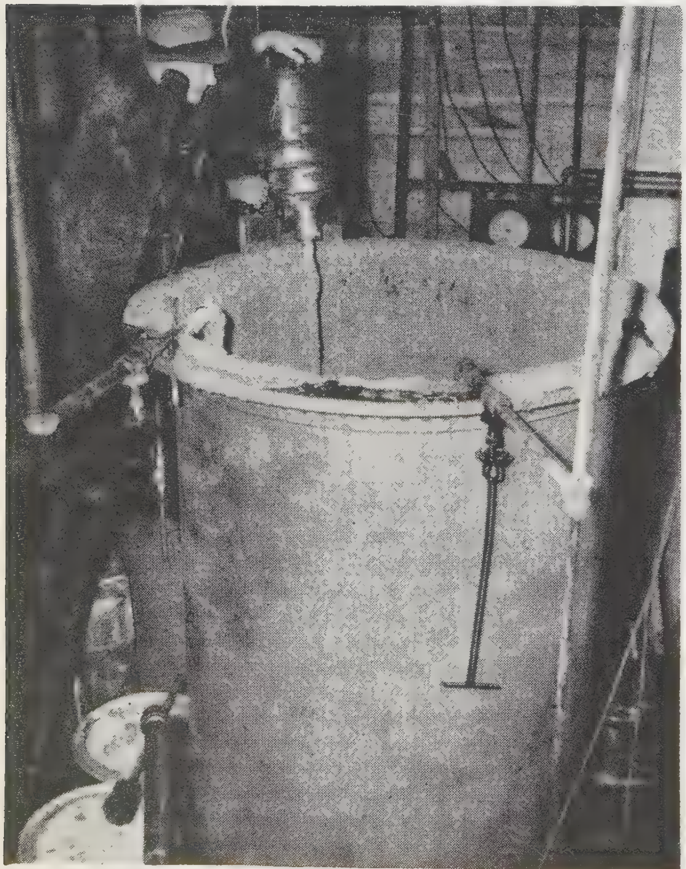


Biotin = $C_{10}H_{16}O_3N_2S$

Vitamin C was found to be necessary for the normal metabolism of tyrosine and phenylalanine. Deficient guinea-pigs, fed 1 g. tyrosine, show excretion of 50% to 100% of the amino acid in the urine as homogentisic acid and parahydroxyphenyl pyruvic acid, a condition not observed when adequate C is given. Similar observations were reported on infants fed cow's milk.

New and improved methods for chemical and microbiologic estimation of most vitamins were described, together with new data on the concentration of vitamins in foods and tissues and their formation by bacteria. Striking are the paradoxical facts that in certain vitamin deficiencies there is a normal or nearly normal concentration of the vitamin in the tissues. This is observed for nicotinic acid in the condition of blacktongue in dogs, for vitamin E in vitamin-E-deficient rats, and for choline in choline-deficient rats showing haemorrhagic kidneys. (*See* also Vitamins.)

Metabolism.—Studies with compounds containing stable and radioactive isotopes continued to provide new and fundamental information. That acetic acid is a precursor of cholesterol was shown by the finding of deutero-cholesterol in the tissue of rats and mice following the feeding of deutero-acetate, but not of deutero-propionate and -succinate. When acetic acid containing an excess of C^{13} is fed to rats, the urine contains acetone bodies with an excess of C^{13} showing a metabolic relation of these two substances. Experiments on the feeding of serine containing N^{15} showed that this amino acid is converted into ethanolamine and cystine, and is also incorporated into the body phosphatides. Experiments with radioactive phosphorus on the formation of phospholipid from inorganic phosphate by rat liver slices showed that this conversion depends upon (1) intactness of the liver cells—mincing or homogenizing prevents the action, and (2) aerobic conditions and energy-forming oxidations—the action is prevented by respiratory inhibitors, cyanide, azide, CO, as well as by absence of O_2. The feeding of methionine containing radioactive sulphur, S^{35}, causes the appearance of taurine containing S^{35} in the bile, and of cystine and methionine containing S^{35} in the proteins of tissues.



SHARK-LIVER OIL was found to contain the highest concentrate of vitamin A of any known substance and was therefore produced in large quantities in the United States during 1942 to replace oils from the livers of fish caught off Norway and Spain. The picture shows an agitator tank in which the crushed livers are mixed with water and chemicals, then heated and agitated to form a strong emulsion

Concerning the fixation of CO_2 by animal tissues, further studies on the utilization of CO_2 in the formation of α-ketoglutarate by pigeon liver, with heavy C^{13}, showed that the fixed CO_2 is found only in the carboxyl groups of organic acids, and in the case of α-ketoglutaric acid, only in the carboxyl group adjacent to the carbonyl group. Other studies with radioactive C^{11} led to the separation of a cell-free enzyme system which, when pyruvate is present, transfers $C^{11}O_2$ into the carboxyl group of this acid ion; and in the presence of both pyruvate and fumarate reaches its maximum rate of $C^{11}O_2$ fixation, while fumarate is converted into lactate and CO_2. Part of this enzyme system was identified as oxaloacetate-carboxylase, which converts oxaloacetate into pyruvate and CO_2. It is the reverse of this reaction (the enzyme catalyzes reversibly) which is thought to be the initial reaction of CO_2 fixation.

Crystalline Proteins.—Two biological activities were separated as crystalline proteins: carbonic anhydrase and the poliomyelitis virus. Electron-micrographs of five different proteins have been taken, and the molecular sizes estimated from these pictures agree well with those estimated by other methods. (*See* also Physiology.)

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Biography: *see* American Literature; English Literature; Children's Books.

Biological Survey, Bureau of: *see* Fish and Wildlife Service.

Biology: *see* Botany; Marine Biology; Zoology.

Biotin: *see* Chemistry; Biochemistry.

Bird Refuges: *see* Fish and Wildlife Service.

Birling.

At Gladstone, the roleo capital of the nation, on Michigan's upper peninsula, July 3, 4 and 5, 1942, top-flight birlers of the nation gathered to vie for the title of "king of the white waters." In the final match, before 15,000 spectators, James Running, 21, Beloit, Wis., and Walter Swanson, 24, Kodiak, Alaska, battled for 55 min. 21 sec. before a decision was reached. Running won the first fall in 48 min. 9 sec. and the second fall in 7 min. 12 sec. James Herron, Kelso, Wash., 1941 champion, did not defend his title because of his enlistment in the coast guard. The title of national girls' champion birler or "queen of the white waters" was retained by Mary Jean Malott, 22, of Cornell, Wis., who is a student at Anderson (Ind.) College and Theological seminary. She defeated Marietta Phipps Terrill, 21, of Stevens Point, Wis., in two straight falls. Marcus Olson, 14, of Marquette, Mich., won the national junior title by defeating Irving Deroeck, 14, of Gladstone, Mich. Ted Springer, Minneapolis, 1941 junior title holder, did not defend his title because of illness. The "old timers' round" for birlers over 50 years of ago was won by Jay Swanson, 51, of Brinnon, Wash., who defeated William Girard, Sr., 51, of Gladstone, Mich. The matches were refereed by Charles M. Sheridan, Washburn, Wis., nationally known authority on birling. (G. T. S.)

Birth Control.

The Birth Control Federation of America, Inc. by vote of its members at the annual meeting in Jan. 1942, changed its name to Planned Parenthood Federation of America, Inc., as more indicative of its aims and purposes. Work during the year was concentrated on: (1) inclusion of pregnancy spacing in more state health departments; (2) stimulation of adequate teaching of contraception in medical schools and wider distribution to physicians of a condensed authoritative text by Robert L. Dickinson on techniques of conception control; (3) raising funds for research and (4) continuing public education.

Claude C. Pierce, M.D., who retired as former director of Region 1 of the U.S. public health service, became medical director of the federation, John H. J. Upham, M.D., former president of the American Medical association, was elected chairman of the board, and Nicholson J. Eastman, M.D., head of the department of obstetrics and gynaecology, Johns Hopkins Medical school, became chairman of the National Medical Council on Birth Control.

(1) **Public Health.**—Three more states were assisted in initiating pregnancy spacing in their health departments, bringing the total to six.

Clinical Service.—On Dec. 1, 1942, there were 782 services in the United States; 216 in hospitals; 256 in public health quarters; 310 extra mural; and 336 of the total supported in whole or part by public funds.

(2) **Medical Education.**—Copies of a new edition of Dr. Dickinson's "Techniques of Conception Control" were sent, on request, to 45,000 physicians and medical schools. Returns on a questionnaire sent to 34,000 of those receiving the pamphlet, showed that the doctor's greatest interest was in techniques. A syllabus for teaching contraception in medical schools was drawn up, to be sent for their consideration to heads of these institutions.

Medical Endorsements.—The Florida State Medical association, the Tennessee State Medical society and the West Virginia State Medical association, all passed resolutions approving child-spacing, or planned parenthood, as part of public health activities and medical practice.

(3) **Research and Investigations.**—The Federation raised funds for research in various aspects of human fertility, to be conducted under the guidance of the National Committee on Maternal Health. These studies were long range projects; results would be announced at their termination. There was still urgent need for research in simpler effective contraceptive methods. Among the independent clinical studies on simple forms of contraception, were those of Irving R. Stein, *et al.* in Chicago, Beebe and Overton in Nashville, Beebe in a rural area in West Virginia, and Beebe and Geisler in a rural area of Kentucky. All of these studies showed a varying reduction in fertility among the cases advised.

The council on chemistry and pharmacy of the American Medical association appointed a committee on contraceptives to study drugs used in this field and to report on contraceptive preparations, and the medical subcommittee of the Family Planning association of Great Britain appointed a special Ad-Hoc committee to conduct a clinical investigation of the efficiency of certain chemical contraceptives.

(4) **Public Education.** *Negro Program.*—A two-year Negro child-spacing demonstration project was successfully carried out under the most difficult conditions to provide proof that under public health direction the benefits of planned parenthood could reach and would receive acceptance by even the poorest and most illiterate groups. Negro leaders in the fields of medicine, education and social welfare gave active support to a national educational campaign.

Legal Decisions, U.S.—The supreme court of errors, of Connecticut, by a vote of 3 to 2, on the Tileston case in June, ruled that the state law on contraception was constitutional and that under it no doctor could advise the use of contraceptives even in cases where the life of a patient was threatened by pregnancy. In November the U.S. supreme court agreed to accept the Tileston case for review.

In Massachusetts all efforts of the opposition to keep the question off the ballot having failed, the people voted in a referendum as to whether physicians in that state could legally advise patients on contraceptives, when life or health were threatened by pregnancy. The question lost.

Abroad.—In Great Britain birth control clinics remained open and an increase in the number of patients was reported. Conscription of women for war work led to a demand for contraceptive service by many who could not carry on in the country's war effort if they became pregnant. Medical officers of health were reported as co-operating in many countries by referring cases to clinics for advice. Elsewhere in Europe no information filtered through, beyond an authentic report from Germany that contraceptives were among the few articles still advertised for sale in a number of large cities. Germany, Italy and Japan were all pressing frantically for higher birth rates. This policy, accompanied by suppression of birth control information did not bring the desired results. (*See* also BIRTH STATISTICS; CIVIL LIBERTIES.)

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Birth Statistics.

Provisional reports covering the first eight months of 1942 indicated that the number of births for that year in the United States, Canada and England and Wales would be appreciably greater than for 1941. Births reported in the United States through August of 1942 were 6.6% above those of the corresponding period of 1941. For 1941 as a whole, there were registered 2,511,550 births in the United States, the birth rate being 18.9 per 1,000 population, the highest since 1930. Canadian cities of 10,000 or more had an increase of 14.4% in births from 1941 to 1942, the period of comparison being through August of each year. Total births in Canada in 1941 numbered 254,483 and the birth rate was 22.3 per 1,000 population. In the great towns of England and Wales an increase of 17.5% in births was observed from the first eight months of 1941 to a like period of 1942. During 1941 as a whole, England and Wales had 587,228 births and a birth rate of 14.2 per 1,000 population, the lowest yet recorded in its history. The sharp recovery indicated for 1942 was a symptom of the hopeful attitude of its people in World War II. It was generally expected that the spurt in the birth rate just noted for the United States, Canada and England and Wales would prove to be temporary. As the war wore on, the withdrawal of millions of men for the armed services was expected to interfere seriously with normal family life and thus tend to depress the birth rate.

Birth rates per 1,000 population for 1941 reported for other nations were: Belgium 12.0; Bulgaria 21.3; Denmark 18.5; Eire 18.9; Germany 18.8; Hungary 18.4; Italy 20.9; Netherlands 20.3; Portugal 23.8; Sweden 15.6; European population of New Zealand 22.8; Japan 29.9; Argentina 23.9; Chile 32.6; Salvador 40.0; and Venezuela 36.8.

In a study of the relation between the course of employment and of the birth rate in Germany, it was found that, over short periods of time, the correspondence between the two was very close; the number of births increased following a period of rising employment, but decreased after a falling period. This relationship was found to be closer in cities than in rural areas. A conclusion drawn from the study was that the rise in the birth rate in Germany shortly before the war may be attributed to her improvement in employment conditions, rather than to the intense propaganda for larger families.

Within the United States, in 1941, the birth rates per 1,000 ranged from a low of 15.7 in New York to a high of 27.8 in New Mexico. Seven states had birth rates of less than 17 per 1,000, namely, Connecticut, Kansas, Massachusetts, Nebraska, New Jersey, New York and Rhode Island. On the other hand, eight states had birth rates of 23 or more; they were Arizona, Louisiana, Mississippi, New Mexico, North Carolina, South Carolina, Utah and West Virginia. It will be recognized that these states lie in the southern tier of the country and that all but Utah have large Negro or Mexican populations with high birth rates. The appended table shows the birth rate in each state in 1941.

Births per 1,000 Total Population in the United States, 1941

State	Rate per 1,000	State	Rate per 1,000
United States	18.9	Montana	20.4
Alabama	22.7	Nebraska	16.9
Arizona	24.1	Nevada	19.8
Arkansas	20.7	New Hampshire	17.8
California	18.1	New Jersey	15.8
Colorado	19.1	New Mexico	27.8
Connecticut	16.0	New York	15.7
Delaware	19.2	North Carolina	23.7
District of Columbia	24.7	North Dakota	21.0
Florida	19.8	Ohio	18.3
Georgia	21.8	Oklahoma	19.5
Idaho	22.3	Oregon	17.5
Illinois	17.0	Pennsylvania	17.6
Indiana	19.3	Rhode Island	16.2
Iowa	18.4	South Carolina	24.8
Kansas	16.7	South Dakota	18.0
Kentucky	22.3	Tennessee	20.8
Louisiana	23.1	Texas	21.2
Maine	18.7	Utah	25.0
Maryland	18.8	Vermont	18.8
Massachusetts	16.0	Virginia	21.9
Michigan	20.5	Washington	17.6
Minnesota	19.5	West Virginia	23.0
Mississippi	24.9	Wisconsin	18.2
Missouri	17.5	Wyoming	20.7

In 1940, the latest year of complete record, the birth rate per 1,000 was 17.5 for the white population, 21.7 for Negroes and 23.1 for other races.

Considered in regard to age of parents, the births per 1,000 population of all marital states were as follows for the white women of the United States in 1940: 42 at 15 to 19 years; 124 at ages 20 to 24; 117 at ages 25 to 29; 79 at ages 30 to 34; 42 at ages 35 to 39; and 14 at ages 40 to 44. Corresponding figures for the white males were: 6 at ages 15 to 19 years; 78 at ages 20 to 24; 125 at ages 25 to 29; 104 at ages 30 to 34; 69 at ages 35 to 39; 37 at ages 40 to 44; 17 at ages 45 to 49; 7 at ages 50 to 54; and 3 at ages 55 to 59. More than one-tenth of the white women bearing children in 1940 were under 20 years of age; one-quarter of them were under 23 and one-half of them were under 26, but only one-tenth were over 35. In the case of white men to whom a child was born during 1940, only one-tenth were under 23, one-quarter under 26, one-half under 30, and one-tenth over 41. The average age of fathers was 32 years, while that for mothers was 27½ years. The higher average age of fathers arises from their higher average age at marriage and the longer reproductive life for men than for women.

There is a pronounced variation in the birth rate in the United States with the season of the year. A recent analysis of data for the period 1937–39 shows, for the country as a whole, high points in February and March, followed in turn by a low point in May then the peak for the year in August, and the low for the year in December. The seasonal swing in the birth rates was most marked in the West South Central states and least marked in the Rocky Mountain and Pacific Coast states.

The need for proof of citizenship for positions in war industries brought forth a great number of requests for copies of birth certificates, when available. It was estimated that 54,000,000 native-born citizens did not have their births registered; of these about 43,000,000 were between the working ages of 20 and 65 years.

(*See* also CENSUS, 1940.)

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(A. J. Lo.)

Bismuth. World production of bismuth in 1941 was estimated at about 3,000,000 lb., of which the United States, Peru, Mexico and Canada supplied the major portion. The United States output was not reported, but was said to have reached a new high record. Imports in the first nine months of 1941 rose to 198,162 lb. of metal, while the bismuth content of lead bullion was probably about double that amount. The bismuth content of the 1941 Peruvian exports was 1,150,813 lb., 729,730 lb. in refined metal and 421,083 lb. in lead bullion, and the 1942 output was expected to increase. Bolivia exported 49,883 lb. of bismuth in concentrates in 1941. In Mexico the output dropped from 408,810 lb. in 1940 to 215,989 lb. in 1941. (*See* also METALLURGY.)

(G. A. Ro.)

Black Market: *see* CRIME.

Blockade. The maritime blockade* of the continent of Europe inflicted severe hardships on nazi controlled territory as well as neutrals. In short, overseas trade ceased to exist for Germany. Blockade is not a spectacular method of warfare but one that, when effective, is felt by every man, woman and child in the blockaded territory. Blockade has through the years been the potent factor incident to superior sea power, and although blockade technique has been modified, the sum total of its effects remains, provided food and the sinews of war are denied the enemy.

Blockade in its generally accepted sense is the process or action by which a belligerent controls the ingress and egress of seaborne trade to another belligerent. Because of the use of air transport a new medium of cargo transportation must be considered in any estimate of the military-naval power and weapons necessary to maintain an effective blockade. The interruption, breaking up and stopping of sea communication has in its historic sense been a function of sea power. The control of bases, occupation of frontiers, and control of the air determine in the main the effectiveness of a land blockade. The most important and decisive blockades of history have been from the sea.

Neutral shipping has always suffered at the hands of superior sea power when strong navies exercise the rights of blockade. Considerable international law has been written on the subject of neutral trade with belligerents, much of which deals with such controversial subjects as "contraband," "ultimate destination," "ultimate consumption," or "substitution." The royal navy ex-

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*All assertions or opinions contained in the above article are the private ones of the writer and are not to be construed as official or reflecting the views of the navy department or the service at large.

UNITED NATIONS CONVOY south of Jan Mayen Island en route to Murmansk, U.S.S.R., with lend-lease supplies in 1942. This convoy was later attacked by waves of German bombers based in northern Norway, and by submarines. Of the several supply lines to Russia, the Murmansk route was most effectively blockaded by the axis in 1942

ercised for years a strict control in war over neutral shipping by the close blockade of enemy ports and by men of war cruising over far-flung commerce lanes where the right of visit and search was exercised.

When blockade is efficient scarcely any trade flows to or from the blockaded country. An excellent example of the effect of blockade is that caused by the British on the American coast in 1813–14 when neutrals were barred as well as American vessels. In one year the exports in the Chesapeake fell from $6,994,000 to $268,000; that of New York from $8,185,000 to $209,000 while Philadelphia which totalled $3,577,000 in 1813 did not export one penny's worth in the following year. This was effected by a close blockade which made it practically impossible for ships to sail without detection; the majority that did sail were captured. The United States lacked a navy of sufficient strength to engage blockading vessels and destroy them.

The blockader generally promulgates to all nations the fact that a blockade exists, stating maritime or territorial bounds.

"It is agreed," writes the authority Hall,* "that for a maritime blockade to be duly set up and maintained:

1. The belligerent must intend to institute it as a distinct and substantial measure of war, and his intentions must have in some way been brought to the knowledge of the neutrals affected.
2. It must have been initiated under sufficient authority.
3. It must be maintained by sufficient and properly disposed force."

The technique of blockade changed considerably after the days of sail and short gun ranges. For in the wars of Great Britain against the French Revolutionary governments, Denmark, the United States, and the French Empire, vigilant watch was maintained within sight of the ports blockaded unless blockaders were driven off by weather.

In 1914–18, the royal navy maintained one of the most effective blockades in naval history by blocking ingress and egress by maritime route to Germany. Its drastic nature was such that the United States government protested the strict British Orders in Council as a violation of neutral rights. Germany finally went "all out" in submarine warfare in an endeavour to break the steel cordon of economic strangulation incident to the British blockade.

In 1942, the royal navy with some American units maintained a blockade and patrol that extended from Iceland to the Straits of Gibraltar as well as a naval force operating in the Mediterranean. Germany had submarine and plane bases located at convenient intervals from Norway to southern France in order to attack United Nations shipping and strike at the blockading vessels whenever possible. The blockading ships and planes frequently attacked axis coastal shipping and U-boats as they sought the high seas from Brest, Saint Nazaire, La Rochelle and other ports of nazi-controlled Europe.

Because of the advent of the mine, the torpedo, submarine, long-range shore batteries, and the aeroplane the modern blockade because of necessity became a "long range" one. The tactical or close blockade was seriously questioned as to its effectiveness after the Russo-Japanese War when Admiral Togo in front of Port Arthur lost two battleships by mines. The loss of one-third of the major Japanese capital ships caused Togo to relinquish his grip on the Russian port.

The British maintained a long-range blockade in 1914–18. In 1939, British naval units were stationed even farther at sea with battleships, cruisers and auxiliary cruisers operating often 500 miles or more at sea when on blockade and destroyers, submarines and corvettes operating in fairly close proximity to the coast of the enemy. All German Atlantic trade ceased but German blockade runners in a few cases were able to slip through the blockade and bring back some valuable cargo from Japanese controlled ports in the orient. A small number of axis raiders and blockade runners in 1942 were able to evade the blockade and reach hunting grounds in the south Atlantic. The Anglo-American occupation of Morocco, Algeria, and western Tunisia in Nov. 1942, severed important axis Mediterranean shipping.

At the outset of World War II, Germany inaugurated a *guerre de course* with submarines. In effect it was a counter blockade with the aim of cutting off the British Isles from food and war materials. After Italy joined Germany as an active axis partner all of Mussolini's submarines were utilized to attack British ships. The Italian navy came out second best in sea engagements with the British. Axis submarine warfare exacted a fearful toll of United Nations shipping and only the astounding record of shipbuilding on the part of the United States kept tonnage built ahead of tonnage sunk. German shore-based aircraft co-operated closely with submarines in harassing and attacking convoys of the United

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*W. E. HALL, *A Treatise on International Law*, Clarendon Press, Oxford, Eng.

Nations when in proximity of the continent of Europe. Axis planes proved a potent weapon in the counter blockade.

The blockader utilized the aeroplane not only for reconnaissance missions but also for bombing. The systematic and strategic bombing of axis bases on the continent was closely related to the Anglo-American blockade. The bomber takes up where the blockade in its more precise sense ceases and by destruction of enemy shipping, attacks on naval ports, and centres of industry, lessens considerably the war potential of the enemy.

At the outbreak of World War II, Great Britain disposed her sea power in order to exert maximum economic pressure on the enemy. A blockade was established that was defined as "an act of war carried out by warships of a belligerent detailed to prevent access to or departure from a defined port of the enemy's coast." It was soon found that the advent of airpower had greatly complicated the maintenance of a blockade. The nazis had a superiority in this new, fast, long-range weapon of war and thereby could give their submarines and raiders valuable information as to the location of enemy men-of-war and merchant ships. The luftwaffe until the late summer of 1942 was superior to the royal air force but with many nazi bases in Norway, Denmark, Holland and France, Germany was never able to gain control of even the eastern Atlantic, mainly because of the superiority of British sea power.

After the fall of France the disposition of the blockading ships of Britain was affected because of the possibility of a nazi invasion. Battleships were placed nearer the coasts of Europe in readiness to attack nazi battleships, some of which were using the fiords of Norway as bases. The royal navy faced at that time the most critical task in its long history.

It should be noted in any study of blockade that although the British fleet went to its blockade stations on Sept. 3, 1939, a formal blockade was never declared. Instead there was made a proclamation of lists of contraband that covered practically all imports to Germany. The British government on Sept. 9, 1939, stated that "to prevent contraband from reaching the enemy His Majesty's government will use their belligerent rights to the full." In the blockade that resulted complicated enforcement machinery was set up to carry out a "long range economic blockade."

A new practice of visit and search was devised because of the danger of stopping men-of-war long enough for inspection of the cargo of neutral ships on the high seas. Submarines and aeroplanes could make this practice a costly one. Suspected merchant ships were sent into control ports for inspection. In World War I the practice was commenced to the extent that in 1915, by the remote control methods of British blockade, about 5,000 neutral vessels underwent delay and search at the northern control stations while many others were subjected to this delay at the stations in the Mediterranean.

At the beginning of World War II merchant vessels were ordered in for examination at Downs near Dover and Kirkwall near Scapa Flow. In fact, a half million tons of cargo destined for Germany was seized by Britain before the end of 1939. This practice was changed after Dunkirk because concentrations for inspection were dangerous with axis air bases in Norway, Holland and France. Trade had nearly ceased to exist with the continent for there were few neutrals left. Any inspections in port had to be made further away from enemy shores.

Consequently a new technique was utilized that had been tried modestly in 1918; that was the issuance of certificates in the ports of loading. The Ministry of Economic Warfare ordered that cargo destined for neutral ports would be inspected by British consuls or officials before ships left the ports of loading and that navigation certificates or "navicerts" would be issued in order that blockading ships would know on challenge that permissible cargo was on board. This method also allowed a close check on aeroplane transport of articles of small bulk and great value. It was a simple and effective system—"navicerts" could be given or denied in ports that were far removed from the menace of enemy submarines and aircraft.

The submarine has been the most destructive of all commerce-raiding and counter-blockade weapons. Underwater craft are also most useful on blockade duty because of their ability to stay submerged during the day and surface to attack shipping and observe coastal activities at night. Until the early summer of 1942 the German U-boats were inflicting serious, in fact, considering tankers—critical damage to American coastwise shipping. But, because of increase in patrol craft, use of convoys, aeroplanes, and systematic search the menace was removed by mid-summer from the United States coastal zone. Shipping losses were still high on the Atlantic and, in particular, where ocean routes meet such as the most eastern tip of South America and the southern extremity of Africa.

Hitler continued the unrestricted U-boat campaign of Admiral Von Tirpitz in an attempt to break the economic bonds imposed on his country and to attack vital supply lines of the United Nations. At the end of 1914, Von Tirpitz was quoted as saying:

> "England wants to starve us! Blockade! We can play the same game. We can bottle her up and torpedo every English or Allied ship which nears any harbor in Great Britain, thereby cutting off large food supplies."

Although true of World War II, that underwater raiders exacted a costly and terrific toll of shipping with "large food supplies" destroyed by sinkings, the United Nations and British ships, in particular, kept the British Isles supplied with food, oil and the materials of war. Escorted convoys with "hunting destroyers" solved in the main the problem in World War I. The fight against the submarine in World War II, remained the major problem confronting sea power in the Atlantic theatre.

U.S. submarines deserved credit for the major share of Japanese merchant ship losses. As Japanese sea power was weakened by attrition and U.S. sea power gained by construction—more and more would a far-flung blockade be imposed on the Pacific area to cut Japan, an island empire, from the food and raw materials vital to her war potential.

At the close of the year the only sea on which German and Italian merchant ships could operate with some degree of safety was the Mediterranean. It appeared that United Nations land-based aircraft and British sea power in the North African zone would continue to take a heavy toll of enemy shipping, as evidenced by November and December records. It was by control of the seas that the United States under the Lend-Lease act could provide the eminently successful British eighth army in Africa with more than 1,000 aeroplanes, hundreds of tanks of which more than 500 were medium ones, 20,000 trucks and hundreds of pieces of artillery.

Storm-tossed surface blockaders and air patrols prevented nazi surface raiders from attacking this vital cargo of men and material bound to the middle east and Northern Africa. And though over 100 U-boats operated in the Atlantic at one time, superior sea and air power sank enough, and kept enough of the submarines from attacking to permit the supplies of the United Nations to be delivered at points of maximum effectiveness. (*See* also SHIPPING, MERCHANT MARINE; SUBMARINE WARFARE; WORLD WAR II.)

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(L. P. L.)

lomfield, Sir Reginald (1856–1942), British architect, was born Dec. 20 at Aldington Kent, England. Designer of the famous Menin Gate memorial t Ypres, Belgium, and architect for a number of other famous difices in England, Sir Reginald died at his home in Frognal, ampstead, according to a London report of Dec. 28. (See *En- yclopædia Britannica.*)

lood Plasma: *see* PHYSIOLOGY.
lood Pressure: *see* MEDICINE.
oard of Economic Warfare: *see* ECONOMIC WARFARE, OARD OF.

oas, Franz (1858–1942), U.S. anthropologist, was born July 9 in Minden, Germany. One of the orld's leading authorities on the inheritance and environment of an, he was professor of anthropology at Columbia university or 37 years, retiring in 1936 to become an active crusader against azi racial theories. Having previously denounced the theory of Nordic superiority" as nonsense, Professor Boas maintained that ace is a matter of environment. He demolished the concept of pure race, demonstrated with historical evidence that European aces are a mixture of many stocks and declared that Germany ad one of the most mixed stocks in all Europe. Among his later orks were: *Race, Language and Culture* (1940). He died in ew York city, Dec. 21. (See *Encyclopædia Britannica.*)

ock, Fedor von (1880–), German army officer, was born Dec. 3 at Kuestrin, near Berlin, and as educated at the Potsdam Military school. At the age of 17 he as assigned to an infantry guards regiment. He had advanced to captaincy by the time of Germany's entry into World War I in 914 and emerged from the war a major. In 1920 he became ommander of the third army group, which post he retained for 8 years, until his appointment by Hitler as commander of the rst army group in 1938. During the invasion of France in May nd June 1940 he commanded the lower Somme army group. He as one of the 12 German generals created field marshals of the eich by Hitler on July 19, 1940.

In 1941 Hitler delegated to him command of the central German rmies in the Russian campaign. Bock dealt the Russians some of heir severest defeats in the early part of the campaign, notably t Bialystok and Minsk; also, later in the year, at Smolensk and yazma. He unleashed six separate major offensives against oscow in the fall of 1941, but failed to take the city. Then ock began his series of "orderly retreats" and "defensive ac- ions." He was later shifted to the southern front, and led the col- mns that bludgeoned their way to Stalingrad in the big German ummer offensive of 1942. He was unable to take the city, how- ver, and in October it was reported that he had been relieved f his command.

oggiani, Tommaso Pio (1863–1942), Italian cardinal, was born Jan. 19 at Bosco arengo, Italy. He joined the Dominican order when he was 15 ears old and was sent to Constantinople as a missionary after e was ordained. In 1912, he went to Mexico as papal nuncio, ith the rank of archbishop. On his return to Italy two years ater, he was made apostolic administrator of the Genoa arch- iocese. There he became involved in disputes over the adminis- ration of the archdiocese; and later he clashed with ecclesiastics ver theological questions in which he maintained a strong stand gainst modern influences in the church. In 1916 he was created ardinal bishop and in 1929 bishop of Porto and Santa Rufina. ardinal Boggiani died in Rome, Feb. 26.

Bohemia and Moravia. A protectorate of Germany in central Europe, formed in March 1939, after the dissolution and occupation of Czechoslovakia. Area, 19,058 sq.mi.; population, 7,000,000, almost completely Czech and Roman Catholic. President (1942): Dr. Emil Hácha. Capital: Praha (Prague). Chief cities: Praha (850,000), Brno (270,000), Moravská Ostrava (125,000), Plzeň (115,000).

History.—During 1942 the protectorate lost the remnants of its autonomy solemnly guaranteed by Germany in 1939, and was made more and more an integral part of Germany. The resentment of the population against enslavement by the Germans increased the movement of resistance which, in its turn, led to measures of repression of unprecedented savagery. On Jan. 15 the so-called cabinet was reorganized. The office of prime minister was abolished, as well as the ministry of social welfare, a field in which the Czechoslovak republic had developed model institutions. The minister of justice, Jaroslav Krejči, the former premier, became chairman of the cabinet; for the first time a German official, ignorant of the Czech language, Walter Bertsch, was appointed to the very important post of minister of economics and labour. Colonel Emanuel Moravec, a professional soldier and one of the few Czechs who had embraced national socialism wholeheartedly, was made minister of public instruction. The task of the new cabinet, appointed in agreement with the acting protector, police general Reinhard Heydrich (*q.v.*), was to create all conditions necessary for the victory of the reich. The former prime minister, General Alois Eliáš, who had been arrested in Sept. 1941 and sentenced to death after having been prime minister under the German occupation for 29 months, was finally executed in June 1942.

This execution was part of the reign of terror which swept the country after an attack May 27 on Heydrich. The chief of the "SS," K. H. Frank, became deputy protector ad interim, a state of siege was proclaimed and ruthless mass executions were carried out. The victims belonged to all walks of life, but most of them were former officers, political leaders, high officials and professional men who were feared as possible leaders of the Czech movement of national resistance. Even Rudolf Beran, a former collaborationist politician in opposition to the policy of President Beneš, was sentenced to ten years at hard labour.

The terror reached its full fury when Heydrich died of his wounds on June 4 after great pain. Yet for several weeks, in spite of hundreds of executions and unprecedented rewards offered for any clue for the detection of the patriots who had attacked the German gestapo chief, the perpetrators could not be found. On June 19 two men, Jan Kubíš and Josef Gabčík, were apprehended in the Russian Orthodox church in Praha and were killed in a fight with the police. It was alleged that these two, and some others, had been dropped as parachutists from British bombers on Dec. 29, 1941, and that the two had actually killed Heydrich.

The most outstanding single act of terror committed by the Germans was the destruction of the small village of Lidice, near the mining centre of Kladno. Because the Germans suspected some inhabitants of having supported the patriots who killed Heydrich all the male inhabitants of the village, numbering more than 200, were shot, irrespective of age. The same fate was meted out to 56 women, while the rest of the women were put into concentration camps and the children were carried off to correction schools. As the Germans proudly announced, "all buildings of the village were levelled to the ground and the name of the village was immediately abolished." As a protest on July 12 a new housing project near Joliet, Ill., U.S.A., was named Lidice. On June 25 another Czech village, Ležáky, a small hamlet near Chrudim in eastern Bohemia, shared the fate of Lidice. This time not only all men, but also all women were slain by the gestapo.

In Bohemia special tribunals were set up to deal with political crimes committed against the Czech nation. The death penalty was decreed for farmers failing to report their entire crop, while confiscation of property was threatened as penalty for minor offenses. The penal code of the protectorate was adapted to the German penal code.

The terror continued in Bohemia and Moravia during the rest of 1942. Among the persons executed were also Bishop Matěj Pavlík Gorasd of the Orthodox Church and three of its priests; the church was disbanded and its property confiscated. The only legal party organization of the Czechs which had been tolerated under the German occupation and which had been organized on a totalitarian basis, the Národní souručenství (the National Solidarity party), was liquidated because it appeared "incapable of ideological regeneration" in the spirit of national socialism. The Jews of the protectorate were first concentrated in the small town of Terezín (Theresienstadt), the inhabitants of which were moved to other towns. From this overcrowded ghetto the Jews were then deported to eastern Europe. In the Terezín fortress died also Dr. Ludwig Czech, former president of the German social democratic party in Czechoslovakia. Under the republic he had been from 1925 to 1928 vice-president of the parliament and later minister of social welfare and afterwards minister of public works and public health. (For activities of the government-in-exile *see* CZECHOSLOVAKIA. *See* also SLOVAKIA.)

(H. Ko.)

Bolivia, a South American inland republic; area, 419,470 sq.mi.; pop. (1941 est.): 3,457,000; chief cities (with est. pop.): La Paz, the seat of government (250,000); Oruro (45,000); Cochabamba (37,000); Potosí (35,000); Sucre, the nominal capital (32,000). Religion: predominantly Roman Catholic. President in 1942 Gen. Enrique Peñaranda.

History.—During 1942 Bolivia continued to benefit superficially from wartime demands for its mineral production; but rapidly mounting living costs brought extensive strikes and unrest. By Dec. 14, miners, demanding a 100% wage increase, had become so insistent that a nation-wide state of siege was decreed. The ensuing conflicts between the miners and government forces brought an announced death toll of 19 and the arrest of three alleged leaders of a plot to overthrow the government. Deliveries to the United States under the provisions of the 1940 agreements (by which the United States was to purchase 18,000 tons of tin annually for five years and 3,000 tons of tungsten for three years) were so threatened that a special United States commission was reported investigating the dispute.

Meanwhile, in July, the United States increased the prices of tin and tungsten and agreed to purchase a greater annual tonnage of the two. In August a Bolivian economic mission to Washington, D.C., returned to La Paz to announce the creation of the Bolivian Development corporation with a loan of $25,000,000 from the United States. These funds were to be devoted to the construction of four major highways, the establishment of a national sugar industry, the stimulation of petroleum production, the creation of a currency-stabilization fund and the financing of imports from the United States.

In November congress, irate over the shortcomings of the August agreement with the United States, forced the resignation of the cabinet. Shortly afterwards, the congressional body finally gave its approval, but only by the narrow margin of one vote, to the settlement reached early in 1942 with Standard Oil of New Jersey, by which Bolivia was to pay approximately $1,750,000 for the properties expropriated in 1937.

Education.—Bolivia had some 2,000 primary schools in 194 with more than 150,000 enrolment, and three universities. Th 1942 budget allotted 125,420,000 bolivianos, or 13.1% to ed cation.

Defense.—The standing army was estimated in 1941 to numb 14,000, with a reserve of 75,000, and an air force of 60 plane Lend-lease grants from the United States were reportedly f $8,000,000 in 1942. A four year military mission from the Unite States was agreed to in August. Some 23% of the 1942 budg was for defense.

Finance.—The monetary unit is the boliviano (value in 194 approximately 2 cents U.S.). National revenues in 1942 we estimated as 1,104,518,300 bolivianos, expenditures 672,402,4 bolivianos. The foreign debt, approximately $53,600,000, was default in 1942.

Trade and Communication.—Tin accounts for some thre fourths of all export values (78% in 1941). Under the intern tional quota, an annual export of 46,778 tons was allotted. Actu export in 1941 was 42,884 tons, with an increase in prospect f 1942 as a result of the rise in prices after July. Tungsten (2,87 tons in 1941), antimony (16,359 tons), silver (228,576 kg.), zi (6,673 tons, a drop from 12,197 tons in 1940), copper (8,0 tons), lead (17,219 tons), gold (254 kg.) and other minerals a counted for practically all the exports.

Foreign trade (officially reported in £ sterling) totalled as fo lows: Exports, 1941 (provisional figures): £15,424,114 (193 £8,888,777; 1940: £12,877,211); imports: £7,768,991 (193 £4,848,358). In 1941 60% of all exports went to the Unite States and 35.3% to Great Britain. Imports are chiefly man factured goods from the United States (41.6% of total impor in 1941) and foodstuffs and fuel from Argentina and Peru (r spectively 20.3% and 9.6% in 1941). Import values in 1942 we estimated as higher than those of 1941.

Mining is the dominant industry; agriculture and grazing a insufficient for domestic needs, as is manufacturing.

External communication is by rail to Chile, especially, and Peru and Argentina, and by Pan American Airways to all par of America. Approximately one-half of a 680-km. railway bei built by Brazil to connect Santa Cruz, centre of the Bolivian o fields, with Corumbá, Brazil, had been completed by the end o 1942, and in September Argentina began the construction of line to Santa Cruz. Railway mileage in 1941 was in excess o 2,229 km. The Bolivian highway system included about 900 m of the Inter-American highway and nearly 5,000 mi. of othe roads. An internal air line, Lloyd Aéreo Boliviano, former German-controlled, was used in 1942 to speed up Bolivian d liveries of rubber to the U.S. (*See* also MEXICO.) (C. N. G.)

Bombing: *see* MUNITIONS OF WAR.
Bonaire: *see* CURAÇAO.
Bonds: *see* STOCKS AND BONDS.
Bonds, War: *see* BANKING.

Book-collecting. William Schwartzmann, working with staff which grew from four to 400 i seven centres of population, compiled, with the facilities of th Library of Congress, a bibliography of material relating to a raids and air-raid precautions in many languages based on th actual experiences of stricken localities, including Germany. Th German material was for the most part excessively difficult t come by. The initial bibliography, which had wide distributio was followed by a supplementary compilation which brought th subject reasonably up to date. Still another supplement was be ing assembled to contain much fresh material from inside Ge many. The three compilations were put at the disposal of civilia defense groups throughout the United States.

Ames W. Williams' virtually completed definitive bibliography of Stephen Crane, compiled in collaboration with Crane's earlier bibliographer, Vincent Starrett, was interrupted because of Mr. Williams' entry into the military service. It is interesting to note that steps were being taken by several institutional libraries to preserve copies of soldier and sailor publications issuing from army camps and posts and from naval stations all over the world.

The year saw the completion and publication of at least two important contributions to scholarly bibliography. The catalogue of one of America's superlative private libraries, that of Carl A. Pforzheimer of New York, appeared, and with its completion William A. Jackson, cataloguer of the collection, was offered and accepted the curatorship of the Houghton library at Harvard. The Houghton library itself, made possible by the generous assistance of Arthur Amory Houghton, Jr., was dedicated and opened during 1942.

An admirable bibliography of the imprints of Horace Walpole's Strawberry Hill Press, based largely on the superb collection of Wilmarth S. Lewis, and compiled by A. T. Hazen and J. P. Kirby, was issued under the sponsorship of the Yale University Press.

The Bibliographical society (England) observed, but did not celebrate, its semi-centennial. Organized as a result of the enthusiasm of Walter Arthur Copinger of Victoria university, Manchester, whose name will always be familiar to every student of incunabula, the society in its early days heard papers read by such authorities as E. Gordon Duff, F. S. Ellis, A. H. Huth, C. T. Jacobi, and William Morris. Its greatest contribution to bibliography was the *Short Title Catalogue of English Books 1475–1640* (1926). The Bibliographical Society of America, only twelve years younger than its London prototype, continued to record a healthy increase in membership despite the stress of the times.

Sales.—The indispensable *American Book Prices Current,* since its initiation as an annual publication in 1895 the standard authority on rare-book values as established in the auction room, this year appeared under the joint editorship of Edward Lazare and Colton Storm, the latter of whom became curator of maps in the William L. Clements Library of Americana at the University of Michigan. Prices in general offered no comparison with the boom period. Buyers in many instances showed an excusable hesitancy in acquiring literary property. Potential sellers, on the other hand, displayed a complementary reluctance to placing their goods on the market.

Important collections dispersed during 1942 included the third and final part of the library of William H. Woodin, President Franklin D. Roosevelt's first secretary of the treasury; the great angling library of Dean Sage, himself the author of one of the rarest and most sought-for of angling books, *The Ristigouche and Its Salmon Fishing* (Edinburgh, 1888); and the collection of literature relating to the stage owned, and long used, by Julia Marlowe Sothern. The auction room lost a picturesque and irreplaceable character in the death of Maximilian Harzof, who went to America an Austrian immigrant boy with little formal schooling and became one of the great authorities on bookselling and book-collecting of his generation.

A new high price was registered for John James Audubon's *Birds of America* (1827–38)—$15,600. A copy of the first collected (1640) edition of Shakespeare's *Poems* fetched $3,400. An interesting allocation of values is provided by the fact that Robert Louis Stevenson's chart of Treasure Island brought $3,200. A copy of Kipling's rigorously self-suppressed *The Smith Administration* (Allahabad, 1891) sold for $2,700. A copy of the so-called (by the author) "second" edition of Poe's *Poems* (New York, 1831) brought $2,400. (J. T. W.)

Books: *see* CHILDREN'S BOOKS; PUBLISHING (BOOK); *see* also under AMERICAN LITERATURE; ENGLISH LITERATURE; FRENCH LITERATURE, etc.

Book Sales: *see* BOOK-COLLECTING.

Boothe, Clare: *see* LUCE, CLARE BOOTHE.

Borates.

The production of borates in the United States in 1941 rose to 301,282 short tons, an increase of 24% over 1940. Imports ceased, and exports declined. Domestic consumption was thought to have reached a new high. There was a temporary shortage of supply due to a strike in one of the plants, but this was remedied on the settlement of the strike. (G. A. Ro.)

Bormann, Martin

(1900–), German politician, was born June 17 in Halberstadt, Germany. After World War I he joined the Free corps and participated in frequent raids along the Latvian frontier. Imprisoned for a political offense in 1923, he was released two years later and joined the budding nazi party. In 1926 he became head of the nazi press in Thuringia and rose steadily in the favour of the party leaders. By 1933 he had become chief of staff to Rudolf Hess, then deputy fuehrer, and was a member of the reichstag. On Feb. 16, 1942 Bormann was appointed successor to Hess, who had flown to Scotland nine months before, and was given powers even exceeding those of his former chief. Long a fierce opponent of Christianity, Bormann had written a book thundering against clerical interference in affairs of the state and declaring that Christianity and naziism were "irreconcilable concepts."

Borneo: *see* BRITISH EMPIRE; DUTCH EAST INDIES; NETHERLANDS COLONIAL EMPIRE.

Borno, Louis

(1865–1942), Haitian politician, was born Sept. 20 in Port-au-Prince. He was a judge in the Haiti court of cassation and also held the portfolios of foreign relations, worship, public instruction, labour and finance in the Haitian government. He induced the government to agree to a treaty with the United States in 1916 which led to American occupation, thereby ending the constant terror and revolution that had wracked the island nation. Borno was elected president of Haiti in 1922, but his tenure was far from peaceful. The Haitians resented foreign rule, and protests against his autocratic administration swept the country. In 1930, following the Hoover Investigating committee's recommendation for gradual withdrawal of U.S. marines from Haiti, Borno agreed to popular elections and stepped down from the presidency in favour of an interim president. He died at Port-au-Prince, July 29.

Bosch, Robert

(1861–1942), German industrialist and manufacturer, was born Sept. 23 in Albeck, Germany. As a youth he worked with Thomas A. Edison in the United States and for the Siemens plant in Woolwich, England. In 1886, he opened his own workshop in Stuttgart, Germany, where he manufactured telephone appliances and later spark plugs. The Bosch magneto, Bosch lamp and Bosch auto horn brought him world fame and fortune. Branches of his company spread to many parts of the world, and he employed about 25,000 workers in Germany alone. He died in Stuttgart, March 12.

Bosen, James Cruze: *see* CRUZE, JAMES.

Boston.

Ninth largest city of the United States, with a population of 770,816 by the federal census of 1940. Boston is a seaport at the head of Massachusetts bay and is the capital of the state of Massachusetts. Area, 43.9 sq.mi., com-

TAXICABS gave way to horse-drawn carriages with top-hatted drivers in Boston after gasoline rationing went into effect along the U.S. eastern seaboard in the spring of 1942

prising most of Suffolk county. Mayor (Jan. 1, 1943): Maurice J. Tobin.

The tax rate for 1942 was $41.00 on an assessed valuation of $1,473,781,000, and the net bonded debt was $158,223,000. City employees received allotments of $1,476,605 to compensate for rising costs of living. Public school enrolment totalled 108,500.

The normal life of the city was greatly modified by the war in 1942. Wartime transportation difficulties were aggravated by the complete elimination of coastwise and intercoastal steamship service, including the tanker fleet upon which New England was dependent for petroleum products, and the gradual disappearance of the collier fleet.

Staggering of hours enabled the elevated system to cope with local passenger traffic in spite of the increasing restrictions on automobile use, but the shortage of fuel became increasingly serious. Thousands of families depended upon kerosene stoves for cooking and heating, and a period of unusually severe cold in December was accompanied by a serious shortage of kerosene.

The famous Boston common became the centre of U.S.O. activities. Many hotels and office buildings were taken over by the army, navy and coast guard. There were frequent blackout tests, and many thousands of citizens were serving in the well organized civilian defense system. Boston in 1942 was the centre of an increasingly important shipbuilding and ship repairing area.

Boston suffered from many fires in 1942. The fire in the Cocoanut Grove night club on Nov. 28 with its toll of about 500 dead and 182 injured was one of the worst disasters the U.S. had known. The city took prompt action to prevent any recurrence. All entertainment licences for hotels and night clubs were suspended until the safety of their premises was established. A series of investigations by state and city authorities culminated in the indictment of 10 persons, including several city officials, for criminal negligence.

Indices for Jan.–Nov. 1942 (average 1925–27 = 100) were as follows: Manufacturing employment 102.1, a gain of 11.4%; manufacturers' payrolls 141.3, a gain of 35.4%; department store sales 79.8, a gain of 7.7%. Jan.–Nov. 1942 bank clearings increased 13.1%, bank debits increased 9.6%, kilowatt hour sales of electricity increased 15.9%, landings by fishing vessels decreased 33.6% by weight and increased 15.1% by value, food prices increased 17%. (S. J. McK.)

Botanical Gardens: *see* BOTANY.

Botany. The organisms principally responsible for the synthesis of the organic matter in sea water (in area, about four-fifths of the earth's surface) are diatoms. The energy for this synthesis is derived from the absorption of light by certain pigments of these green algae. H. H. Strain and W. M. Manning (Carnegie Inst. of Washington, Stanford univ.) showed that the green pigment chlorofucine is a normal constituent of diatoms, and also of various species of brown algae, and that in some regions of the spectrum it absorbs considerably more radiation than chlorophyll *a*. It was demonstrated that chlorophyll *b* is not present in either of these groups of organisms.

The white clover mosaic, which causes the streak disease of the garden pea and which was previously thought to be due to a single virus, was shown by F. Johnson (Rockefeller Inst. for Medical Research, department of Animal and Plant Pathology) to be due to a combination of two viruses, pea-mottle virus and pea-wilt virus, a separation of these two being accomplished. When diseased white clover plants were connected to healthy broad-bean plants by means of strands of dodder stems, the pea-mottle virus but not the pea-wilt virus was transmitted to the bean plants through the dodder tissue. Then by inoculating cowpea plants with the mixed viruses it was found that only the pea-wilt onstituent became established, the cowpea being immune to the ea-mottle type.

The method of preserving wood against rotting organisms by mpregnating it with coal tar or creosote had been in use for nore than a century. Nevertheless, C. M. Christenson, F. H. Kaufert, H. Schmitz and J. L. Allison (Univ. of Minn.) found hat a fungus tentatively identified as *Hormodendrum resinae* is common and general inhabitant of wood (such as railroad ties nd telephone poles) impregnated with coal tar or creosote. This ungus was isolated from creosoted wood samples from eight videly separated states of the United States. The fungus not only olerates the coal tar and creosote but "is able to grow and reproduce with no other source of nourishment than occurs in these compounds." The strength of the wood is not injured by the ungus.

Albino maize seedlings fail to grow because food synthesis cannot take place in the leaves in the absence of chlorophyll. The equirement for organic material for growth cannot be met by dding sugar to the culture solution because absorption of sugar hrough the roots is inadequate. H. A. Spoehr (Carnegie Inst. of Washington, Stanford univ.) overcame this difficulty by introducing the organic nutrient into the plant through its leaves. The ip of the leaf was cut off and discarded; the cut surface of the emaining portion was immersed in a solution containing 0.3 molar ucrose. Such plants grown in sand containing mineral nutrients ncreased in dry weight, formed starch in the dark, and produced nflorescences, pistillate with silks, and staminate with pollen.

Leaves of persimmon were found by C. G. Vinson (Univ. of Mo.) and F. B. Cross (Okla. A. and M. college) to be unusually high in vitamin C, showing values varying among the five cultivated varieties and three wild forms from 20,300 to 32,800 mg. per kg. of fresh leaves. An acceptable tea was made from the eaves. Fruit tissue contained about one-tenth as much of the vitamins as did leaves.

The aberrant behavior of the pollen in the pear variety Beurré Bedford observed by P. T. Thomas (John Innes Horticultural nst., London, Eng.) forms the basis for producing improved ypes by an alteration of the number of chromosomes. Following nuclear division in the pollen mother cells the four nuclei use irregularly, so that some of the mature pollen grains have 4 x, some 3x + x, others 2 x + 2 x, 2x + x + x, or x + x + x + x chromosomes. In using this variety as the male parent in crosses with diploid and tetraploid varieties, progeny with chromosome numbers varying from 2 x to 5 x were obtained.

Tetraploidy similar to that induced with colchicine was produced (by T. M. Little, U.S. Dept. of Agric.) in snapdragon (*Antirrhinum majus*) by placing a drop of 0.2% sanguinarine hydrochloride on the growing tip of the plant.

Various species of the Saprolegniaceae show asexual characters of two or more genera of the family. S. B. Salvin (Harvard univ.) ttempted to determine whether such combinations of characters could have arisen in nature by sexual matings between individuals of two different genera. Out of 51 matings tested, one succeeded, hat between *Achlya flagellata* and *Thraustotheca clavata*. The resulting oospores had not been induced to germinate by the end of 1942.

British ecologists reported on the re-vegetation of bombed sites. M. Hartog examined the site of a three-storied corner house destroyed by a direct hit in Sept. 1940. By Aug. 1942 she found n flower within the bombed lot 22 species belonging to 10 natural orders, and in addition, thick patches of moss with fruiting capsules. One of the plants showing good capacity to invade and hold in such areas was *Buddleia*. In the sites of three houses bombed in the autumn of 1940, R. F. Shove in autumn 1942 counted 60 *Buddleia* plants, some of them 5 to 6 ft. tall.

Prune dwarf, a virus disease which reduces the yield of the prune type of plums to less than 10% of normal, was shown by Hildebrand (Cornell univ.) to be harboured in and to be transmissable from the tissues of the Damson plum tree, the disease at the same time showing no symptoms in the Damson and causing no reduction in yield of fruit.

In the experiments of J. C. Montermoso and A. R. Davis (Univ. of Calif.) rooted leaves and cuttings of *Coleus blumei*, after a pre-conditioning period of exposure to the normal conditions of light and darkness, showed a rhythmic fluctuation of the rate of water loss in darkness even under constant conditions of temperature and humidity. The loss was determined over four-hour intervals and the curve resembled that of a sine curve. When these same plants were given a reversed light exposure in the pre-conditioning period, *i.e.*, with electric lights turned on at 7:30 P.M. and off at 7:30 A.M., again a periodic loss of water occurred on transfer to darkness, but the diurnal maxima and minima in the curve were the reverse of those obtained with plants grown in the natural periods of light and darkness. It required about three and one-half days of exposure to the reversed light periods to bring about complete reversal of the maxima and minima of the curve, shorter periods producing only a partial shift. (*See* also HORTICULTURE.)

Botanical Gardens.—During 1942 the activities of botanical gardens and arboreta were considerably modified by war. Great emphasis was given to war gardens, economic plants and to drug and herb plants.

In the United States, Brooklyn Botanic garden continued its researches on canker-resistant chestnuts, comparisons of the floras of western South America and Galapagos islands, and the diseases of cultivated Iris. It published an illustrated guide to the trees (500 species, 130 genera and about 120 hybrids and varieties) of the garden, and an ecological guide to the local flora (500 species) of the garden. It also ran ten different activities that helped in the war effort: selling bonds, collecting books for canteens, furnishing plants including trees for army bases, and garden seeds for children of Greater New York. It also promoted in many ways the war garden movement in New York city.

At New York Botanical garden 12,000 accessioned species and varieties were in cultivation, also 3,000 species and varieties of ornamentals. A series of propagating houses were built and 30,000 types in the herbarium were isolated and placed in separate covers for easy reference.

At the Missouri Botanical garden the development of the arboretum 35 mi. southwest of St. Louis was continued with new roads and planting. A successful Victory Garden Harvest show was held in October. The Cornell arboretum under reduced appropriations, because of the war, continued its planting. It planted during the year more than 1,000 trees, mainly junipers and conifers. In the absence of Director Warren H. Corning, Captain in the Army Air Corps, B. P. Bole, Jr. directed the Holden arboretum at Cleveland, Ohio. The arboretum obtained during 1942 an outstanding collection of hybrid azaleas.

In spite of lack of available labour, Montreal Botanical garden, under the Directorship of Henry Teuscher, was well maintained during 1942. The garden had an exhibit of "Plants Useful to Man" at the Province Horticultural show. Close co-operation was developed between the garden and the city park system.

The Morton arboretum, at Lisle, Ill., completed Thornhill building. This building contained a large lecture room with seating capacity for 250 people, class rooms, laboratory, library and offices. This building was to be used entirely for educational work for which there would be no charge. The arboretum ran three demonstration victory gardens of various sizes during the summer of 1942.

Arnold arboretum, Boston, Mass., added 61 new varieties to its lilac collection, bringing the total number of species and varieties to 556. This was believed to include all species and varieties growing in the United States. A complete collection of ornamental crabs was also being attempted. Dr. Frans Verdoorn was employed as bibliographer to make an *Index Botanicorum*.

For the occasion of the Centenary celebration of the Royal Botanical garden, Kew, Eng., April 1, 1941, its Director, Sir Arthur W. Hill, wrote a brief history of the development of this garden. A rather full review of this historical sketch appeared in *Chronica Botanica* (vol. 6, pp. 414–417, 1940–1941). (*See* also HORTICULTURE.) (W. C.)

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Boule, Pierre Marcelin

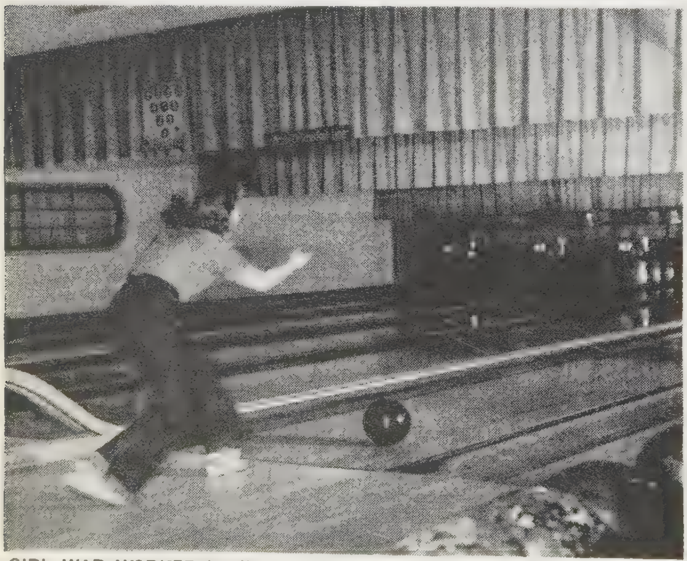
(1861–1942). French palaeontologist, born Jan. 1 at Montsalvy, was a recognized authority on the Neanderthal and other prehistoric men. He died in retirement at Montsalvy, July 19. (See *Encyclopædia Britannica* for his biography.)

Bowling.

John Stanley of Cleveland, rolling a near-record 756, won the American Bowling congress singles title. His total, second highest in the 42-yr. history of the A.B.C., included games of 258, 253 and 245. Stanley Moskal of Saginaw, Mich., won the all-events championship with a 1,973 total, including scores of 599 in team, 711 in doubles and 663 in singles. John Heinrich of Chicago had high single game of the A.B.C., a 299.

Ned Day of West Allis, Wis., relinquished his world championship crown, but the title did not leave Wisconsin. Connie Schwoegler, a 25-year-old 215-lb. bowler from Madison, Wis., won the 1942 national individual match game title with a 72-game average of 217.18. Schwoegler included a 299 in his championship total.

Nina Van Camp of Chicago set a new all-events record in the 25th annual Women's International Bowling congress, her 1,888 being 71 pins higher than the previous mark. Tillie Taylor of Newark, N.J., won the singles with 659, while Stella Hartrick and Clara Allen of Detroit won the doubles with 1,204.



GIRL WAR WORKER bowling. This sport was a favourite among workers in U.S. war plants during 1942

No letup in bowling's popularity was evinced in 1942. An estimated 15,000,000 fans took part in the sport in the United States. The recreational aspect of the sport for war workers was expected to increase its popularity and keep most of the country' 180,000 alleys in constant use. (M. P. W.)

Boxing.

Dim-out regulations curtailed outdoor boxing activities in affected areas. The New Jersey Athletic commission approved 1 A.M. starting time for bouts early in the year to accommodate war workers. The New York State Athletic commission co-operated to the fullest in ring events arranged for service funds or service members. Soldiers and sailors of allied nations were welcomed to boxing bouts on the guest-basis that obtained in theatricals and movies.

The two king-pins of fisticuffs, Sergeant Joe Louis, world heavyweight champion, and Corporal Billy Conn, most dangerous contender for the title, were paired for a contest on Oct. 12 1942, outdoors, which was to have been staged in the interests of the Army Emergency Relief fund. Sponsored by a committee of sports writers, advertised as a non-profit undertaking from which only the fund would profit, the project had advanced through its preliminary stages when complications forced its abandonment and on order from Secretary Stimson of the war department, Louis and Conn, already engaged in light training for the occasion, were ordered back to army duties.

Louis, heavyweight champion since 1937, made two defenses of his title, one as a civilian, the other as a soldier.

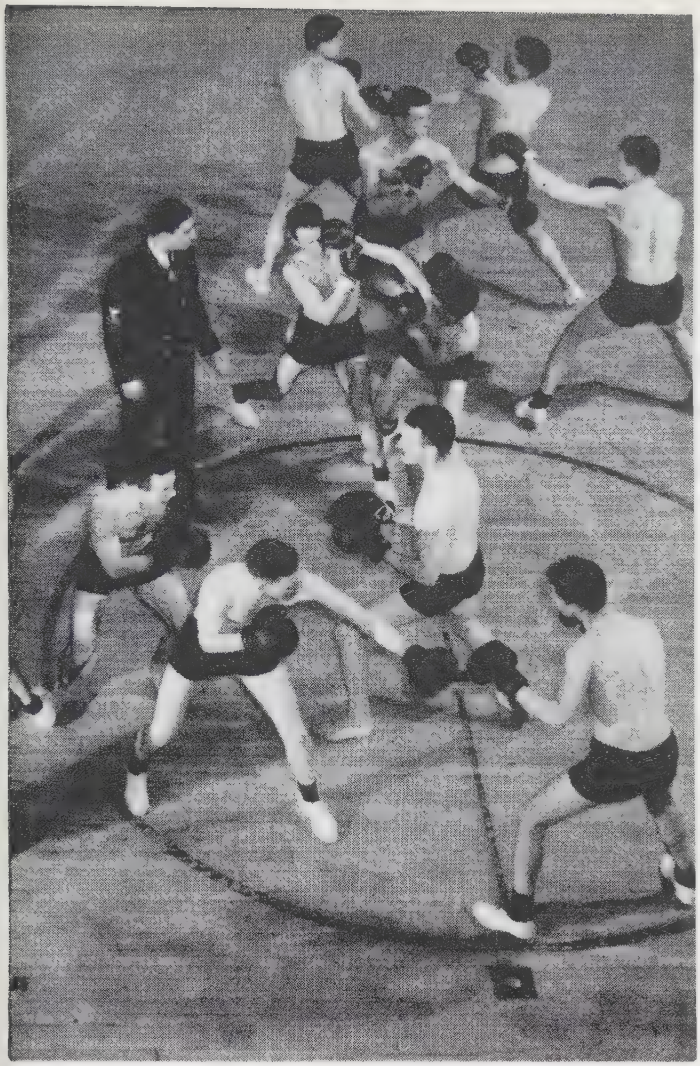
In slightly more than seven rounds of fighting, Louis polished off the two challengers. He knocked out the gigantic Buddy Baer at Madison Square Garden on Jan. 9, in 2 minutes 56 seconds of the first round of what was to have been a 15-round battle and the following day he was on his way into the army. He came out of military training March 27 long enough to knock out ponderous Abe Simon in 16 seconds of the sixth round of a scheduled 15-round bout in Madison Square Garden and, his furlough over, resumed his army life. There were 18,870 in attendance on the Baer battle which grossed $189,700. This was the year's biggest boxing gathering as well as the largest receipts. The Navy Relief society, for which the bout was staged, received $89,092, for, to Louis' winnings, $47,100, were added the profits of Promoter Mike Jacobs, part of Baer's purse, and contributions from preliminary fighters, ushers and attendants, and the Madison Square Garden corporation.

At the Simon battle of March 27 there were 18,220 persons present and the receipts amounted to $132,431. This match was staged for the Army Emergency Relief fund, which realized $64,980, the biggest contribution being Louis' entire purse amounting to $36,146. As was the case with the earlier Baer fight, Promoter Jacobs contributed his profits and the other contributions swelled the total.

Gus Lesnevich, Cliffside Park, N.J., world light-heavyweight champion, early enlisted in the coast guard and did not defend his title. The same was true of Tony Zale, Gary, Ind., world middleweight champion, who enlisted in the navy. Freddie (Red) Cochrane, Newark, N.J., world welterweight champion, was inactive because he enlisted in the navy in 1941.

Sammy Angott, Washington, Pa., made one defense of his world lightweight title and retired, undefeated. He retained the title against Allie Stolz, Newark, N.J. challenger, winning a 15-round decision May 15 in Madison Square Garden. Scheduled for a later defense of his title, Angott unexpectedly announced his retirement from boxing on Nov. 13, giving as his reason the claim that his hands were damaged irreparably and adding he intended to enter war defense work.

On Dec. 18 Beau Jack (Sidney Walker), Augusta, Ga., knocked



BOXING is a required sport at Great Lakes Naval Training station north of Chicago. The station produced a number of crack athletic teams in 1942

out Tippy Larkin, Garfield, N.J., in 1 minute 19 seconds of the third round in a scheduled 15-round bout in New York, and gained title recognition from the New York State Athletic commission. He had knocked out Stolz in six rounds on Nov. 13. The National Boxing association, however, declined to recognize Jack as champion, expressing a preference for a nation-wide elimination series.

Chalky Wright, Los Angeles, made two defenses of the world featherweight championship and lost the title on his third. He held the honour with a tenth-round knockout of Harry Jeffra in Baltimore, June 19 and remained featherweight champion Sept. 25, when he won a 15-round decision over Charley (Lulu) Costantino, New York. On Nov. 20, Wright was outpointed in 15 rounds by Willie Pep, Hartford, Conn., and his title passed. The division leadership, however, was in confusion because the National Boxing association, not in harmony with the New York State Athletic commission, recognized Jackie Wilson, Pittsburgh, as champion.

In the bantamweight ranks, too, confusion beclouded the championship. Manuel Ortiz, Mexico City, was recognized as champion on the strength of a twelve-round decision he won over Lou Salica, New York, recognized champion, in Hollywood, Calif., Aug. 7. However, because the bout was not at 15 rounds, the New York State Athletic commission declined to recognize Ortiz as champion, necessitating a re-match between the rivals. The flyweight class was dormant, as it has been for years.

Amateur and collegiate boxing felt the effects of the war, but championship tournaments were conducted. University of Maryland, expressly invited to fill out the entry lists, won the Eastern Intercollegiate association championships at Charlottesville, Va., March 7, although its 5-man team lost every bout in the finals. University of Wisconsin's 4-man team won the National Collegiate Athletic association championship title at Baton Rouge, La., March 28, winning four individual titles as well. In the Amateur Athletic Union's annual championships held in Boston, April 13, 14 and 15, titles were won by competitors from Cleveland, O., New Orleans, La., Fort Mitchel, N.Y., Lackawanna, N.Y., Saugus, Mass., St. Louis, Mo., and Pittsburgh, Pa.

(J. P. D.)

Boy Scouts. Among the outstanding war service projects requested by the U.S. government and performed by the Boy Scouts of America in 1942 were the collection, over a nine months period, of 300,000,000 lb. of paper; a scrap rubber campaign in which more than 30,000,000 lb. of rubber were collected; an all-out salvage campaign in which millions of pounds of steel were collected; the distribution of war bonds and stamps posters; the collection of more than 10,500,000 lb. of aluminum in 11,369 communities; and the planting of thousands of victory gardens.

The Boy Scouts of America were recognized officially as a part of the Office of Civilian Defense, and scout leaders were entitled to wear the insignia upon their scout uniform. By a joint agreement between the OCD and the Boy Scouts of America, three specific responsibilities were placed upon scouts (1) messenger service; (2) assisting emergency medical units; (3) fire watchers.

The new status of Junior Alumni was formed during 1942 for scouts who are obliged to drop their scouting activities but wish to maintain their relationship with the organization.

During 1942 the Air Scout program was adopted by the Boy Scouts of America and made available to all scouts 15 years of age as air scouts, and to scouts below 15 as air scout candidates. Four new merit badge pamphlets and an air scout manual were published.

Scout leaders and former scouts rushed to enlist in their country's service. In the first year of the war, out of 411 who received Distinguished Service awards from the United States government, 285 were former Scouts.

The 32nd Meeting of the National Council, a wartime meeting, was held in Minneapolis and St. Paul.

On Sept. 30, 1942, the grand total membership of the Boy Scouts of America, including scouts and scouters, cubs and cubbers, was 1,528,515 (including the latest figure received from Philippine Islands). Total troops and packs numbered 50,478.

Great Britain.—During 1942, scouts in England performed numerous acts of heroism. Since the beginning of the war many awards had been received by scouts and former scouts for gallant conduct, among which were one Victoria cross, more than 80 naval, military and air force decorations, presented to scouts, rovers and leaders serving in His Majesty's forces. In addition, awards of the Bronze cross, the Silver cross, the Gilt cross, 24 certificates of gallantry, 5 certificates of merit and three letters of commendation were made by the Boy Scouts association for gallantry during the war. Scouts in England were performing 180 different war service jobs, and more than 60,000 Scouts had qualified for the national service badge.

Four King's Scouts—Britain's equivalent of Eagle Scouts—toured the United States and Canada, recounting for American scouts and scouters their thrilling experiences under actual air bombardment and their service during Britain's trial by fire. Upon their return to England another tour was made in which they told of their experiences in America. (J. E. W.)

Bracken, John (1883–), Canadian political leader, was born at Ellisville, Ont., on June 22, and graduated from the Ontario Agricultural college, and the University of Illinois. After graduation Bracken went into the prairie provinces as a seed inspector for the Canadian government. He became professor of field husbandry at the University of Saskatchewan, and later president of the Agricultural college of Manitoba. It was while holding this post that in 1922 he was offered, and accepted, the leadership of the newly formed Agrarian or Progressive party in the province of Manitoba. He was returned to the legislature in a by-election held in Le Pas, the constituency he still represented in 1942. In 1932 he headed a coalition government of Progressives and Liberals, and later the coalition principle was extended to include Conservatives, Cooperative Commonwealth Federationists, and Social Credit members. In Dec. 1942 he emerged as a national figure, when he was chosen national leader of the Conservative party by a nominating convention meeting at Winnipeg. In deference to his views, the name of the party was altered to Progressive Conservative.

(J. I. C.)

Bragg, Sir William Henry (1862–1942), British scientist and Nobel prize winner, was born July 2 at Wigton, Cumberland, England. After the outbreak of World War II, he served as chairman of a scientific food committee. His last book, *The Universe of Light,* was published in 1933. Sir William died in London, March 12. (For his biography, see *Encyclopædia Britannica.*)

Bramah, Ernest (1868?–1942), British author, a resident of China for many years, was best known for his Kai Lung and Max Carrados detective fiction books. His first book was *English Farming* (1894). At the turn of the century, under the influence of the orient, he began his Kai Lung series which include *The Wallet of Kai Lung* (1900), *Kai Lung's Golden Hours* (1922), *Kai Lung Unrolls His Mat* (1928), *The Return of Kai Lung* (1937) and *Kai Lung Beneath the Mulberry Tree* (1940). His detective hero, Max Carrados, was a blind sleuth; his adventures are described in *Max Carrados* (1914), *The Eyes of Max Carrados* (1923) and *Max Carrados Mysteries* (1927). Bramah died in Somerset, England, June 26.

Brauchitsch, Walther von (1881–), German general, was born in Berlin on Oct. 4, the son of a general of cavalry, and was educated in the German capital. He entered a military academy and became a lieutenant in 1900. In 1912 he became an officer of the German general staff and he served in this position during World War I. In 1933 he succeeded Marshal von Blomberg as commander of the East Prussian army district, which in 1935 was transformed into the 1st army corps. In 1937 he became commander of the 4th army group, and in Feb. 1938, after the "army purge," he succeeded Gen. von Fritsch as commander in chief of the German army. He personally directed the campaigns in Poland, the Netherlands, Belgium and France. He was singled out for mention by Adolf Hitler on July 19, 1940, and, with 11 other generals, was raised to the rank of field marshal.

In 1941 Brauchitsch supervised German operations in the Balkans and Crete, in northern Africa and in the U.S.S.R. When his armies in Russia retreated, Hitler announced on Dec. 21, 1941, that he had removed Brauchitsch as commander in chief as of Dec. 19 and, answering an "inner call," had taken over that position himself. London dispatches of Dec. 10, 1942, reported that Brauchitsch had been summoned back to Berlin for consultations but was not reinstated.

Brazil A republic in eastern and central South America and the largest independent country in the western hemisphere; language: Portuguese; religion: overwhelmingly Roman Catholic; capital: Rio de Janeiro (pop. 1,781,567); president in 1942 (since 1931): Dr. Getúlio Vargas.

Area and Population.—Brazil has an area of 3,291,416 sq.mi. The population according to the 1940 census was 41,356,605, an increase of 10,721,000 in ten years, but was considerably less than the official estimate as of Dec. 31, 1939 (45,002,176). The main concentrations of population are in the south and in the east. Four southern states (São Paulo, 7,230,163; Paraná, 1,243,838; Rio Grande do Sul, 3,336,632; Santa Catharina, 1,182,854) had 31.4% of the population, but made up less than 10% of the area. The five eastern states of Rio de Janeiro (1,861,727), Sergipe (541,945), Bahia (3,907,086), Espirito Santo (758,425), Minas Geraes (6,797,219), and the federal district, *i.e.,* Rio de Janeiro city (1,781,567), with one-seventh of the total area, had 37.9% of the population. Seven northeastern states, occupying another seventh, had 24% (Maranhão, 1,246,813; Piauhy, 832,250; Ceará, 1,994,000; Rio Grande do Norte, 774,503; Parahyba, 1,424,457; Pernambuco, 2,674,683; Alagoas, 957,621). The Amazon valley states of Amazonas (449,077) and Pará (949,808) and Acre territory (81,326), with three-eighths of the total area, had 3.6% of the population; interior Goyaz (882,865) and Matto Grosso (427,629) states occupy almost a quarter of the area, but had only 2.2% of the population. Census reports for 1940 were lacking for individual cities; 1939 official estimates, however, showed the chief cities as: São Paulo, 1,322,643; Recife (Pernambuco), 550,389; São Salvador (Bahia), 388,183; Porto Alegre, 385,389; Belém (Pará), 318,341; Bello-Horizonte, 217,218; Santos, 203,126.

No official estimates of racial distribution were made, but according to the best unofficial calculations the population was 32.7% white (with 8.9% chiefly Italian stock and 2.6% chiefly German), 37.2% Negroes and mulattoes (full-blooded Negroes 5% to 12%), 17.7% Indians and mestizos (pure Indians 2.2%), and 0.7% orientals.

History.—World War II and its effects dominated Brazil's history politically and economically throughout 1942. In January

BRAZIL'S DECLARATION OF WAR Aug. 22, 1942, was "felt all over South America," as neatly illustrated by Bishop of the *St. Louis Star-Times*

Brazil was host to the Conference of Foreign Ministers of the American Republics at Rio de Janeiro (*see* HISPANIC AMERICA AND WORLD WAR II). Under the leadership of her foreign minister, Oswaldo Aranha, Brazil stood out as one of the most influential of all the countries represented at the conference. Foreign Minister Aranha himself played a prominent role in shaping the conference's program and policies. Evidencing its own sincerity and good faith, Brazil broke relations with the axis powers, with the avowed policy of giving all aid short of war to the United Nations.

With Natal, in Rio Grande do Norte state, a scant 1,620 mi. from Dakar (in 1942 under axis domination), northeastern Brazil was a logical point of entry for any axis-inspired invasion aimed at the western hemisphere. Fully cognizant of this, the government made strenuous efforts to improve the defenses of this area. In close co-operation with the United States in particular, air bases were developed, anti-aircraft defenses set up, and other air-raid precautions were taken.

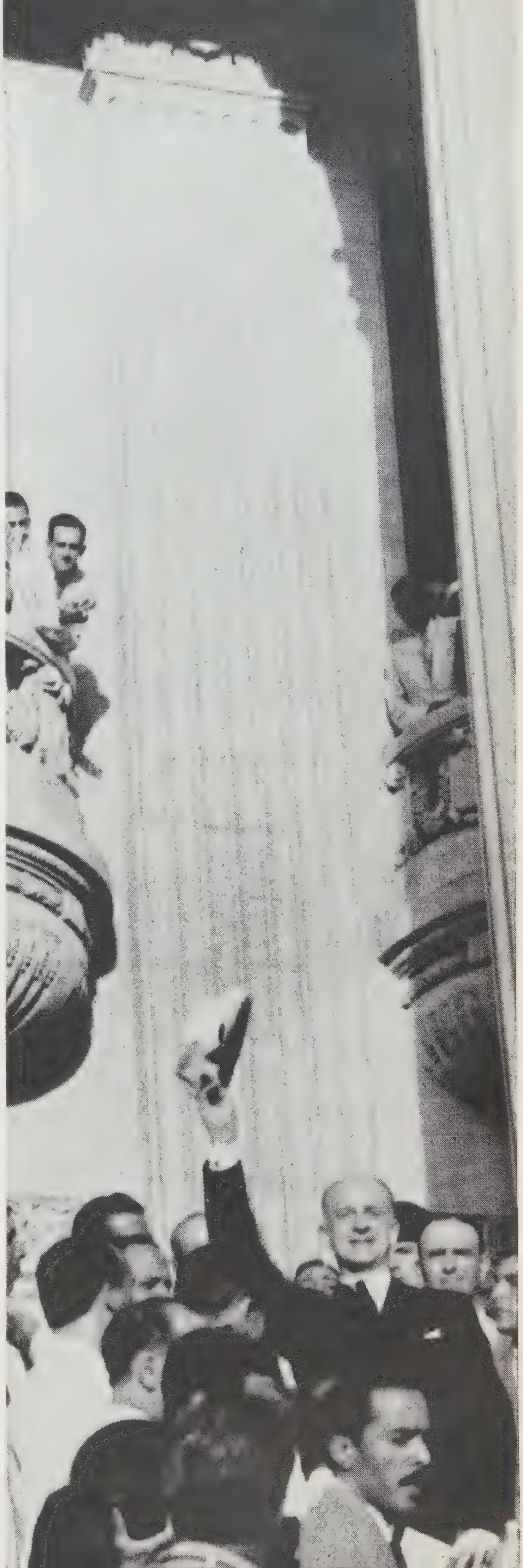
Meanwhile, as the axis submarine campaign in American waters increased in intensity, Brazil was drawn closer to actual participation. Several Brazilian ships were sunk, as well as a number under other flags engaged in carrying Brazilian commerce. Pres. Vargas promptly took strong countermeasures. A portion (from 1% to 30%, depending on the amount involved) of all axis-owned assets in the country was seized as compensation for Brazilian losses, and the Brazilian air force patrolling the coast was ordered to attack any axis submarines encountered. At the same time large minorities of axis origin in the country were carefully watched, and numerous persons of questionable loyalty rounded up.

The "aid short of war" period came to an end in August. Early in that month five Brazilian ships, including one load transport, were sunk by submarines off the Brazilian coast with heavy loss of life. These attempts to intimidate the country were soon answered on Aug. 22, by a formal declaration of war.

Immediately coastal patrol was stepped up, blackouts were instituted at strategic points, and enemy agents, including members of the pro-fascist Integralist party, were hunted down. Other measures effected complete confiscation of axis-owned properties, including banks with assets roughly estimated at $30,000,000 and a yearly turnover of around $200,000,000. Seventeen axis ships seized at an earlier date were formally confiscated, as were the properties of the Condor air lines, a subsidiary of the German Lufthansa. Plans were also made for evacuation of all Germans from the strategic "bulge" of Brazil.

The most immediate military significance of Brazil's entry into the war as a member of the United Nations lay in its effect upon the submarine campaign. Brazilian naval units, designed for defensive operations, were brought into active use, as were its air forces. Formerly, the nearest base from which to combat the submarine menace had been Paramaribo in Surinam, 1,800 mi. from the focal point of submarine activity off Brazil's easternmost tip. Now all Brazilian harbours and air bases were available. At the same time previous complications surrounding the use of Brazilian airfields for air transport from the U.S. mainland to West Africa were done away with.

The effect of Brazil's war declaration upon still nonbelligerent nations was likewise noteworthy. Every other South American country, including still-neutral Argentina and Chile, promptly granted nonbelligerent rights to Brazil, as they had earlier done for the United States. So, too, did Portugal, the Brazilian motherland, whose policies the other United Nations had at times found unsatisfactory.



SUMNER WELLES, U.S. undersecretary of state, acknowledging the cheers of Brazilians Jan. 15, 1942, the opening day of the Emergency Conference of American Foreign Ministers at Rio de Janeiro

ABAIXO OS TRAIDORES DO BRASIL

ON AUG. 22, 1942, when Brazil declared war on the axis, jubilant citizens staged an impromptu celebration in front of the U.S. embassy in Rio de Janeiro

Internally the declaration of war was followed by extensive mobilization measures. The government took over the operation of several domestic and foreign commercial organizations, among them the Lage organization, one of the country's largest commercial combines, involving shipping lines, shipbuilding, coal mining, construction, aeroplane manufacture, banking, real estate, insurance and other activities.

Measures controlling stocks and prices of a number of commodities were also adopted, and rationing was extended. Coal was one of the important products placed under price and distribution control. The decrees concerning controls provided for preference for government departments in merchandise sales, requisition of products needed by the government, and the preparation of national inventories of metallic, medicinal and drug stocks. Labour laws on working hours were relaxed to allow increased output in general industries and in those directly affecting national defense.

Education.—In 1940 there were 42,103 primary schools (enrolment: 3,463,000), besides numerous secondary, technical and other specialized schools, with more than 300,000 students.

Defense.—Military service is compulsory. As of 1941, Brazil had a standing army of 88,548 and reserves officially estimated at more than 250,000. The navy comprised 2 battleships, 2 cruisers, 16 destroyers (with 9 more under construction) and 4 submarines. The air force had 100 military planes and a personnel of 3,500. After Brazil's declaration of war in Aug. 1942, the armed forces underwent considerable expansion.

Finance.—Until 1942 the monetary unit was the milreis (valued at from 5 cents to 6 cents U.S.), theoretically split into 1,000 reis, and for large transactions ordinarily expressed in contos of 1,000 milreis each. Effective Nov. 1, 1942, the monetary unit was changed to the *cruzeiro,* equal to the old milreis, divided into 100 centavos.

In 1942, the budget presumed 4,388,756 contos of revenue, 6.4% more than in 1941, and 5,026,077 contos of expenditure 3% greater than in 1941. The budget for 1943 anticipated 4,777,673,000 cruzeiros in receipts and 5,270,160,879 cruzeiros expenditures. The largest single revenue source was the consumption tax replacing customs receipts, which had declined sharply since 1939 War expenditures were cared for by war bonds, whose purchase was obligatory for all 1942 income taxpayers.

Trade.—In 1941 export values (6,729,401 contos) exceede those of 1940 by 35.7% and 1939 by 19.8%. Import value totalled 5,514,417 contos, 11.1% over 1940 and 10.7% over 1939 For the first ten months of 1942, exports were tentatively reporte as 2,925,000,000 cruzeiros and imports 2,064,000,000 cruzeiros roughly half and two-fifths of the totals for the comparable 194 period.

The dominant feature of 1941 foreign trade was the increase role of western hemisphere trade. The United States took 56.9% of all exports (1940: 42.3%), Great Britain 12.2% (17.3%) Argentina 9.2% (7.2%), Japan 4.0% (5.8%), Canada 3.4% (2.1%), China 1.8% (3.1%), Uruguay 1.6% (1.5%), Chile 1.3% (0.7%), Germany 1.2% (2.3%), Colombia 1.1% (0.2%). Imports came from the United States, 60.4% (1940: 51.9%), Argentina 11.2% (10.8%), Great Britain 5.7% (9.4%), Curaçao 4.4% (4.7%), Canada 2.4% (1.9%), Japan 1.9% (2.4%), German 1.8% (1.9%), Portugal 1.8% (1.6%), Sweden 1.7% (1.4%) Switzerland 1.2% (0.7%).

Every major classification of imports and exports, except liv animals, showed considerable increases in 1941. Exports consiste of raw materials 48.3% (1940: 43.2%), foodstuffs 46.2% (1940 54.2%), manufactures 5.5% (1940: 2.6%), others, including liv animals, less than 0.1%; imports into manufactures 52.3% (1940 50.6%), raw materials 33.3% (1940: 33.7%), foodstuffs 13.6% (14.8%), live animals 0.8% (1940: 0.9%).

The leading exports in 1941 were coffee 29.9% (1940: 32.0%) raw cotton 15% (1940: 16.9%); preserved and refrigerated meat 6.7% (1940: 9.4%); cacao 4.7% (1940: 3.9%); hides and skin

4.5% (1940: 4.5%); carnauba wax 4.3% (1940: 3.4%); cotton cloth 3.1% (1940: 1.4%); vegetable oils (including cottonseed, oiticica, castor, copaiba, coco-nut and babassu oils) 2.9% (1940: 1.9%); castor oil seed 2.8% (1940: 2.4%); lumber 2.2% (1940: 1.7%); diamonds 2.2% (1940: 1.6%); quartz 1.5% (1940: 0.6%). Leading imports were: machinery and apparatus 18.8% (1940: 16.2%); wheat 8.8% (1940: 9.5%); automobiles and accessories 8.3% (1940: 8.1%); iron and steel goods 8.2% (1940: 8.9%); coal, coke, etc. 4.8% (1940: 5.8%); chemicals 4.1% (1940: 3.9%); gasoline 4.1% (1940: 4.0%); unrefined iron and steel 3.2% (1940: 1.9%); lubricating oils 1.8% (1940: 1.4%); unrefined copper 1.6% (1940: 1.0%).

An outstanding feature of 1941 foreign trade was the increased volume and value of mineral exports, whose export was restricted as of June 13, 1941 to the United States.

Communication.—External communication, normally good, was hampered by war conditions during 1942. Pan American Airways provided air transport service north and south, and its Brazilian subsidiary Panair do Brasil connected from Natal on the Brazilian "bulge" to Africa, linking there with routes to Portugal. The facilities of the former Condor (German) air line to the Rio de la Plata were in process of reorganization at the end of 1942.

Internal aviation in 1942 was under government control through the ministry of aviation. Domestic lines linked many isolated areas with the main centres of population.

Rail and highway communication was generally inadequate, with the Amazon basin entirely dependent upon navigable rivers. The highway system was about 140,000 mi. in extent but nearly all of it was unsurfaced in 1942. As of 1941, there were 21,750 mi. of railway in operation and some 600 mi. under construction.

During 1942, as a result of a visit to British Guiana by the governor of Amazonas state, long dormant proposals were revived for a railroad or highway from the interior of British Guiana to Bôa Vista, Brazil, in order to link that area with Manáus, the Amazon metropolis.

Agriculture.—Brazil is primarily agricultural, with coffee and cotton the principal money and export crops. Under the Inter-American Coffee Quota agreement of 1941, Brazil received originally a quota of 9,300,000 bags of 132 lb. for export to the United States, the principal consumer of coffee. A series of quota adjustments raised this amount to 13,772,990 bags (in July 1942) for the crop year ending Sept. 30, 1942. In the crop year 1941–42, first under the quota system, coffee prices averaged 50% more than in the previous year.

Unsatisfactory shipping conditions during 1942 threatened for a time to deprive Brazil of facilities for marketing its crops. Under an agreement with the United States in Oct. 1942, however, that country undertook to purchase a minimum of 9,300,000 bags of the 1942–43 crop, with payment made in advance of actual shipment. Included in this accord were similar provisions for purchase of 1,300,000 bags of cacao and 10,500 tons of Brazil nuts, at a total cost of $212,000,000.

In 1941 the cotton crop totalled 521,600 tons, of which 55% was exported, against 468,695 tons in 1940, with 48% exported. Exports in 1941 were 288,274 tons. A rapidly increasing amount of cotton was being manufactured for export.

Cacao is produced on a considerable scale in the tropical areas. Corn, rice, sugar, oranges, beans and manioc are important for domestic consumption. Forest products, mostly semi-cultivated, include yerba maté (Paraguay tea), carnauba wax (taken principally by the United States), castor seed, oiticica oil, a substitute for tung oil, and the babassu palm nut, whose oil was being developed in 1942 for use as a combustible.

It was estimated in 1942 that the Amazon basin had a potential of 60,000 to 70,000 tons of wild rubber annually, against actual production of 10,000 to 16,000 tons. During 1942, under stimulus of war demands, strenuous efforts were made to utilize Brazil's potential rubber production. Following a study of conditions and possibilities by technical experts from the United States, an agreement with the United States provided for a price of 39 cents per lb., and bonuses up to an additional 5 cents for production in excess of 10,000 tons, with the entire supply going to the United States Rubber Reserve company. The United States further undertook to aid transportation development in the primeval Amazon area and to provide extensive sanitation safeguards. The government of Brazil, on its part, took over the handling of all wild rubber collected, and made plans to recruit some 50,000 labourers and eventually double that number, drawing them largely from the northeastern states. Balata, close kin to rubber, used especially for machine belting and similar purposes, is likewise found in quantity.

In 1938 there were 41,883,374 cattle, 23,542,998 hogs, 14,167,450 sheep, 6,712,710 horses, 5,905,581 goats and 4,119,273 mules in Brazil. Frozen beef and hides and skins were exported in considerable quantities.

Manufacturing.—Manufacturing is primarily for domestic consumption, but exportation had been greatly accelerated since 1939. Manufactured exports in 1941 were 70% greater in volume and 184.3% in value than in 1940, largely the consequence of increased cotton textile and chemical and pharmaceutical manufactures.

Formerly, domestic iron and steel mills supplied around 144,000 tons of steel annually toward a normal demand of 405,000 tons, but the Volta Redonda steel mills, on which construction was begun in 1940, were expected to be in operation by 1944, with an initial output of 275,000 tons and eventually 750,000 tons.

Mineral Production.—In 1941 coal output was 1,407,530 tons (1940: 1,336,301 tons). Mineral exports in 1941 were more than double those of 1940 in value (487,803 contos; 1940: 221,813 contos) and only mica, aquamarine and chrome decreased in volume. In order of value, the 17 leading minerals exported in 1941 (with 1940 volume in parentheses) were: diamonds 64,309 grams (50,866 grams); quartz 1,980 tons (1,103 tons); iron (including all alloys except ferronickel) 476,190 tons (286,117 tons); manganese 437,402 tons (222,713 tons); mica 867 tons (1,117 tons); aquamarine 524,651 grams (1,169,034 grams); coal 61,434 tons (7 tons); titanium 2,369 tons (499 tons); carbonates 4,309 grams (2,304 grams); tantalum 91 tons (27 tons); zirconium 4,735 tons (1,521 tons); bauxite 14,365 tons (82 tons); ferronickel 441 tons (89 tons); beryl 1,703 tons (1,472 tons); tungsten 32 tons (10 tons); ilmenite 4,471 tons (12 tons); chrome 4,424 tons (4,572 tons). (*See* also ARGENTINA.)

Bread and Bakery Products.

An abundance of wheat in the U.S., and shortages in many other foods, increased the importance of bread and bakery products in wartime diets. Nutritional authorities advocated, in fact, that breadstuffs such as enriched white bread should comprise at least 40% of the calories in well-constructed American and British dietaries.

Continued progress was made in the enrichment of white bread with the vitamins of the B complex, thiamin and niacin, and the food-mineral iron. At the end of 1942 about 75% of all U.S. white bread was thus enriched with vitamins and minerals natural to whole wheat, in contrast to about 33% at the end of 1941. It is estimated that more than 12,000,000,000 lb. of white bread were produced in the U.S. in 1942, as against approximately 11,000,000,000 lb. in 1941.

Two states, South Carolina and Louisiana, adopted legislation in 1942 for the mandatory enrichment of all white flour and bread sold in those states. Federal standards for enriched flour sold in interstate commerce became effective on Jan. 1, 1942, but federal standards for enriched white bread were not promulgated. The standards followed for enriched bread continued to be those recommended by the National Research council.

Nutritional improvement of the popular U.S. white bread was accomplished, in general, by the voluntary action of American bakers, and was regarded as a noteworthy contribution to the war effort. A resolution for the vitamin and mineral enrichment of *all* white bread was unanimously adopted at a Baking Industry War Conference in Chicago in October 1942.

In Canada an Order in Council, effective April 1, 1942, established "Canada-Approved Bread," made from a specially prepared flour high in thiamin. In Great Britain the bread was the so-called national whole-meal loaf.

According to the latest official data, the American baking industry in 1942 consisted of about 18,000 establishments making bread and bakery products. These employed more than 200,000 wage earners, who were paid more than $262,000,000. Cost of materials was more than $568,000,000, and the total value of products amounted to nearly $1,500,000,000. (*See* FLOUR AND FLOUR MILLING.) (J. A. To.)

Brereton, Lewis Hyde (1890–), U.S. army officer, was born June 21 in Pittsburgh, Pa., was graduated from the naval academy at Annapolis, 1911. Two days after he was commissioned as an ensign he resigned to become a lieutenant in the army's coast artillery corps. He took flight training in 1912, served as a pilot in the Philippines and commanded one of the first U.S. flying units on the western front during World War I. A pioneer in the development of dive-bombing, he commanded in 1922 the first aviation attack group in the army air corps. He was in command of an airfield in the Canal Zone, 1931–35, and was transferred from his air command at the Tampa field in July 1941 to head the army air force in the Philippines. After fighting a losing battle against Japan's quantitative plane superiority, he was ordered to leave the Philippines and was made chief of the U.S. air forces in India. On one occasion in April 1942 he personally led a U.S. bomber raid on Japanese-held Port Blair in the Andaman islands. Transferred to the middle east in July 1942, he was put in command of the U.S. air force there and co-operated with the R.A.F. in planning joint attacks on axis military and supply bases in the Mediterranean zone.

Brett, George Howard (1886–), U.S. army officer, was born Feb. 7 in Cleveland, O. A graduate of Virginia Military institute in 1909, he was a major during World War I, retiring from active service in 1920. He later returned to the army, specialized in military aviation, and won his rating as a command pilot. In Oct. 1940, he was promoted to the rank of major general. After Japan attacked U.S. Pacific possessions, Gen. Brett, British General Wavell and Generalissimo Chiang Kai-shek set up a military council in Chungking for common prosecution of the war. On Jan. 3, 1942, when President Roosevelt and Prime Minister Churchill made Gen. Wavell supreme commander of Allied forces in the far east, Gen. Brett was appointed deputy supreme commander of that region and on Jan. 10 he was promoted to lieutenant general. On Nov. 4, 1942 Brett succeeded Gen. Frank M. Andrews as head of the Caribbean command.

Brewing and Beer. The generic word beer covers the malt beverage group, including beer, ale, porter, etc. Malt beverages are sold in all of the states of the U.S.A. under regulation and licence. They are taxed by the federal and state governments and in scattered cases local taxes are imposed. Aside from taxation, control is vested in the states which generally treat beer distinct from liquors because of its low alcoholic content.

In 1942, the product was manufactured in 39 states. Approximately 490 breweries were in operation at the close of the year as compared with 750 in 1935.

Sales Records.—Following are the sales records in United States barrels (31 gal.) by fiscal years, ending June 30: 1933 (85 days)—6,277,728; 1934—32,266,039; 1935—42,228,831; 1936—48,759,840; 1937—55,391,960; 1938—53,926,018; 1939—51,816,874; 1940—53,014,230; 1941—52,799,181; 1942 (official but not audited)—60,493,015.

Sales for the calendar year 1942 approximated 64,000,000 bbl While this was an increase of 12% over 1941, the rise was fair under the rate of increase in national income, which was about 20% over 1941. Brewing industry economists usually agree that beer sales, normally, follow the curves in national income.

Market Conditions.—Impaired facilities for distribution resulted in rationing by brewers in some instances. Tire rationing forced a cut in deliveries, and in many instances brought a return of the nearly forgotten brewery wagons and teams to share with trucks in delivery loads. Priorities on tin affected the bottling rooms. Cans, during 1942, became a total casualty as far as civilians were concerned, and were made available only to the armed forces. The shift to total packaging in bottles developed a heavier demand for crowns. In spite of this new load, brewers were allowed only 60% of the weight of crowns they used in 1941. Laboratory experiments with composition substitutes had developed no satisfactory solution by the close of 1942.

An adequate supply of ingredients was the most favourable factor for the industry. The brewers' raw materials are farm products that do not compete with the table and in recent years have been grown in surplus.

Package sales, considered significant of home consumption, continued to gain in 1942, accounting for about 58% of all beer sales In 1934 the percentage was 25% package against 75% draught Research conducted by the Psychological corporation of America revealed that 46% of all urban families are purchasers of beer or ale, an increase of 7% over a previous survey, taken a few months earlier.

Taxes.—The federal tax was increased $1 per bbl., effective Nov. 1, 1942, making the new rate $7 per bbl. Added to the state tax, averaging nearly $1.50 per bbl., the new tax rate borne by beer was over 8 times the tax load carried in 1914, when beer consumption hit its all-time peak.

Federal excise and special taxes on beer for the fiscal year 1942 ending June 30, totaled $369,659,765. Cumulative federal taxes after re-legalization, April 7, 1933, totalled $2,447,067,953. State and local taxes for the year ending June 30 were estimated at $960,000,000, bringing the combined public revenue from beer to approximately $3,407,000,000 for the period from April 7, 1933 to June 30, 1942.

Law Observance.—The industry's nationwide program being conducted through the Brewing Industry foundation, with committees of brewers and beer distributors applying it intensively in 15 states, worked directly with retailers and the public authorities to protect the good repute of beer and brewing from abuse by a minority of law violators.

In addition, an "army camp area" program covered all of the 37 states in which there were large concentrations of troops in training, including 13 of the 15 states referred to above. This program for camp and training areas, directed by the foundation, brought the co-operative effort of brewers, wholesalers, retailers and their associations to work with military and civil authorities for the maintenance of wholesome conditions where beer is sold. Light beer was sold on military reservations.

The general results of such sales at or near army training camps were found satisfactory by army and civil authorities, as well as private investigators, including many church representatives. As a result, many of them lent their support to a crystallization of sentiment opposing a threatened return of wartime prohibition. (*See* also LIQUOR CONTROL; LIQUORS, ALCOHOLIC.)

(H. HY.)

Bridge, Contract: *see* CONTRACT BRIDGE.

Bridges.

The world's longest spans of the various types in 1942 are listed in Table I.

Table I.—*World's Longest Spans*

Type	Bridge	Location	Year	Span
Cable Suspension .	Golden Gate	San Francisco	1937	4,200 ft.
Eyebar Suspension	Florianopolis	Brazil	1926	1,114
Cantilever	Quebec	Canada	1917	1,800
Steel Arch	Kill van Kull	New York	1931	1,652
Continuous Truss .	Duisburg	Germany	1935	839
Wichert Truss . .	Homestead	Pittsburgh	1937	533½
Continuous Girder .	Mangfall	Germany	1935	354
Simple Truss . . .	Metropolis	Ohio river	1916	720
Concrete Arch . .	Esla	Spain	1940	645
Vertical Lift . . .	Cape Cod canal	Massachusetts	1935	544
Swing Span	Fort Madison	Mississippi river	1927	525
Bascule	Sault Ste. Marie	Michigan	1914	336
Masonry Arch . .	Plauen	Saxony	1905	295

Plans for the reconstruction of the Tacoma Narrows bridge (main span 2,800 ft.—the third longest in the world), which was destroyed by wind action on Nov. 7, 1940, were postponed until after the war. Dismantling of the cables and towers was begun in Sept. 1942, when scrap steel prices made it profitable to tear down these remaining portions of the structure.

A contract was let in 1942 for the strengthening of the Bronx-Whitestone bridge in New York (span 2,300 ft.—the fourth longest in the world) by adding deep trusses to the stiffening girders in order to increase the resistance of the suspension span to aerodynamic undulations.

The world's longest double-leaf bascule span (*see* Table I) at Sault Ste. Marie, Mich., which collapsed under a passing locomotive on Oct. 7, 1941, due to a failure of the interlocking system which permitted a clear signal to be given before the two leaves were properly locked and closed to form a simple truss, was repaired and reopened to railroad traffic in 1942.

Despite the war, construction on the new Waterloo bridge over the Thames in London, Eng., was continued and the partially completed roadway was opened to traffic on Aug. 11, 1942. Demolition of the old bridge was begun in 1935 and construction of the new one started in 1937. It consists of five spans of 238 ft., of cellular construction, with piers and spans of reinforced concrete faced with granite and Portland stone. The bridge deck, providing six lanes of traffic, is 80 ft. wide. The old bridge, a famous structure of masonry arches built by John Rennie in 1811–17, had a roadway width of only 27½ ft.

The Puente Cuscatlan over the Lempa river in El Salvador, completed in 1942 with a main span of 820 ft., is the longest suspension bridge in Central America and a vital link in the Pan-American highway. Each cable is composed of 16 galvanized steel bridge strands of 1$\frac{15}{16}$-in. diameter.

A combination tramway and suspension bridge 1,185 ft. long across the Espiritu Santo river on the boundary line of Brazil and Bolivia, in the jungle regions of the Matto Grosso, was commenced in 1942. Two 100-ft. towers support the tramway cables and the compensating suspension cables. A suspended tram car geared to a two-cable track is capable of carrying 80 persons or a 7-ton truck across the river.

The Howrah bridge over the Hooghly river, India, under construction 1938 to 1942, is a cantilever bridge costing £1,750,000.

The Charter Oak bridge, carrying an express highway over the Connecticut river at Hartford, was completed and opened to traffic as a state-owned toll bridge on Sept. 5, 1942. It has three continuous steel girder spans of 270, 300 and 270 ft. respectively, establishing a new record for the longest continuous plate-girder span in America. The cost is $4,400,000.

A new cantilever bridge at New London, Conn., under construction 1941 to 1942 at a cost of $6,000,000, with a main span of 540 ft., carries an express highway over the deep tidal estuary of the Thames river. Foundations for the main river piers are from 135 to 155 ft. deep. A new interstate toll bridge, spanning the Mississippi river at Chester, Ill., is a continuous truss of two 670-ft. spans. Financed by the city of Chester, it was started in 1940 and completed in 1942 at a cost of $1,090,000.

The new interstate highway bridge across the Mississippi river at Dubuque, Iowa, completed in 1942, is a continuous, through-truss, tied-arch cantilever of novel design, with 845 ft. central span and 347 ft. side spans. The total cost is $3,600,000.

A new highway bridge over the Illinois river at Peoria, Ill., under construction 1941 to 1943, has a three-span continuous truss over the main channel. The cost is $2,000,000.

The new Kentucky river crossing at Cleveland, Ky., under construction in 1942, is the highest highway bridge east of the Mississippi river—250 ft. above the water, with a maximum pier height of 198 ft. It is a three-span continuous truss with spans of 320, 448, and 320 ft. Replacing an old wrought-iron bridge built in 1869, it eliminates several steep grades and dangerous hairpin curves in the highway. The cost is $900,000.

To save steel, a new bridge completed in 1942 over the Brazos river in Palo Pinto county, Tex., is built of native stone. It is 440 ft. long, and consists of a series of 19 stone arches.

The State street double-leaf bascule bridge over the Chicago river, with 245 ft. span, had its completion delayed by priority difficulties. Each leaf will weigh 4,200 tons.

In 1942 the historic iron truss bridge across the Susquehanna river at Havre de Grace, Md., was ordered taken down to yield 3,495 tons of scrap metal for the nation's war drive. Originally a railroad bridge, it became obsolete in 1904. Refused by the county commissioners as a free gift, the bridge was sold in 1910 for $1 to a group of seven citizens for operation as a highway toll bridge; thereafter, with mounting receipts approaching $200,000 annually in tolls, it came to be known as the "Gold Mine Bridge." In 1923 the state of Maryland purchased it for $585,000, and in 1927 an upper deck was added to double the capacity; this operation, adding 1,260 tons of new steel, established a notable pioneer record in structural welding. The following year the bridge was made free as the total investment had been repaid by tolls; and in 1940 the old bridge was superseded by a beautiful modern bridge of the Wichert type, built at a cost of $4,500,000, to accommodate increased traffic requirements at this crossing.

The artistic bridge awards of the American Institute of Steel Construction for bridges completed in 1941 went to the Rainbow bridge at Niagara Falls (a hingeless arch of 950 ft.); the Fairmount Boulevard bridge in Cuyahoga county, O. (a continuous girder of three spans); and the Passaic river bridge of the Lincoln highway in New Jersey (with a lift span of 332½ ft.).

The trend of toll-bridge ownership in the United States is indicated in Table II.

Table II.—*Toll Bridges in the United States*

	1938	1940	1941
Public.	97	114	115
Private	145	120	120
Total	242	240	235

In 1938, tolls paid in the U.S. to cross rivers via bridges, tunnels and ferries amounted to $76,000,000. (D. B. S.)

Briggs, Caspar Warren (1846?–1942), U.S. photographer, was born in Norton, Mass. He bought a magic lantern business in the 1870s and began to manufacture "slip slides." One of the early forms of motion pictures, the slip slides were operated in such a fashion that the figures painted on a lantern slide moved horizontally across a scenic background mounted on another slide. Briggs's first slide production shown throughout the country in magic lantern theatres was *Lincoln's Assassination;* it was followed by such melodramas as *The Drunkard's Daughter, The Bottle, Father, Dear Father* and *Ten Nights in a Barroom.* Others of his stories were taken from the Bible. He won the distinguished service award from the Pennsylvania Arts and Sciences society in 1938 for his work in the field of animated screen pictures. He died in Atlantic City, July 10.

Briquettes, Fuel: *see* FUEL BRIQUETTES.

Bristol, Arthur LeRoy (1886–1942), U.S. naval officer, was born July 15 in Charleston, S.C. He graduated from the naval academy in 1906, and qualified as naval pilot in 1928. During World War I he served with the Atlantic transport force and won the navy cross and the army's distinguished service medal. He was naval attaché in London, 1931–34, commander of the naval air station at San Diego, 1936–39, and in June 1940 he was named commander of carrier division I, aircraft battle force. Adm. Bristol, who was put on duty with the Atlantic fleet in 1941, was promoted to vice-admiral, Feb. 28, 1942. He died in Washington, D.C., April 20.

British Borneo: *see* BRITISH EMPIRE.

British Columbia. The most westerly province of Canada, bordering on the Pacific ocean. The crown colonies of Vancouver Island (1849) and of British Columbia (1858), after uniting in 1866, entered the Canadian confederation in 1871 to form the province. Area, 366,255 sq.mi., of which 6,976 sq.mi. are water. The total population of 817,861 persons (1941) is divided between 443,394 urban and 374,467 rural dwellers. The chief ports of Vancouver (271,597), Victoria, the capital (42,907), and New Westminster (21,602) lie in the southwestern corner—not far from the United States border.

History.—Early in 1942 public concern over the presence of a relatively large group of persons of Japanese extraction prompted the dominion government to expel all Japanese fishermen from that industry, and subsequently led to the gradual removal of this racial group from strategic coastal areas.

In the spring session of the legislative assembly, the coalition government introduced legislation to create a postwar rehabilitation council; ratified an agreement with the dominion government under which the province, in return for an annual dominion payment of $12,048,367.51, consented to withdraw from the income tax field for the duration of World War II; and sought to encourage private interest in the prospects for an iron and steel industry. John Hart, premier and minister of finance, in his budget address, announced an estimated revenue of $33,155,058 and an expenditure of $33,094,292 for the fiscal year ending March 31, 1943. In October, E. C. Carson was appointed minister of mines and trade and industry, succeeding H. Anscomb, who had accepted the portfolio of public works following the demise of R. Bruhn. The remaining members of the provincial cabinet in 1942 included: G. S. Pearson, provincial secretary, labour and fisheries; P. Maitland, attorney-general; K. C. McDonald, agriculture; Wells Gray, lands and municipal affairs; H. G. T. Perry, education and chairman of the postwar rehabilitation council.

In September, Justice G. McG. Sloan, commissioner inquiring into the Workmen's Compensation act and its administration, reported that the act had been efficiently administered and suggested a moderate extension of its coverage as well as certain minor, upward adjustments in the scale of compensation. In October the new Royal Canadian Naval college at Royal Roads, Esquimalt, was commissioned. Completion of the United States-Canadian military highway in November, through northern British Columbia to Alaska, revived interest in proposals to make the province-owned Pacific Great Eastern railway a link in a potential railroad connecting the Pacific northwest states with Alaska.

Education.—During the school year ending June 30, 1941, 119,634 students were enrolled in the elementary (78,306), junior high (14,318), superior (3,442) and high (23,568) schools of the province. Teaching staffs comprised 2,658 teachers in the elementary, 481 in junior high and 1,109 teachers in superior and high schools.

Communications.—Provincial highways in 1940 totalled 21,258 mi. and included 8,376 mi. of surfaced, 10,299 mi. of improved earth and 2,583 mi. of unimproved earth roads. Railway mileage amounted to 3,883 mi. of single track in the same year. The total number of telephones, 167,788, included 32,503 on automatic switchboards.

Manufacturing, Trade, Agriculture, Minerals.—Although affected by the growing shortage of manpower and rising production costs, business activity in British Columbia during 1942 maintained the relatively high level of 1941. Production in the basic industries reached an estimated net value of $343,000,000 in 1941 compared with $302,762,441 in 1940. Salaries and wages paid to employees in the leading industries were estimated at $239,525,459 in 1941, an increase of approximately $51,000,000 over the estimated 1940 gross pay roll of $188,325,766. The impact of wartime conditions created new labour problems for the gold mining industry; led to the sale of the entire 1942 canned salmon pack to Great Britain; and brought enlarged orders for steel cargo vessels to the expanding shipyards from the federal Wartime Merchant Shipping, Ltd.

According to preliminary provincial estimates, the net value of production in 1942 amounted to $60,000,000 (1941, $58,577,539) in agriculture, $30,000,000 in fisheries (1941, $31,732,037); $120,000,000 in forestry (1941, $119,920,000) and $75,000,000 in min-

Economic Activity in British Columbia, 1940-42

	Unit	1940	1941	1942 preliminary estimates
Agriculture:				
Total value of production	$	52,317,121	58,577,539	60,000,000
Livestock	$	5,854,000	7,472,000	7,800,000
Poultry products	$	5,169,000	6,085,000	6,200,000
Dairy products	$	14,218,825	16,209,733	16,900,000
Fruits and vegetables	$	10,150,307	11,782,076	13,100,000
Field crops	$	14,761,000	14,552,000	14,800,000
Fisheries:				
Total value of production	$	21,719,167	31,732,037	30,000,000
Pack of canned salmon	case	1,467,216	2,295,433	1,850,000
Forestry:				
Total value of production	$	102,804,000	119,920,000	120,000,000
Timber scaled	M.B.M.	3,693,155	3,522,750	3,100,000
Paper production	ton	330,572	351,241	350,000
Mining:				
Total value of production	$	75,701,155	78,479,719	75,000,000
Internal trade:				
Index of wholesale sales	1935-39=100	126.1	155.0	175.0
Index of retail department store sales	1935-39=100	116.5	134.8	150.0
Railway freight loaded	ton	7,592,881	9,139,480	9,000,000
Consumption of electric power	000 kw.hr.	2,095,625	2,407,480	2,500,000
Construction	$000	11,929	14,509	9,000
Bank debits	$000	2,137,200	2,427,200	2,700,000
Index of employment	1926=100	113.3	135.6	160.0

ing (1941, $78,479,719). The trend in other business characteristics may be seen from the table on p. 126. (G. N. P.)

British East Africa. Under this heading are grouped British colonial territories on the east coast of Africa, of which certain essential statistics are given in the table. *See* British Empire for population, capital towns, status and governors. (*See* also Rhodesia.)

A civil defense and supply council was set up for the East African colonies. The civil supply board advised on the distribution of imports and essential civil supplies. The war supply board was responsible for the purchase of military supplies of foodstuffs and for the organization of products other than agriculture. The industrial research and development board was investigating substitute fuels, among which are cottonseed oil, power alcohol and charcoal gas. East African troops, both European and African, continued to take part in the North African campaign, and detachments of the King's African Rifles who had been through the Abyssinian campaign, were sent to Ceylon and Madagascar. A number of British officials from Malaya were drafted to East Africa.

Kenya.—Increased production, especially of food supplies for military needs, was the chief objective in Kenya, and 10,000 acres in the Athi plains, formerly a grazing ground for herds of wild animals, were to be devoted to wheat cultivation. The shortage of labour in Kenya, depleted still further by military needs, made the government decide to introduce conscription, especially for farm labour, under regulations laid down with regard to pay and other conditions of work. Army schools were set up for the training of African artisans to serve military needs. More than a thousand men a month were being turned out of these schools as masons, carpenters, joiners, blacksmiths, tailors, electricians, and in other sections as signallers and motor mechanics and drivers.

Uganda.—The Kabaka of Uganda came of age in 1942 and special ceremonies were held at the Baganda capital. The first electric cotton ginnery was established, and two sugar factories to process sugar cane were opened. At Malago hospital Africans were being trained as doctors and medical assistants.

Tanganyika.—An economic control board was set up for the territory. After the fall of Malaya and the Netherlands Indies two of Tanganyika's products, sisal and rubber, became vital to the war effort. All the sisal which was not bought up by the British government was earmarked by the United States. Rubber, however, had the priority over all other production. Old German plantations were revived, the collection of wild rubber organized, and research undertaken at the Amani research station, in co-operation with an official of the Rubber Research institute from Malaya. Two fully qualified African doctors, trained in Uganda, were working in Dar-es-Salaam hospitals. Arrangements were made to receive 5,000 Polish refugees from the U.S.S.R. and Iran in specially prepared camps in the highlands.

Nyasaland.—A successful experiment in African dairy farming in north Nyasaland for making ghee for export was accompanied by the beginnings of small holdings farmed on up-to-date lines. There was a marked improvement in the housing conditions for labour on tea estates. Five months after war savings certificates had been introduced into the country, over £14,000 had been subscribed.

Zanzibar.—The clove industry showed a record export for 1941 in spite of the fact that the main drive was for extended cultivation of food crops, which resulted in a considerable increase in the island's food production.

Somaliland.—At the first big Muslim festival after the victory in Ethiopia, the leading chiefs met the governor and assured him of their support and help. The Somaliland Camel corps destroyed large concentrations of locust hoppers and so saved the land and crops from the ravages of swarms of locusts.

Mauritius.—A special drive to increase food cultivation on the island resulted in one third of all the cultivated lands being under food crops. A successful settlement of the Jewish refugees from central Europe resulted in increased cultivation and the starting of new village industries. (M. Rd.)

British East Africa

Territory and Area in sq.mi.	Principal Products	Imports and Exports Merchandise (in thousand £)	Road, Rail and Shipping	Revenue and Expenditure (in thousand £)	Education: Elementary and Secondary
Kenya 224,960	(1940 exports) coffee 165,974 cwt. (£406,283); sisal 23,748 tons; pyrethrum 97,720 cwt.; gold 104,015 oz.	(1941) imp. 8,085; exp. 4,739	(1937) rds. arterial, 3,160 mi.; rlys. 1,290 mi.; shpg. cleared 2,158,767 net tons	(1940) rev. 4,111; exp. 4,064	(1937) Europ.: schls., 35, schlrs., 2,091; African: schls., 52, schlrs., 4,593; Indian: schlrs., 7,635; mission schls. 100
Mauritius 720 (dependencies, 87)	(1939 metric tons) sugar 229,457; copra 1,600	(1940) imp. Rs. 37,932; exp. Rs. 32,833	(1939) rds. 700 mi.; rly. 141 mi.; shpg. cleared 776,454 net tons	(1939–40) rev. Rs. 19,000; exp. Rs. 18,432	(1938) schls., 126, schlrs., 39,952
Nyasaland 47,949	(1939 metric tons) tobacco 6,600; tea 5,100	(1941) imp. 968.3; exp. 1,296.8	(1939) rds. main, 1,852 mi.; rly. 289 mi.	(1940) rev. 909.7; exp. 1002.0	(1939) elem.: Europ.: schls., 4, schlrs., 117; African: schls., 4,279, schlrs., 204,761
Seychelles 156	(1939 metric tons) export: copra 4,700; cinnamon leaf oil 67.3	(1939) imp. Rs. 1,150; exp. Rs. 1,284	(1939) 60 mi. of 1st class cart rd.	(1939) rev. Rs. 1,168; exp. Rs. 1,105	(1939) elem. schls., 26, schlrs., 3,105; sec. schls., 3, schlrs., 415
British Somaliland 68,000	(1939) export: gums and resins, 10,861 cwt.; skins, number, 1,952,512	(1939) imp. 509; exp. 196; re-exp. 8	(1938) rds. for wheeled traffic, *c.* 2,000 mi.	(1938) rev. 206; exp. 227	(1938) elem.: govt. schls., 2, schlrs., 121; private-aided schls., 14, schlrs., 514
Tanganyika 360,000	(1941 exports) coffee 13,667 tons (£447,977); sisal 75,195 tons	(1941) imp. 3,656; exp. 5,680; re-exp. 664	(1939) rds. 2,927 mi.; rly. 1,377 mi.; shpg. cleared 3,077,951 net tons	(1940) rev. 2,308; exp. 2,258	(1938) elem.: Europ.: schls., 19, schlrs., 934; Indian: schls., 67, schlrs., 5,128; African: schls., 1,014, schlrs., 76,360
Uganda 93,981	(1940 exports) coffee 343,016 cwt. (£469,495); cotton 54,206 tons (£3,760,109)	(1941) imp. 2,346; exp. 5,711	(1938) rds. 7,488 mi.; rly. 332 mi.	(1940) rev. 1,871; exp. 2,065	(1938) elem.: schls., 300, schlrs., 34,232; sec.: schls., 22, schlrs., 1,250
Zanzibar (640) and Pemba (380)	(exports) cloves (1941) 329,823 cwt. copra (1940) 184,890 cwt.	(1941) imp. 1,038; exp. 1,272; re-exp. 278	(1939) rds. (Z.) 151 mi.; (P.) 71 mi.	(1941) rev. 565; exp. 481	(1938) elem.: schlrs. (govt. schls.) 2,428, (private schls.) 2,930

British Empire. The governments of the British empire and the governors and premiers were as follows as of Dec. 1, 1942:

Country	Area Sq. miles (approx.)	Population (000's omitted) (est. Dec. 1939)	Capital	Status	Governors and Premiers
Europe					
Great Britain and Northern Ireland	93,991	47,735	London	Kingdom	George VI, King-Emperor. *Prime Minister* of Great Britain: Winston Churchill. Governor of Northern Ireland: The Duke of Abercorn. *Prime Minister* of Northern Ireland: J. M. Andrews.
Channel Islands	75	96	St. Helier St. Peter Port	Kingdom of Great Britain and N. Ireland	*Jersey:* Maj. Gen. J. M. R. Harrison. *Guernsey:* Maj. Gen. J. R. Minshull-Ford.
Eire	26,601	2,958*	Dublin	Dominion	*President:* Dr. Douglas Hyde. *Prime Minister:* Eamon de Valera.
Gibraltar	2	20	Gibraltar	Colony	Maj. Gen. F. N. M. Macfarlane.
Isle of Man	227	49	Douglas	Kingdom of Great Britain and N. Ireland	Vice-Adm. Lord Granville.
Malta	122	270	Valletta	Colony	General the Viscount Gort.
Asia					
Aden, Perim, etc.	80	48	Aden	Colony	Sir J. Hathorn Hall.
Aden Protectorate	112,000	600		Protectorate	
Bahrein Islands	213	120	Manama	Protectorate	Ruler: H. H. Sheikh Sir Hamad bin 'Isa al Khalifah.
Borneo:					
State of North Borneo	29,500	302	Sandakan	Protectorate	C. R. Smith.
Brunei	2,226	39	Brunei	Protectorate	J. G. Black (Brit. Res.).
Sarawak	50,000	*c.* 450	Kuching	Protectorate	Rajah: H. H. Sir Charles Vyner Brooke.
Burma	261,610	16,824†	Rangoon	Member of the British Commonwealth of Nations	Sir R. Dorman-Smith; *premier:* Sir Paw Tun.
Ceylon	25,332	5,981*	Colombo	Colony	Sir A. Caldecott.
Cyprus	3,572	382	Nicosia	Colony	C. C. Woolley.
Hongkong	391	1,050	Victoria	Colony	Sir M. A. Young.
Indian Empire	1,575,187	388,800†	Delhi	Member of the British Commonwealth of Nations	Emperor of India: H.I.M. George VI. *Secretary of State:* L. S. Amery. *Viceroy and Governor General:* Marquess of Linlithgow.
Malaya:					
The Straits Settlements	1,357	1,406*	Singapore	Colony	Sir T. S. W. Thomas.
Federated Malay States	27,700	2,169*		Protectorates	The Rulers of Perak, Selangor, Negri Sembilan, and Pahang.
Unfederated Malay States	24,347	1,869*		Protectorates	The Rulers of Johore, Kedah, Perlis, Kelantan, Brunei, and Trengganu.
Palestine	10,100	1,545*	Jerusalem	Mandated territory	Sir H. A. MacMichael, High Commissioner
Trans-Jordan	34,740	350	Amman	Mandated territory	Emir H. H. Abdullah ibn Hussein.
Africa					
Kenya Colony and Protectorate	224,960	3,500	Nairobi	Colony and protectorate	Sir Henry Monck-Mason Moore.
Uganda Protectorate	93,981	3,830*	Entebbe	Protectorate	Sir Charles Dundas.
Zanzibar	1,020	250	Zanzibar	Colony and protectorate	Sir Henry Guy Pilling (Brit. Res.).
Mauritius	809	419	Port Louis	Colony	Sir Donald Mackenzie-Kennedy.
Nyasaland	47,949	1,680	Blantyre	Protectorate	Sir S. C. Richards.
St. Helena and Ascension	81	5	Jamestown	Colony	Major W. B. Gray.
Seychelles	156	32	Victoria	Colony	W. M. Logan.
Somaliland Protectorate	68,000	350	Berbera	Protectorate	Under military occupation (British).
Basutoland Protectorate	11,716	590	Maseru	Protectorate	Lord Harlech.
Bechuanaland Protectorate	275,000	275	Mafeking, in Cape Province	Protectorate	Lord Harlech.
Southern Rhodesia	150,333	1,434*	Salisbury	Self-governing colony	Hon. Sir E. Baring.
Northern Rhodesia	290,323	1,400	Lusaka	Colony	Sir E. J. Waddington.
Swaziland	6,705	160	Mbabane	Protectorate	Lord Harlech.
Union of South Africa	472,550	10,521†	Seat of Government, Pretoria Seat of legislature, Cape Town	Dominion	Sir P. Duncan. *Premier:* General J. C. Smuts.
South-West Africa	323,000	321†	Windhoek	Mandated territory	Dr. D. G. Conradie, Administrator.
Nigeria, including British Cameroons	372,674	19,773	Lagos	Colony and protectorate and mandated territory	Sir B. H. Bourdillon.
Gambia	3,999	205	Bathurst	Colony	H. R. R. Blood.
Gold Coast, including British Togoland	91,843	3,572*	Accra	Colony and protectorate and mandated territory	Sir Alan Burns.
Sierra Leone and Protectorate	27,926	2,000	Freetown	Colony and protectorate	Major Sir H. C. Stevenson.
Anglo-Egyptian Sudan	967,500	6,362*	Khartoum	Condominium	Sir H. Huddleston.
Tanganyika Territory	374,000	5,284	Dar-es-Salaam	Mandated territory	Sir W. E. F. Jackson.
America					
Bahamas	4,375	69	Nassau	Colony	H.R.H. Duke of Windsor.
Barbados	166	195	Bridgetown	Colony	Sir H. Grattan Bushe.
Bermudas	19	32	Hamilton	Colony	Viscount Knollys.
British Guiana	80,500	341	Georgetown	Colony	Sir G. J. Lethem.
British Honduras	8,598	59	Belize	Colony	J. A. Hunter.
Canada	3,729,665	11,422*	Ottawa	Dominion	Earl of Athlone. *Premier:* W. L. Mackenzie King.

*Pop. est. 1940 †Pop. est. 1941

(*Continued on next page*)

British Empire (continued)

Country	Area Sq. miles (approx.)	Population (000's omitted) (est. Dec. 1939)	Capital	Status	Governors and Premiers
America (Continued)					
Falkland Islands and Dependencies	4,618	3	Port Stanley	Colony	A. W. Cardinall.
Jamaica and Dependencies	4,846	1,190	Kingston	Colony	Sir A. F. Richards.
Leeward Islands (Antigua, St. Kitts-Nevis, Montserrat, and the Virgin Islands)	422	93	St. John (Antigua)	Colony	Sir D. J. Jardine.
Newfoundland and Labrador	c. 152,000	295	St. John's	Colony, Constitution suspended	Vice-Adm. Sir H. T. Walwyn.
Trinidad and Tobago	1,980	473	Port of Spain	Colony	Sir Bede Clifford.
Windward Islands (Grenada, Dominica, St. Vincent, and St. Lucia)	825	272	St. George's (Grenada)	Colony	Sir C. F. Grimble.
Oceania					
Commonwealth of Australia	2,974,581	7,137†	Canberra	Dominion	Brig. Gen. Lord Gowrie. *Premier:* J. Curtin.
Fiji	7,055	215	Suva	Colony	Sir P. E. Mitchell.
New Zealand	103,415	1,631†	Wellington	Dominion	Marshal of R. A. F. Sir Cyril Newall. *Premier:* Peter Fraser.
Papua	90,540	280	Port Moresby	Part of Commonwealth of Australia	H. L. Murray, Administrator.
Pacific Islands	c. 11,900	162	. . . .	Colonies and protectorate	Sir P. E. Mitchell.
New Hebrides	5,700	50	Vila	Condominium	Sir P. E. Mitchell.
New Guinea, Territory of	93,000	675*	Rabaul	Mandated territory	Brig. Gen. W. Ramsay McNicoll
Western Samoa	1,133	61*	Apia	Mandated territory	A. C. Turnbull, Act. Administrator.
Nauru	8	3	. . . .	Mandated territory	Lt. Col. F. R. Chalmers.

*Pop. est. 1940 †Pop. est. 1941

British Guiana, a British crown colony in northeastern South America. Area, 89,480 sq.mi. Population: 1931 census, 310,933; 1940 official est., 346,982. East Indians are proportionately greater (42.7%) than in any other American area except Trinidad. Negroes aggregate 38.2% of he population, mixed races 12.3%. Almost the entire population ives on the coastal plain. Surveys show, however, that the inerior highlands possess great possibilities for extensive white colonization. Georgetown, the capital (pop. 69,844) and New Amsterdam (pop. 9,913) are the chief cities. The United States n 1942 maintained naval air and patrol bases at Suddie and near Georgetown. Governor (1942): Sir Gordon Lethem.

History.—During 1942 British Guiana felt increasingly the strain of war disruptions of trade and shipping, but was able to withstand the ill effects better than were her sister colonies in he West Indies. This was largely the result of the self-sufficiency program begun early in World War II. Government control of gasoline and power alcohol, subsidies for production of some staple foods, and stringent restrictions of imports were effected, however.

Education.—In 1940 the colony had 238 primary schools, with n enrolment of 55,707, and seven secondary schools.

Finance.—The monetary unit, the British Guiana dollar, tied o the pound sterling at 4.8665 to 1, is normally equivalent to the United States dollar (1942 exchange value: approximately 83 cents U.S.).

Trade.—Under wartime regulations, output and export of certain strategic materials (notably bauxite) were not made public. Statistical information was, therefore, fragmentary, particularly fter 1940. In 1940 imports totalled $14,197,921 (1939: $10,07,506). Great Britain supplied 39% (1939: 45%), Canada 3% (1939: 18%), United States 19% (1939: 14%). Incomplete 941 figures indicated approximately $16,600,000 value, the increase reflecting greater unit costs rather than larger volume. In he first months of 1942, imports declined 8%, primarily the esult of shipping difficulties and of the self-sufficiency program. n 1940 exports were $15,212,223 in value (1939: $14,727,075), with 30% unofficially estimated to represent bauxite (1939: 9.7%).

Communication.—External communication, both by sea and by air, are normally good. Within the colony, however, railways (79 mi.) are confined to the coastal districts, as are most of the 322 mi. of highway. Interior communication is quite primitive and entirely by navigable rivers except for a 102-mi. road to the diamond centres and a cattle trail (182 mi.) to the Rupununi district. In April 1942 the visit of the governor of the Brazilian state of Amazonas served to focus attention again on long-discussed proposals for a railway from the colony's border to Bôa Vista in Brazil.

Agriculture.—Sugar and rice are the main agricultural products. In 1940 sugar (142,707 tons), rum (1,811,635 gal.) and molasses (3,719,531 gal.) made up nearly $10,000,000 of export values in 1940 (1941: $9,000,000 est.). Sugar export to Sept. 30, 1942 was 105,654 tons. Rice (1940: 11,677 tons; first nine months of 1942, 16,720 tons) is exported, especially to the British West Indies. In 1942 an imperial grant of $400,000 was allotted for drainage and irrigation works to extend rice production. In 1942 rubber production was resumed after an 11-year lapse. United States technical assistance and guaranty of purchase through 1946, coupled with a production bonus, was expected to show results by late 1943.

Mineral Production.—British Guiana is one of the world's leading bauxite exporters (1939: 476,013 tons). Under war stimulus the output was greatly expanded. Diamonds (1939: 33,351 carats) and (1940: 35,745 oz.) are also important.

BIBLIOGRAPHY.—*West Indies Year Book, 1941–1942; Canada-West Indies Magazine* (Montreal, monthly); *Crown Colonist* (London, monthly).

British Honduras, a British crown colony in northeastern Central America bordered by Guatemala on the west and by Yucatan (Mexico) on the north. The area is 8,598 sq.mi. Although the Guatemala boundary was formally settled by treaty in 1859, Guatemala officially reopened the question in 1939, but subsequently suspended its claims for the duration of World War II. The population (1931 census: 51,347) was officially placed at 58,759 in 1939. The capital is Belize (1931 pop.: 16,687). Governor in 1942: Sir John Adams Hunter.

History.—During 1942 the already critical economic condition of British Honduras was further disturbed by shipping disruption caused by the serious submarine menace, which brought the war to the colony's doorstep. In June 15 persons were arrested as enemy agents who had been furnishing axis submarines with information and supplies. The leader of this gang, which had close liaison with a spy ring in Panama, was identified by police as a local resident. No official announcement was made as to their fate.

Education.—There were 106 elementary schools in 1942, with an enrolment of over 10,000, and five secondary schools with around 500 pupils. Most, but not all, of the schools receive government financial aid.

Finance.—The monetary unit is the British Honduras dollar, tied to the pound sterling at 4.8665 to 1, and normally equivalent to the United States dollar (1942 exchange value: approximately 83 cents U.S.).

Trade and Resources.—In 1940 exports were valued at $3,039,505 (Br. Hond. currency), imports at $3,318,070. Re-exports to and from adjacent sections of Mexico, for which the colony serves as an important trade intermediary, accounted for 47.3% of all exports in 1940. Imports are largely foodstuffs, textiles, machinery and other manufactured goods, supplied mainly by the United States, Great Britain and Canada. Normally, 80% of domestic exports are forest products (mahogany logs, mahogany timber and chicle), with the remainder almost entirely agricultural, principally bananas, grapefruit and coconuts. Under war conditions, however, the export markets for fruits was lost except for dehydrated and other concentrated forms. Rubber development was stimulated during 1942, however, with a United States Rubber Reserve company contract to purchase all production until the end of 1946.

Communication.—Belize normally enjoys regular steamer service to New Orleans, Kingston and Tampa. The TACA (Central American Air Transport) air lines provide service to San Pedro Sula, Honduras. Domestic transport is by navigable rivers, 25 mi. of railway and 185 mi. of improved highways. There are only a few subsidiary roads. In 1942 a highway from Belize to Cayo (near the Guatemala border), to cost £187,500, was authorized. (*See* also WEST INDIES, BRITISH.)

BIBLIOGRAPHY.—*West Indies Year Book, 1941–1942; Canada-West Indies Magazine* (Montreal, monthly); *Crown Colonist* (London, monthly).

British Legion.

The year 1942 saw the twenty-first birthday anniversary of the Legion. In these 21 years, millions of ex-service men and their dependents had been made happier and more contented by the Legion's pensions work, expenditure on benevolent aid had grown from £160,000 in 1922 to £466,563 in the peak year before World War II and 394,725 vacancies had been filled by the employment department in the 12 years ending 1941. The annual Poppy day appeal for funds had risen from £106,000 in 1922 to £752,000 in 1941, the total collected in the 21 years being £9,000,000.

The planning committee of the national executive council issued interim reports during the year on post-war problems. These included schemes for land settlement and the employment of demobilized men in the civil service. The internal re-organization of the Legion to provide for expansion after the war was under consideration. Benevolent grants, after falling for a period, had recently gone up by 15% to 20%. The immediate pensions aims of the Legion were to raise the pensions payable to men of World War II to the level of those paid to the men of World War I, and to extend the system of independent appeals tribunals to men and women of World War II. It achieved one of its objects in raising the pensions of totally deaf men to 100%, on a parity with the blind. Membership of the Legion, which fell for a period when war broke out, had been restored to its old strength.

British Malaya: *see* FEDERATED MALAY STATES; JAPAN; STRAITS SETTLEMENTS; UNFEDERATED MALAY STATES; WORLD WAR II.

British Pacific Islands: *see* PACIFIC ISLANDS, BRITISH.

British Possessions in the Mediterranean: *see* MEDITERRANEAN, BRITISH POSSESSIONS IN THE.

British Somaliland: *see* BRITISH EAST AFRICA.

British South African Protectorates.

Under this heading are grouped the British protectorates in the south of Africa, of which certain essential statistics are given in the table below. *See* BRITISH EMPIRE for population, capital towns, status and governors. For other territories of the British empire in the south of Africa, *see* SOUTH AFRICA, UNION OF.

British South African Protectorates

Territory and Area in sq.mi.	Principal Products (in metric tons)	Imports and Exports (in thousand £)	Road and Rail	Revenue and Expenditure (in thousand £)	Education: Elementary and Secondary
BASUTOLAND 11,716	(1938–1939) wheat, 33,100 maize, 68,800	(1940) imp. 938.3 exp. 461.7	rds. 502 mi.	(1939–40) rev. 392.9 exp. 368.2	(1939) Elem. schls.: native, 848; other schls., 69; total schlrs., 82,941
BECHUANALAND *c.* 275,000	gold (1940) 560 kg. silver (1938) 1,127 oz.	(1940) imp. 440.5 exp. 445.8	rds. 2,048 mi. rly. 396 mi.	(1939–40) rev. 188.0 exp. 225.5	(1940) Europ., schls., 11, scholars 189; native schls. 139, scholars 15,906
SWAZILAND 6,705	(1938) gold, 1,246 oz. tin, 174 tons maize, 5,900	In customs union with South Africa	rds. 654 mi.	(1939–40) rev. 109.8 exp. 159.8	(1940) Europ., schls., 10, schlrs., 377; native schls. 219, scholars 8,263

History.—The Auxiliary Military Pioneer corps raised in the three protectorates received high praise from the military authorities. In Aug. 1942 there were 20,000 of these men on active service in the middle east, and another 15,000 in training. Chief Tshekedi and five other Bechuanaland chiefs went to the middle east to visit their men. They found them in the heavy repair workshops dismantling engines, working as motor mechanics, volunteering for dangerous work in the fire services, supervising Egyptian labourers on construction work. Before the Swazi troops went north, their paramount chief presented them with the Swazi colours, which were dedicated by the archdeacon. Cotton growing was promoted in Swaziland by the Empire Cotton Growing corporation, and some 60 Swazi farmers were cultivating cotton on their lands on up-to-date lines. The three protectorates continued to give generously to war funds. The Bechuanaland protectorate arranged broadcasting for Africans from Mafeking. Receiving sets with loud speakers were installed in the principal towns and villages. (M. RD.)

British West Africa.

Under this heading are grouped the British colonial territories on the west coast of Africa, for which certain essential statistics are given in the table on page 131. *See* BRITISH EMPIRE for population, capital towns, status and governors.

Lord Swinton was appointed as minister of state in West Africa and made the Gold Coast his headquarters, using part of the buildings of Achimota college. He toured all the West African colonies and interviewed leading Africans as well as Europeans. Broadcasting and information services were considerably developed in 1942, and the station at Accra now reached all West

British West Africa

Territory and Area in sq. mi.	Principal Products	Imports & Exports (in thousand £)	Road, Rail & Shipping	Revenue & Expenditure (in thousand £)	Education: Elementary & Secondary 1938
NIGERIA (including British Mandate of Cameroons) 372,674	(exports, 1940) (metric tons) palm kernels 107,600 ground-nuts 245,800	(1940) imp. 7,479 exp. 11,604	(1939) rds. 20,990 mi. rlys. 1,901 mi. shpg. cleared 1,790,019 net tons	(actual 1939–40) rev. 6,113 exp. 6,499	elem. and middle schools 565; scholars 25,067
GOLD COAST (including Ashanti, Northern Territories and British Mandate of Togoland) 91,843 .	(1939) cocoa 200,000 metric tons; gold production (1940) 27,568 kg.	(1941) imp. 6,137 exp. 5,979	(1940) rds. 2,366 mi. rly. 500 mi. shpg. cleared (1941) 1,548,772 net tons	(1940–41) rev. 3,869 exp. 3,872	elem. schools 927; scholars 83,824; sec. and higher educ. scholars 2,078
ST. HELENA (47) and ASCENSION ISLANDS (34)	(1939) export flax fibre 834 tons; tow 512 tons.	(1940) imp. 51 exp. 30	(1939) rds. 62 mi.	(1940) rev. 33.7 exp. 33.4	(1939) 810 scholars
GAMBIA 3,999 . . .	(export 1940) (metric tons) ground-nuts 43,700	(1940) imp. 278 exp. 307	rds.(1939)869mi. shpg. cleared (1940) 445,244 net tons	(1940) rev. 204 exp. 197	(1940) elem. schools 7, scholars 1,725; sec. schools 4, scholars 200
SIERRA LEONE 27,926	(1940 [value]) diamonds £780,770 iron ore £493,269	(1941) imp. 3,814 exp. 1,593	(1940) rds. 836 mi. rly. 311 mi. shpg. entered (1938) 2,725,573 tons	(1940) rev. 1,139 exp. 952	elem. schools 253; scholars 20,851

Africa, and was broadcasting in several languages. A number of Africans went to England to be trained as technicians in various branches of munitions and other war production work. Additional labour officers and experienced trade union organizers were sent from England to Sierra Leone, the Gold Coast and Nigeria. Army schools were opened in the Gold Coast and Nigeria for training clerks and artisans to serve with the military forces.

Nigeria.—After the fall of Malaya, the Nigerian tin mines became vital to the Allies and they were working to their maximum production. To ensure an adequate labour supply, conscription of Africans for the mines was permitted under certain safeguards. A school of forestry was opened at Ibadan with the object of providing an adequate supply of trained Africans for the forestry department. The first Nigerian woman to become a barrister was appointed as an acting magistrate of Ikeja district. Two Africans who had taken B.Sc. degrees in England were appointed as cadet education officers. The alake of Abeokuta said in his address on the 21st anniversary of his accession that the external signs of progress in his country were evident in the macadamized roads, electric power, stone buildings in towns and improved villages.

Gold Coast.—The lands belonging to the Asantahene, the African ruler of Ashanti, were formally restored to the Stool in a ceremony held at Kumasi. The African ruler of Ashanti was made zone organizer of the home guard with the honorary title of lieutenant-colonel. The first African to receive the king's commission as an officer in the British army was from the Gold Coast, and two Africans were appointed as cadet officers in the administrative service. A report on education based on a five-year's survey envisaged an extension of school facilities to cover all children of school age.

Sierra Leone.—Measures for air raid precautions and civil defense became increasingly important in view of the position of the colony on the coast. Special measures were taken to increase the cultivation of rice to assure the food supplies of the colony.

Gambia.—The British government again undertook to buy the complete output of ground-nuts, the most important export crop in the colony.

St. Helena.—The manufacture of hemp in the island continued, as the necessary supplies of fuel were obtained from South Africa. Food supplies were strictly rationed, but production of food crops increased locally. (M. RD.)

British West Indies: *see* WEST INDIES, BRITISH.

Broadcasting: *see* RADIO.

Bromine.

The series of increased outputs that prevailed after 1933 brought the production of bromine in the United States in 1941 to 34,159 short tons, from 14 plants. The production of bromine as a by-product of the recovery of magnesium in sea water was expected to contribute a further increase in 1942. (G. A. RO.)

Brooke, Sir Alan Francis

(1883–), British army officer, was born at Baguères de Bigorre, France, on July 23, the son of Sir Victor Brooke. After completing his studies at the royal military academy, Woolwich, he joined the royal field artillery in 1902. He was stationed in Ireland from 1902 to 1906, then India. At the outbreak of war in 1914 he went to France. Advancing rapidly, he was soon recognized as an authority on artillery and was a general staff officer of the royal artillery at the time of the armistice. After the war he joined the staff college, Camberley, and the imperial defense college, and from 1929 to 1932 he was commandant of the school of artillery. After duty at various other military posts he was appointed in 1939 commander in chief of the anti-aircraft command. When Germany invaded the Low Countries on May 10, 1940, Brooke was commander of the B.E.F. 2nd corps in France. His guarding of the British retreat from Flanders was an important factor in the successful evacuation at Dunkirk. Back in England early in June, he hastily reassembled British military manpower for the expected nazi invasion and prepared a formidable series of defense zones. For his work in Flanders he was knighted, and on July 19, 1940, he was appointed to succeed Sir Edmund Ironside as commander in chief of the home forces.

On Nov. 18, 1941 Brooke was appointed chief of the British imperial general staff to succeed Sir John Greer Dill. Sir Alan accompanied Churchill on his visit to Washington in June 1942 and on his trip to Moscow in Aug. 1942.

Brookings Institution.

Much of the research program of the Brookings institution in 1942 was devoted to problems connected with the war effort or with the maintenance of democracy in the light of critical world conditions. Among the book-length studies published were the following: *American Highway Policy,* by Charles L. Dearing, a presentation of policies needed in order to insure the proper distribution of the cost burden among the various classes of highway users; *Refugee Settlement in the Dominican Republic,* conducted by a staff of seven under the direction of Dana G. Munro, which surveyed the possibilities of refugee colonization offered by the republic, in the light of its economic and agricultural resources; *Democracy, Efficiency, Stability* and *Peace Plans and American Choices,* both by Arthur C. Millspaugh, the former dealing with the problems involved in reconciling the operation of the democratic process with efficient and stable government and the latter concerning international alternatives which the United States may have to face after the war.

A series of pamphlets on the subject of price-making in a democracy was published under the authorship of Edwin G. Nourse. Other pamphlet studies included the following: *German Manpower: The Crucial Factor,* by Fritz Sternberg; *Automobile Transportation in the War Effort,* by Charles L. Dearing; *Will Electric Power Be a Bottleneck?* by Louis Marlio; *French Price Control,* by Louis Franck.

The institution suspended the granting of fellowships for advanced study for the duration of the war. The facilities ordinarily utilized by holders of fellowships were made available to the National Institute of Public Affairs for the use of students being trained in government departments. (H. G. Mo.)

Brooklyn-Battery Tunnel: *see* TUNNELS.

Brown, Wade Hampton (1878–1942), U.S. pathologist, was born Oct. 18, in Sparta, Ga. He received a B.S. degree from the University of Nashville, 1899, and an M.D. from Johns Hopkins in 1907. After teaching pathology at the universities of Virginia, Wisconsin and North Carolina, he joined the Rockefeller institute in 1913 as an associate in pathology and bacteriology. He was made a member of the scientific staff for medical research in 1922. During his association with the institute, he specialized in the study of syphilitic infections and the relation of environment to disease. He made important contributions in the chemotherapy of spirochaete and trypanosome infections. He died at Rice Lake, Wis., Aug. 4.

Brunei: *see* BRITISH EMPIRE.

Bryn Mawr College. A resident college for women at Bryn Mawr, Pa. (eight mi. from Philadelphia). Katharine Elizabeth McBride, former dean of Radcliffe college, was inaugurated as the fourth president of Bryn Mawr college on Oct. 29, 1942. She succeeded Marion Edwards Park, who reached the age of retirement. The college, while maintaining its regular academic work, added special war courses in elementary Russian; postwar reconstruction, by the department of economics and politics; techniques of translating, interpreting and analyzing, by the department of French; photogrammetry and mapping, by the departments of geology and mathematics; and the theory and practice of democracy, an interdepartmental course. The courses in photogrammetry were practical and were based on laboratory and field work. For statistics of enrolment, faculty, endowment, library volumes, etc., *see* UNIVERSITIES AND COLLEGES. (K. E. M.)

Bubonic Plague: *see* PLAGUE, BUBONIC.

Buckner, Thomas Aylette (1865–1942), U.S. insurance executive, was born Jan. 18, in Bloomingdale, Ill. At the age of 15, he started as office boy in the New York Life Insurance company and worked up to president of the company, 1931–36. He was chairman of the board, 1936–41, later becoming chairman of the finance committee. He retired from active service at the end of 1941, remaining as director. Buckner died in New York city, Aug. 8.

Buckwheat. Production of buckwheat in the United States in 1942 was estimated Nov. 1 by the department of agriculture as 6,412,000 bu., compared with 6,392,000 bu. in 1941 and a 10-year (1930–39) average of 7,315,000 bu. Production in Canada was officially estimated at 5,110,000 bu. in 1942 and 4,788,000 bu. in 1941. Average yield in the United States was 17.7 bu. in 1942 and 17.9 bu. per ac. in 1941.

Table I.—*Estimated U.S. Production of Buckwheat in Leading States, 1942 and 1941*

State	1942 bu.	1941 bu.	State	1942 bu.	1941 bu.
New York . .	2,257,000	2,282,000	West Virginia .	216,000	254,000
Pennsylvania .	2,028,000	2,300,000	Ohio	140,000	192,000
Michigan . . .	438,000	208,000	Virginia. . . .	128,000	176,000
Minnesota . .	350,000	210,000	Maryland . .	114,000	84,000
Wisconsin . .	238,000	188,000	Maine	102,000	144,000

Table II.—*Canadian Production of Buckwheat in Leading Provinces, 1942 and 1941*

Province	1942 bu.	1941 bu.
Ontario	2,545,000	2,326,000
Quebec	1,785,000	1,773,000
New Brunswick.	552,000	483,000

(S. O. R.)

Budenny, Simeon Mikhailevich (1876–), Russian soldier, was born April 25 in Koziurin, in the Don basin, the son of a Cossack farmer. (See *Encyclopædia Britannica.*) He entered the Moscow military academy in 1928, and was graduated with honours in 1932. Budenny, who became a marshal of the soviet union in 1935, was made commander in chief of the Moscow district in 1937. He played an outstanding role in the final victory over the Finns in 1940, and in Aug. 1940, he was made first vice-commissar of defense. In July 1941, after the outbreak of war with Germany, he was appointed commander in chief of the Russian armies defending Kiev and the Ukraine. Following Stalin's "scorched earth" policy, Budenny's retreating armies blew up the huge Dnieper river dam in Aug. 1941. He was shifted from the southern front Oct. 23, 1941 and was charged with formation of new Russian armies. Budenny thereafter dropped out of public notice.

Budgets, National. President Roosevelt's second war budget covering the fiscal year 1944 was submitted to congress on Jan. 11, 1943. It was designated as a budget presenting the maximum program of the United States for waging war, in contrast to the previous year's budget, which the president had called an instrument for transforming a peace economy into a war economy. The figures for the fiscal year 1944 were truly staggering, so far outstripping previous budgets as to make comparisons almost meaningless. Total government expenditures for the fiscal year 1944, exclusive of government corporations and agencies, were estimated at more than $104,000,000,000, while revenues on the basis of tax legislation were expected to yield more than $35,000,000,000. The president recommended that congress consider additional taxes or forced savings to yield not less than $16,000,000,000. In the fiscal year 1940, immediately preceding the defense program, government expenditures totalled $8,998,000,000, while gross receipts were $5,924,000,000.

Completely dominating the expenditures side of the maximum war budget were the contemplated expenditures for war activities. Within the budget proper, war expenditures for fiscal year 1944 were estimated at $97,000,000,000, while an additional expenditure of $2,693,000,000 for war purposes by the various government corporations and agencies was anticipated.

The budget did not include detailed estimates of war expenditures because of the possible use of such information by the enemy. However, it did show the broad categories of war expenditures, revealing that munitions alone would amount to $66,000,000,000 in the fiscal year 1944, as compared with $43,000,000,000 in the fiscal year 1943. The other major items were: military and civilian pay and subsistence, $21,000,000,000; industrial construction, $2,000,000,000; other construction, $5,000,000,000; other expenditures, including agricultural lend-lease, $6,000,000,000. It

Table I.—*General Budget Summary of the United States*

Classification	Estimated 1944	Estimated 1943	Actual 1942
General and Special Accounts			
Receipts (based on present legislation)*:			
Direct taxes on individuals	$13,750,600,000	$ 8,338,500,000	$ 3,695,340,677.95
Direct taxes on corporations	14,915,000,000	10,070,000,000	5,021,578,715.65
Excise taxes	3,915,380,000	3,678,110,000	3,127,631,235.25
Employment taxes	1,982,200,000	1,472,300,000	1,194,046,888.42
Customs	204,300,000	252,600,000	388,948,426.88
Miscellaneous receipts	639,215,000	740,745,000	277,376,297.34
Adjustment to daily treasury statement basis	...	...	—37,007,417.65
Total receipts	35,406,695,000	24,552,255,000	13,667,914,823.84
Deduct:			
Net appropriation for federal old-age and survivors' insurance trust fund	1,525,450,000	1,076,180,000	868,853,202.82
Postwar credits for excess profits tax and Victory tax	800,000,000	500,000,000	...
Net receipts, general and special accounts	33,081,245,000	22,976,075,000	12,799,061,621.02
Expenditures:			
War activities	97,000,000,000	74,000,000,000	26,011,065,089.39
Interest on the public debt	3,000,000,000	1,850,000,000	1,260,085,336.46
Other activities:			
Legislative establishment	27,455,600	27,042,300	27,268,973.19
The judiciary	12,663,500	12,118,100	11,537,736.82
Executive office of the president	3,049,190	2,568,085	2,347,031.83
Civil departments and agencies	862,760,733	892,981,648	774,573,471.24
Post office deficiency	...	3,789,712	17,729,774.85
District of Columbia—United States share	6,000,000	6,000,000	6,000,000.00
General public works program	354,612,300	576,752,350	619,661,880.05
Veterans' pensions and benefits	879,360,000	613,756,000	551,885,121.65
Aids to agriculture	889,319,000	1,010,463,120	1,092,035,673 59
Aids to youth	...	16,000,000	250,512,659.12
Social security program	502,705,000	522,049,500	496,474,723.91
Work relief	5,436,000	344,764,200	937,272,410.80
Refunds	127,522,000	102,001,100	94,399,952.79
Retirement funds	440,041,600	322,041,800	243,735,262.00
Statutory public debt retirement	5,000,000	5,000,000	94,722,300.00
Supplemental items, regular	13,000,000	130,000,000	...
Total other activities (including statutory public debt retirement)	4,128,924,923	4,587,327,915	5,220,156,971.84
Total expenditures, general and special accounts	104,128,924,923	80,437,327,915	32,491,307,397.69
Excess of expenditures, general and special accounts	71,047,679,923	57,461,252,915	19,692,245,776.67
Transactions in Checking Accounts of Government Corporations and Agencies			
Expenditures (net):			
Reconstruction Finance corporation (including subsidiaries)†	3,812,140,000	3,801,531,292	2,457,769,984.33
Commodity Credit corporation	787,500,000	1,085,972,000	236,834,660.78
Other corporations and agencies	174,483,000	154,491,708	930,119,609.24
Net expenditures, transactions in checking accounts of corporations and agencies	4,774,123,000	5,041,995,000	3,624,724,254.35
Effect of Operations on the Public Debt			
Public debt at beginning of year	134,830,142,661	72,422,445,116	48,961,443,535.71
Net increase in public debt during year:			
General and special accounts, excess of expenditures over receipts	71,047,679,923	57,461,252,915	19,692,245,776.67
Government corporations and agencies, net expenditures	4,774,123,000	5,041,995,000	3,624,724,254.35
Trust accounts, excess of receipts over expenditures	—34,795,035	+11,449,630	—119,219,304.17
Statutory public debt retirements	—5,000,000	—5,000,000	—94,722,300.00
Change in treasury balance	—63,000,000	—102,000,000	+357,973,153.66
Net increase in public debt during year	75,719,007,888	62,407,697,545	23,461,001,580.51
Public debt at end of year	210,549,150,549	134,830,142,661	72,422,445,116.22

*Does not include proposal for $16,000,000,000 additional funds from new legislation for the fiscal year 1944.

†Includes net war expenditures of $2,254,949,959 for 1942 and estimates of $3,332,000,000 for 1943 and $2,693,000,000 for 1944.

Source: Budget statement sent to congress by President Roosevelt Jan. 11, 1943.

as interesting to note that, ith the nation reaching a full ar footing, total war construc- on expenditures would decline rom $14,000,000,000 in fiscal 943 to $7,000,000,000 in the ollowing year.

The president emphasized in is budget message that this ar program should not be con- idered fantastic, since it was ntirely feasible if the nation's nanpower and resources were ully harnessed. He particularly nentioned the necessity of chieving the maximum possi- le productive effort so that es- ential civilian needs could be net at the same time with an ll-out war effort. To accom- lish these objectives it would e necessary to utilize all avail- ble manpower, equipment and aw materials in the most ef- ective way. Although 10,000,- 00 people had already been dded to the employed and the rmed forces since the summer f 1940, about 6,000,000 addi- ional would be needed during he calendar year 1943 for the rmed services and war produc- ion. To meet this requirement, would be necessary not only o mobilize and train a reserve f women and young people, ut to accelerate the shift of abour from nonessential to es- ential industries, and to re- uce turnover and migration of abour.

With the nation's economic esources working effectively, President Roosevelt declared hat essential civilian needs ould be met in addition to the $100,000,000,000 war program. It was estimated that these needs vould average about $500 of goods and services per person dur- ng 1943–44. The level of consumption would represent a reduc- ion of almost 25% from the record of the calendar year 1941.

The other major item on the expenditures side of the budget o show a striking increase was interest on the public debt. For he fiscal year 1944 interest charges were estimated at $3,000,- 00,000 as compared with $1,260,000,000 in 1942 and $1,850,- 00,000 in 1943. This precipitous increase resulted from the rise n the volume of debt outstanding, interest rates on the govern- nent debt being held at relatively low levels.

For the total of all other expenditures of the federal govern- nent, the budget for 1944 showed a continuation of the decline hat had characterized the previous few years. Expenditures on hese nonwar activities were estimated at $4,128,924,000 for the iscal year 1944 as compared with $4,587,000,000 and $5,220,000,- 00 in the years 1943 and 1942, respectively. In recognition of ublic agitation for a reduction of nonwar expenditures, the resident explained this item in some detail in his budget message. He said, "Actually, the 'nonwar' classification now has little, if any, meaning. Most of these expenditures are related to the war effort and many are directly occasioned by it." While expressing his desire to co-operate with the congress in effecting further reductions in nonwar expenditure, he emphasized that both the congress and the nation should realize "that we are fast approaching the subsistence level of government—the minimum for sustaining orderly social and economic processes—and that further reductions will necessarily be of much smaller magnitude than those already achieved."

The major categories of nonwar expenditures which were decreased in the budget were those which had grown up in the course of the depression years. The general public works program was to be cut to approximately $350,000,000 from almost $577,000,000 in the fiscal year 1943. No allowance was made in the budget for aids to youth, and only $5,500,000 for work relief, whereas these two items had been $250,000,000 and $937,000,000, respectively, in the fiscal year 1942. Aids to agriculture were estimated at $889,000,000 as compared with slightly more than

$1,000,000,000 in the two preceding years. The food stamp plan was to be discontinued, and various other curtailments were to be made. However, the president considered that a large agricultural program was still essential to secure the food needed for victory. The only significant increase among the nonwar expenditures was veterans' pensions and benefits, which were expected to rise to $879,000,000 in fiscal year 1944 as compared with $551,885,000 in 1942.

Table II.—*Government Receipts and Expenditures—Great Britain*

(£'000)

Receipts	Actual Receipts 1941–42	Estimate for 1942–43
Inland Revenue:		
Income tax	769,657	913,000
Surtax	74,937	78,000
Estate duties	90,870	90,000
Stamps	14,133	15,000
National defense contribution	21,883	425,000
Excess profits tax	247,160	
Other inland revenue	902	1,000
	1,219,542	1,522,000
Customs and Excise:		
Customs	378,361	438,295
Excise	325,650	366,705
	704,011	805,000
Motor vehicle duties	38,422	34,000
Total tax receipts	1,961,975	2,361,000
Canadian government contribution	....	225,000
Post office net receipt	13,668	10,000
Wireless licences	....	4,300
Crown lands	950	800
Sundry loans	5,234	5,000
Miscellaneous	92,230	21,000
Total ordinary revenue	2,074,057	2,627,100

Expenditures	Exchequer Issues 1941–42	Estimate 1942–43
Consolidated fund services:		
Interest and management of national debt	257,207	325,000
Payments to N. Ireland	9,121	9,500
Other consolidated fund services	7,728	7,800
	274,056	342,300
Supply services (excluding P.O. and broadcasting):		
Defense token votes	4	4
Civil votes	400,584	425,656
Revenue departments	16,050	18,519
Votes of credit	4,085,000	4,500,000
	4,501,638	4,944,179
Total ordinary expenditures	4,775,694	5,286,479
Sinking funds	....	....
Total	4,775,694	5,286,479
Self-balancing Revenue and Expenditure		
Post office	93,746	102,523
Broadcasting	6,836	....
Total	100,582	102,523

*In addition, £8,700,000 was issued to the Post Office from votes of credit in 1940–41 and £4,970,000 was estimated to be so issue in 1941–42.

With new revenue acts having been passed in each of the years 1940, 1941 and 1942, it was estimated that federal revenues in the fiscal year 1944 would reach the record total of more than $35,000,000,000, as compared with $24,552,000,000 in 1943 and $13,668,000,000 in 1942. By 1944, direct taxes on individuals and corporations would constitute the overwhelming bulk of federal revenues, accounting for almost $29,000,000,000. In 1942 these classes of taxes had yielded less than $9,000,000,000; in 1940, $2,125,000,000.

On Oct. 20, 1942, the largest tax bill in the nation's history was enacted, providing additional revenue of nearly $7,000,000,000 for a full year of operation on the basis of the income level of 1942. Because the increase in government expenditures was much more rapid than the increase in revenues, the president recommended that additional funds be sought by new legislation. He suggested a goal of $16,000,000,000 for the fiscal year 1944, which would mean that approximately 50% of federal expenditures would then be met by current receipts. The new revenues were to be taxes, forced savings or both. Above all, the president emphasized the necessity for additional taxes in order to buttress the government's price stabilization program. While it was recognized that the major reliance in the prevention of inflation was being put upon direct price control and rationing, the need for a large enough tax program to make these direct controls workable, was stressed.

The federal deficit for the fiscal year 1944 was estimated at slightly above $71,000,000,000, as compared with $57,461,000,000 in the previous year and slightly less than $20,000,000,000 in fiscal 1942. If the president's revenue recommendations were followed, the deficit in 1944 might be held to $55,000,000,000. In any case, an increase in the public debt to approximately $200,000,000,000 by the end of the fiscal year 1944 was in prospect. (*See* also NATIONAL DEBTS; NATIONAL INCOME AND NATIONAL PRODUCT; TAXATION; UNITED STATES.)

Great Britain.—The budget messages for the fiscal years 1941–42 and 1942–43 were concerned not so much with the purely bookkeeping aspects of government receipts and expenditures as with the problem of how the vast sum required for war purposes could be spent by the government while yet avoiding an inflation of prices and the cost of living. It was made clear that this problem had to be met by eliminating the "inflationary gap"—the excess of probable private and government expenditures over the total value of goods and services available for purchase without a rise in prices. The chancellor of the exchequer, Sir Kingsley Wood, was more interested in offsetting this gap—which he estimated at about £500,000,000 in 1941–42—than in the budget deficit of £2,420,597,000. Since closing the ga necessitated a reduction in total expenditures and since th government expenditure was necessary for the war effort, it wa evident that private expenditure had to be reduced. It wa proposed that half the gap be met by increased taxation an half by increased saving on the part of the public.

There were two innovations in connection with the income ta proposals. The first was that the graduation of the surtaxes o the higher incomes was so steep as to constitute an effectiv ceiling on personal income after taxes at about £4,000. T retain this amount required a gross income in the neighbourhoo of £30,000, and there were only about 1,000 incomes of thi size or larger in Britain. The steepness of the graduation in th higher brackets might be judged from the fact that whereas hal of a gross income of £4,000 would go for taxes, a taxpayer wit a gross of £100,000 would be left with less than £6,000.

The second was the adoption of the "forced saving" plan firs proposed by John Maynard Keynes. It provided that the increased income taxes paid by individuals because of lowere exemptions and allowances be credited to the taxpayer and repaid to him after the war. Since there was a fairly low uppe limit to the rebate, this provision primarily benefited person at the lower end of the income scale. The plan had a twofol objective. It was designed to hold out the promise of greate economic well-being after the war for the heavy sacrifices required during the conflict. It also aimed to provide a pool o purchasing power after the war to cushion the readjustment t a peacetime economy and thus prevent severe depression.

Because the additional administrative controls of maximum prices and rationing were working fairly effectively in holding dow inflation, and because the budget for the previous year had com very close to exhausting the effectiveness of the fiscal instrument, the budget for the fiscal year 1942–43 contained onl minor changes. In all, it was expected that the scale of expenditures would be raised by £500,000,000 while a slightly large increase was expected in total revenue inclusive of proposed ta changes. The deficit would remain, therefore, approximately th same as in the previous year, a little in excess of £2,500,000,000

The changes in taxes that were recommended were all of relatively minor character. In order to iron out some inequities and to provide incentives in special cases, the total yield of the income tax was actually to be reduced. The increased taxes were confined to such things as alcoholic beverages, tobacco and amusements. On a wide range of luxury goods the rate of purchase tax was to be doubled so that the tax would equal two-thirds of the wholesale value.

The statistics of American lend-lease aid to Britain were not included in the budget proper but, in his budget message, Sir Kingsley Wood expressed the gratitude of Britain to the United States for the immense contribution which was being made to the British war effort by this assistance. (M. Gt.)

Building Industry. The year 1942 saw an almost complete cessation of construction in the U.S. except for military or war production purposes. All residential construction was restricted to war production areas. Therefore the construction figures for 1942 reflected an over-all drop of 34% from 1941 in new family dwelling units started. They also reflected the fact that only low cost housing was built. The bureau of labour statistics reported that "dwelling units with permit valuations or estimated construction costs of $3,000 to $3,999 were most common, accounting for more than a quarter of all privately financed units. In New England and the east north central states the most frequently reported cost was from $4,000 to $4,999. In both the south Atlantic and east south central states the largest group of units was in the cost class of $2,000 to $2,999."

Because metals, lumber and many plastics were needed to manufacture materials of war, the War Production board in 1942 put a tight clamp upon the amount of critical material allotted to construction. Sudden freezing orders, occasioned by military demands or by unforeseen bottlenecks of supply, caused great hardship to the construction industry. Many housing projects lay idle because of inability to get sewers, or electric wiring, or water mains. In May, WPB issued an order freezing the sale and delivery of softwood lumber for 60 days. (This was later modified.) In September the lumber supply grew very acute. The lumber industry was not able to keep pace with the heavy war demand because it was losing its skilled and unskilled labour to the armed forces and to war industries paying higher wages.

The National Housing agency and the War Production board (*qq.v.*) were forced to save materials (1) by building only for workers in areas where there were no available dwelling units; (2) by curtailing the number of family dwellings built; (3) by curtailing the amount of critical material used in family dwelling units; (4) by programing a large quantity of temporary family dwelling units using less critical material, and a large quantity of dormitory units and apartments using less critical material per person than would be used in family dwelling units; (5) by urging the conversion of large single family houses, lofts, office buildings, etc., to multifamily use; (6) by urging families in war production areas to rent all spare rooms to war workers; (7) by encouraging builders to use substitute materials.

PORTABLE SHELTERS for migratory labourers being assembled at Swedesboro, N.J., in May 1942. Such shelters were also considered for possible future use in bombed areas

The demountable house excited the imagination of many in 1942 and the denunciation of others. It was used in many areas to provide emergency housing for war workers. In 1942 it furnished a psychological guarantee to the community that it would not remain there if there was no future need for it.

New Construction Activity in the United States by Function and Ownership, 1940-1942

(Millions of dollars)

Item	1940	1941	1942
New construction, total	$6,951	$11,145	$13,558
Private, total	4,196	5,261	2,964
Residential building (nonfarm)	2,323	2,881	1,461
Nonresidential building	982	1,306	522
Industrial	423	678	314
All other	559	628	208
Farm construction	245	300	245
Dwelling	145	176	132
Service	100	124	113
Public utility	646	774	736
Public, total	2,755	5,884	10,594
Residential	205	479	600
Military and naval	510	2,059	5,013
Nonresidential building	497	1,671	3,385
Industrial	144	1,400	3,696
Other	353	271	139
Highway	946	1,013	671
Sewage disposal and water supply	143	115	107
All other federal	353	425	310
Miscellaneous public service enterprises	101	122	58

Bibliography.—*Survey of Current Business,* Jan. 1943; publications of the National Housing Agency; publications of the U.S. Department of Labor; *The Architectural Forum,* Jan. 1943; publications of the National Committee on the Housing Emergency, the National Association of Housing Officials and the Bureau of Labor Statistics U.S. Department of Labor.

(D. Rn.)

Great Britain.—During 1942 the building industry passed the peak of production in June, when a special urgency program was initiated by the government, mainly in the provinces. The "flying squads" of mobile builders organized by the ministry of works were very successful in dealing with air-raid damage and in the preparation of site construction camps. All repairs, alterations, maintenance and private work were drastically reduced; the total amount of new work and the total amount of labour was, at the close of the year, not more than 60% of the normal.

A levy of 3*s.* per 1,000 was imposed on bricks, the revenue to be applied to the care and maintenance of closed brickyards to ensure that such works would be ready to resume production immediately hostilities ceased. This revenue during 1943 was estimated at £300,000. Bonuses were being paid to building and civil engineering operatives whose output was higher than "basic" for all main building and civil engineering operations on over 2,000 government sites which were scheduled as "essential works."

Interest was increasingly focussed upon postwar planning. The reports of the Scott, Uthwatt and Royal Institute of British Architects committees were outstanding. The Scott committee, before which 10 government departments and 42 other bodies and organizations gave evidence, was concerned with land utilization in rural areas. The Uthwatt report concerned an objective analysis of the payment of compensation and the recovery of betterment in respect of public control of use of land. The R.I.B.A. statement covered a wide field and embraced planning and amenities, housing, building, legislation, architecture, the building industry and building technique.

(*See* also Business Review: *Industrial Groups;* Housing; United States.) (N. Ke.)

Bulgaria. A kingdom in the Balkan peninsula. Area (end of 1940) *c.* 42,796 sq.mi.; pop. (est. 1942) 8,700,000. Capital: Sofia. Chief cities: Sofia (327,000), Philippopolis or Plovdiv (99,883), Varna (69,944), Ruschuk or Russé (49,447), Burgas (36,230), Plevna (31,520). Religion: mainly Greek Orthodox; about 1,000,000 Moslems; 50,000 Jews. King: Boris III; premier (1942): Professor Bogdan Philoff.

History.—The year 1941 had witnessed the open and full-hearted alignment of Bulgaria on the side of the axis powers. As a result of the disintegration of Yugoslavia and Greece under German pressure, Bulgaria had added to its territory Greek Macedonia, with about 25,600 sq.km. and 1,600,000 inhabitants, and western Thrace, with 8,712 sq.km. and about 350,000 inhabitants. From Yugoslavia, Bulgaria got southern Serbia, with about 26,000 sq.km. and a population of 1,500,000. Three new provinces were created, those of Bitolj, Skoplje and Xanthi, so that Bulgaria counted at the end of 1942 ten provinces. During the whole year Bulgaria continued its fascist regime under the king's personal dictatorship. Though all the worst features of the fascist regimes were adopted, Bulgaria did not participate in the war against the soviet union, because the sympathies of the Bulgarians, who are Slavs, had been traditionally on the side of Russia. The Bulgarian government did, however, declare war on the United States of America, and its fascist policy went so far as to suppress all Rotary clubs and Y.M.C.A. organizations and to liquidate their properties. Though the number of Jews in Bulgaria amounts to much less than 1% of the total population, the anti-Semitic legislation closely imitated the national socialist laws and practice and distinguished itself by a thoroughgoing barbaric treatment of the small Jewish minority. Similarly there were bitter complaints from the Greeks and Serbs in the newly-occupied countries about the harshness and cruelty of the Bulgarians.

At the end of March King Boris visited Chancellor Hitler, who demanded an active support of Bulgaria in the Russian campaign. As a result of this visit, the Bulgarian premier, Bogdan Philoff, declared that "the destruction of Bolshevism" was essential, but Bulgaria still refused to participate actively in the war against Russia. A majority of the parliament refused to approve the far-reaching demands of Hitler. As a result the cabinet resigned on April 11. Several ministers, especially the foreign minister, Ivan Popoff, and the minister of war, General Theodossy Daskaloff, did not join the new cabinet formed by Premier Philoff. The premier became foreign minister, and General Mishoff, commander of the army corps of Sofia, became minister of war. The powerful ministry of the interior remained in the hands of Peter Gabrovsky. It was decided to celebrate April 12 of each year—the date of the union of Macedonia and Thrace with Bulgaria—as the day of the unification of Bulgaria.

In his declaration for the new cabinet, Premier Philoff promised the maintenance of a strong and well-equipped army, the liquidation of all remnants of democratic and liberal ideologies and their representatives, strict enforcement of the anti-Semitic legislation, and stern measures against threats of communists within the country. Thus the new cabinet mirrored the firm determination of the king to maintain closest collaboration with the axis, against a definite opposition within the country. On April 12, the new national holiday, German, Italian and Japanese flags and immense pictures of Chancellor Hitler, Premier Mussolini and the Japanese emperor decorated Sofia.

The strength of the unrest in the country was shown when several leading Bulgarians, among them General Vladimir Zaimoff, former Bulgarian minister of the interior, were executed as "tools of Bolshevism." Concentration camps were reported filled to capacity with political prisoners. The unrest grew with the loss of German prestige following the successful resistance of the Russians. In Sept. 1942 the American college in Sofia was closed and the Americans connected with the college were expelled. The food situation also worsened. On Oct. 7 an Italo-Bulgarian treaty was signed regarding the construction of a motor highway from Durazzo in Albania to Sofia, but the Italians did not succeed in receiving an increased export of foodstuffs from Bulgaria.

Education.—Though elementary education is obligatory and free for children between the ages of 7 and 14, the census of 1934 showed 20.4% of the males and 42.8% of the females illiterate. In 1939 there were in Bulgaria 252 kindergartens, 4,743 elementary schools, 1,932 junior high schools and 112 senior high schools with 969,599 pupils. There is one university in Sofia, with an enrolment of 4,377 men and 1,653 women students.

Defense.—Compulsory military service was introduced in May 1940. All men from 17 to 65 were made liable to service. Bulgaria then tried to build up an efficient army, though an air force and modern equipment were lacking.

Finance.—The revenue for 1941 was estimated at 10,160,000,000 and the expenditure at 10,096,000,000 leva. On June 30, 1940, the total foreign debt amounted to 12,483,000,000 leva, the internal debt to 11,767,000,000 leva, of which 9,237,000,000 leva was not consolidated. The monetary unit is the lev, stabilized at 92 leva to one gram of fine gold (equal to .95 cent U.S. at the end of 1941). The note circulation on June 30, 1941, was 8,861,000,000 leva.

Trade and Communication.—Imports amounted in 1940 to 7,028,000,000 leva. Most of the imports came from Germany, with Italy second. The exports for 1940 amounted to 7,019,000,000 leva, of which by far the greatest part went to Germany. In 1939, machinery and war material ranked first among the imports to Bulgaria, followed by metal goods, textiles, vehicles and mineral oils. Among Bulgarian exports, tobacco ranked first, followed by fruit, eggs, wheat and hides. Though Bulgaria has two important ports at the Black sea and some on the Danube, its mercantile marine consisted only of 14 ships of 17,476 tons in June 1939. At the same time it had 2,211 mi. of railroad, all belonging to the state, 806 post offices, 798 telegraph offices and 772 telephone exchanges.

Agriculture and Mineral Production.—More than 80% of the population was engaged in agriculture in 1942. The main crops are wheat, maize, barley, rye and oats. Fruit-growing is highly developed, also the growing of tobacco, and silkworm cocoons. Though the country is rich in coal, industrial development has been slow. Of other minerals there is only some aluminum and salt. (H. Ko.)

Bureau of Standards, National: *see* STANDARDS, NATIONAL BUREAU OF.

Burma. A British province lying on the eastern side of the Bay of Bengal, between India and Thailand. Area 261,610 sq.mi.; pop. (1941) 16,823,798. Chief cities: Rangoon (cap., 498,369); Mandalay (est. 150,000), Moulmein (70,000). Religion: Buddhist (85%); governor (1942): the Rt. Hon. Sir Reginald Dorman-Smith; prime minister: the Hon. Sir Paw Tun; languages: Burmese and English.

History.—The Japanese military campaign in Burma was short and sharp. Decisive battles of the Salween and the Sittang rivers were fought quite early in 1942. The vital port of Rangoon was repeatedly bombed, causing dislocation of essential services, and became untenable in March. The most complete and effective act of voluntary destruction of the oilfields and installations was carried out at Yenangyaung and Syriam. By May the Japanese were in occupation of practically the whole country.

In June the governor, Sir Reginald Dorman-Smith, together

HOUSES OF MAYMYO, headquarters of U.S. Gen. Joseph Stilwell in Burma, aflame after a Japanese raid early in April 1942. By May 7, 1942, all of Burma was in Japanese hands

S. "FLYING TIGERS" (American Volunteer Group) refuelling one of their Tomahawk anes painted to resemble a shark. The famed group under the command of Gen. Claire L. ennault disbanded July 4, 1942, to become a part of the regular U.S. army air forces

TAFF MEMBERS of U.S. Gen. Joseph Stilwell resting during their retreat through the ngles of Burma to India in May 1942

SMALL INDIAN BOY trotting to keep up with his father, fleeing from Burma in the spring of 1942. The million Indians in Burma feared not only the Japanese but the Burmese, who had despised them for years

with the prime minister, Sir Paw Tun, the finance minister and judges of the Burma high court, established their headquarters in India.

On Aug. 1 the commander-in-chief of the Japanese troops in Burma introduced a system of joint Japanese and Burmese administration under Dr. Ba Maw. The key portfolios of finance and defense were held by the Japanese, and policy was the exclusive concern of the Japanese military administration. Supreme power was vested in the Japanese commander-in-chief. The Burma legislature ceased to function, and freedom of the press was not permitted.

Commercially, Burma was badly hit by the loss of her previous export markets, for Japan lacked the shipping to export her surplus rice, while the breakdown of the national transport systems caused serious maldistribution of supplies within the overrun territories. The Japanese set up a committee to organize the reconstruction of the roads, railways and bridges and the restoration of industries. In Rangoon they appointed a Burmese mayor and a Burmese secretary-general. The new government organized a mission to tour the country in order to enlighten the people on the significance of the Japanese "co-prosperity sphere." Schools for the study of the Japanese language were opened in Rangoon. A government resolution urged the use of Burmese as the official language in the courts. Currency adjustments were made; the decimal system was introduced, the cent becoming the new monetary unit with 100 cents to the rupee.

In July Sir Reginald Dorman-Smith, while on a visit to London for consultations, said: "We are going back to Burma. We have got to help the Burmese to rebuild their country, both physically and economically." At the same time the British government, in a statement of intentions, declared that "property and goods destroyed or damaged in Burma should be replaced or repaired as resources permit."

Renewed air and patrol activity against the Japanese in Burma at the end of the monsoon season emphasized the strategic importance of the reconquest of the country.

Education.—In 1940, total number of institutions 27,015, scholars 851,922; primary schools 5,679, scholars 384,060; middle 1,018, scholars 139,190; high 399, scholars 94,353; special 1,172, scholars 19,190; unrecognized institutions 18,745, scholars 212,663; university (Rangoon) 2,365 students; arts college (Mandalay) 101.

Finance.—Revenue (est. 1941–42) Rs.17 crores 13 lakhs; expenditure (est. 1941–42) 18 crores 28 lakhs; public debt (March 31, 1940) Rs.51 crores 22 lakhs; exchange rate: rupee (Rs.1) = 1*s.*6*d.* = approx. 30.3 cents in 1942; one crore = 10,000,000 rupees; one lakh = 100,000 rupees.

Trade and Communications.—Overseas trade in merchandise (April–March 1940–41): imports Rs.29 crores 55 lakhs; exports, including re-exports, Rs. 55 crores 38 lakhs. Communications 1940: roads suitable for motor traffic, all weather, 6,811 mi., seasonal 5,661 mi.; railways, open to traffic, 2,060 mi.; inland waterways (approx.) 1,300 mi.

Agriculture.—Production (1940–41): rice 6,000,000 tons; ground-nuts 160,000 tons; sesamum seed 72,000 tons; cotton 13,000 tons of lint; tobacco 106,869,600 pounds.

Mineral Production.—In 1939, petroleum 275,673,364 gal.; tin concentrates 5,441 tons; tungsten concentrates 4,342 tons; tin tungsten concentrates 5,593 tons; refined lead 76,000 tons; antimonial lead 1,180 tons; zinc concentrates 59,347 tons; copper matte 7,935 tons; nickel speiss 2,896 tons; silver 6,175,000 troy oz.; gold 1,206 troy oz. (Ton = 2,240 lb.). (*See* also JAPAN; WORLD WAR II.) (H. L.)

Burma Road: *see* ROADS AND HIGHWAYS.

Buses: *see* AUTOMOBILE INDUSTRY IN THE WAR; ELECTR TRANSPORTATION; MOTOR TRANSPORTATION.

Business Review. The most distinctive characteristic o 1942 for U.S. business consisted in th increasing pressure of total war on the American economy. Whi industry was making strenuous efforts to maximize output, an many plants were operating on a 168-hr. week, shortages of man power and materials, frozen inventories, frequent changes in plan and other obstacles to production appeared as glaring defects i the productive processes of wartime democracy.

Specific production data were withheld not only from the pub lic but from interdependent industries. Not available were dat on copper deliveries; on zinc, lead, tin and silver output; bitum nous coal exports; auto tire and rubber production; raw silk sup plies; imports of wool, rayon, crude oil, cocoa and coffee; metha nol, ethyl alcohol and cellulose output; gasoline consumption; pi iron and steel ingot production; shipbuilding employment an pay rolls; and other technical key products essential to war pro duction. The government ceased the publication of the index o physical output for the foregoing industries in Feb. 1942, but di release such data pertaining to the most significant industria trends as did not afford "aid and comfort to the enemy," such a those published by the Federal Reserve board and included i Table I. (*See* also WAR PRODUCTION, U.S.)

Table I.—*Indexes of U.S. Physical Production, Carloadings, Construction and Department Store Sales for 1942*

Month	(1935–1939 = 100)					(1923–1925 = 100)			
	Industrial Production Physical Volume				Freight car loadings	Construction contracts awarded (value)			Department store sales (value)
	Total	Manufactures		Minerals		Total	Residential	All other	
		Durable	Non-durable						
Jan.	172	224	143	131	140	118	82	147	138
Feb.	172	227	142	129	139	128	100	151	126
March	172	231	139	127	136	125	95	149	124
April	174	234	139	130	143	128	82	165	117
May	175	239	138	129	143	158	76	226	108
June	176	244	136	133	141	193	76	288	104
July	179	249	138	132	142	206	74	313	121
Aug.	183	257	140	133	143	182	65	278	130
Sept.	185	263	140	131	136	179	70	268	123
Oct.	188	268	143*	127*	133	185	81	269	128
Nov.	192	273	145*	129*	134*	180	75*	259	138*
Dec.	194	281	145*	128	145	..	83*	..	..

*Estimated. Federal Reserve *Bulletin.*

Non-Durable Goods Industries.—During 1942, allocations fo non-durable goods were extended. Only for the manufacture foods industries did civilian production of 1942 exceed that o 1941; in all other leading industries the output for civilian use of non-durable goods dropped. Silk output for civilian use reache zero in 1942. For all non-durable goods industries, orders ex ceeded expansion of output, and the most striking gains appeare in wool and woollens, chemicals, rubber and coke production The Federal Reserve board and the U.S. department of commerc issued figures contained in Table II showing relative productio for civilian and war uses in 1942 in selected non-durable good industries.

Industrial Problems.—Although very significant gains in wa production had occurred during the defense and preparednes campaign of industry in 1941, the strenuous efforts made by busi ness to maximize production in 1942 created unprecedented prob lems for business management, labour and government. Chie among these problems were the allocation and rationing of scarc raw materials for production, rationing of scarce finished product for consumption, maximum utilization of available manpower concentration of production for war and civilian use, scrap ac cumulation, and renegotiation of war contracts. For a discussio of the allocation problem, *see* PRIORITIES AND ALLOCATIONS.

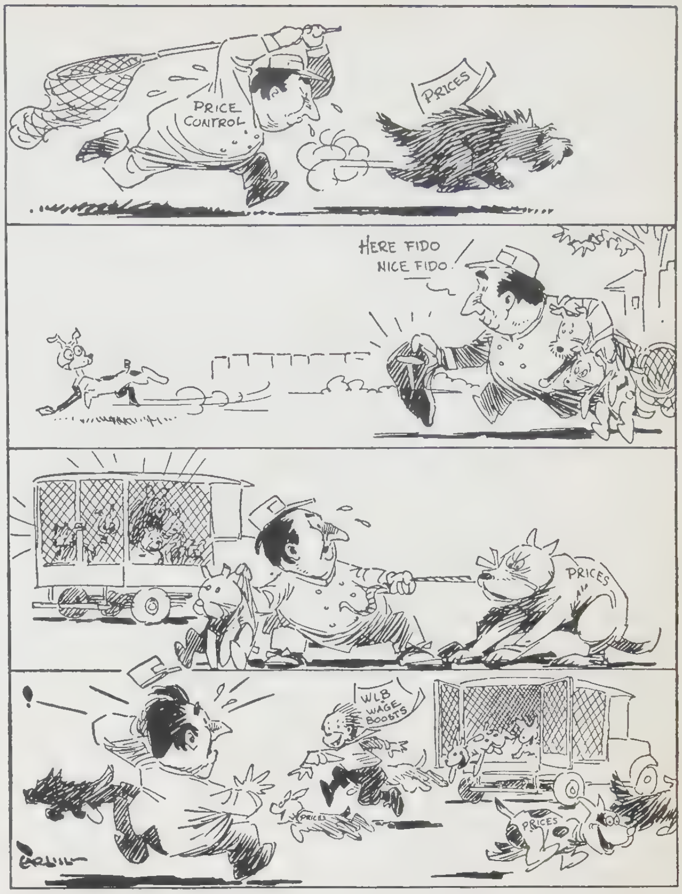
Steel Scrap.—The unused capacity of U.S. steel mills reached 67,000 tons in July 1942, primarily because of insufficient suplies of scrap steel and iron. Nation-wide scrap drives were instiuted when it became known that this lack meant a loss of 4,404,-00 tons per year of steel ingot production—an amount about qual to Japanese steel ingot capacity for seven months. The reponsibility for the shortage of scrap steel was shared by the War roduction board, which handled allocations; the Office of Price dministration, which had fixed price ceilings too low upon the dvice of scrap brokers; and the Bureau of Industrial Conservaon and the Metals Reserve company, which was in charge of crap collection. Rumours of racketeering and speculative hoardng by scrap brokers undermined public support.

From July 1941 to July 1942, the scrap steel stock decreased nore than 40%, and the steel industry launched a publicity camaign at a cost of $1,500,000 to stimulate the salvage of scrap and n plate. Results were fairly gratifying but inadequate for the vinter need of 7,000,000 tons. The demand for scrap was made till more acute because 628,350 tons of new steelmaking capacity ad been added by mid-year, and had brought U.S. capacity 50% bove that of the axis countries, which would be meaningless for var purposes unless in actual operation. The steel industry's goal vas 90,000,000 tons, of which half would be supplied from scrap n hand. The year ended with renewed attempts at local scrap rives to increase this supply of vital war material. (*See* also IRON ND STEEL; SALVAGE DRIVES, U.S.)

Rubber.—During 1942, the U.S. crude rubber stock tumbled rom 600,000 to 450,000 tons, and the normal civilian demand ropped to almost zero, while governmental demand became alnost insatiable. Relief for the crucial rubber situation was seured, first, by freezing the sale of new cars on Jan. 1, 1942, thus bruptly curtailing civilian demand; second, by local drives for ubber scrap, started June 15; third, by nation-wide gas rationing, he most effective method of curtailing civilian demand; fourth, y synthetic production, which rose to an estimated 60,000 tons. atin-American sources were expected to add another 100,000 ons of crude rubber, and congress appropriated $75,000,000 for he cultivation of guayule and Russian dandelions as substitutes or raw rubber supplies. The leading rubber companies made huge nvestments in rubber plantations. Farm leaders encouraged the roduction of synthetic rubber from recurrent crops, but the Baruch committee favoured the more economical and expeditious ynthetic production from crude oil, coal and other minerals. *See* also RUBBER AND RUBBER MANUFACTURE.)

Table II.—*U.S. Civilian and War Production of Non-durable Goods Industries for 1941 and 1942 Compared (1935–39 = 100)*

Industry	Average production	1941		1942		
		Civilian portion	War portion	Estimated production	Civilian portion	War portion
Textiles and their products	151	128	23	155	85	70
Cotton consumption	158	134	24	170	119	51
Rayon deliveries	166	158	8	168	146	22
Silk	51	46	5	15	0	15
Woollens and worsteds	162	122	40	178	45	133
Leather and products	121	109	12	116	87	29
Shoe production	123	117	6	112	103	9
Mfg. food products	128	122	6	141	127	14
Mfg. dairy products	132	125	7	147	132	15
Meat packing	129	123	6	147	125	22
Other mfg. foods	129	123	6	143	129	14
Alcoholic beverages	116	116	0	100	100	0
Tobacco products	120	116	4	127	112	15
Paper and products	144	130	14	134	107	27
Paper and pulp	145	130	15	134	107	27
Printing and publishing	124	124	0	112	106	6
Newsprint consumption	107	107	0	100	95	5
Printing paper products	140	140	0	124	118	6
Petroleum and coal products	128	115	13	122	73	49
Gasoline production	125	113	12	109	71	38
Coke production	151	98	53	164	16	148
Chemicals	139	118	21	170	85	85
Rubber products	148	133	15	81	28	52
Rubber consumption	151	136	15	87	31	56



"LOVE'S LABOR LOST." A cartoon of 1942 by Carlisle of the *Des Moines Register*, pointing out the futility of attempting to control prices while raising wages

Sugar and Gasoline.—Rationing of sugar and gasoline in 1942 was based not on a shortage of supplies, but on difficulties of distribution. Sugar stocks in refineries, which in July 1941 had exceeded 600,000 tons, dropped to 200,000 tons at the beginning of 1942, approximately the level of 1938. Following the order of the War Production board to divert 500,000 tons to alcohol production, the beet-sugar growers planted 24% greater acreage than in 1941, while Cuban and Puerto Rican supplies increased despite shipping losses. With the increased farm planting of cane, sorghum and kalo crops, the alcohol demand for sugar decreased and stocks of refined sugar increased. Subsequently the Office of Price Administration permitted the ration exemption of sugar needed for the first processing of fruits. On the whole, sugar coupon rationing worked smoothly throughout the U.S. (*See* also SUGAR.)

The U.S. supply of finished gasoline stocks reached an all-time peak in the first quarter of 1942. Produced as a joint product with high-octane gasoline for aviation use and with decreased demand for gas by car owners, the gas reserves increased; but transportation difficulties caused an acute shortage in the fourth quarter along the east coast. Severely felt were the losses in transportation of transoceanic supplies, needed by the armed forces. Railroad tank cars did not exist in sufficient numbers to relieve the east coast shortage, so that gas sales were prohibited for four days in December primarily to accumulate adequate supplies for the north African forces. During 1942 pipe-line construction to the eastern states was begun and barge transportation on the Ohio vastly increased. (*See* also PETROLEUM.)

Fuel Oil.—At no point in the whole U.S. rationing scheme did greater public remonstrance arise than in the rationing of fuel oil. On Oct. 1 the War Production board ordered fuel rationing for 17 eastern states and 13 midwestern states, reducing annual consumption on the average about 25%. Conversion of fuel-oil burners was expected to save 15,000,000 gal. annually. Each coupon was assigned an original value of ten gal., but since the mean average temperature between Oct. 1 and Dec. 31 was approximately 38% lower than the 20-year average, an increase of 10% in the value of each coupon was authorized. So great were the visible supplies, however, that considerable opposition arose in those states having an exportable surplus of oil and the entire administration of coupon rationing of consumers' goods met with mounting public criticism.

Coffee.—Coffee rationing started Nov. 28 with a 38% reduction of the previous five-year average consumption period. Again, rationing was not caused by shortage of total supply but by difficulties in distribution and by excessive consumer hoarding. Dehydration of coffee before import was increased and promised to afford substantial additions to supplies by economizing transport space. Those who entered the armed forces and those who left the U.S. for more than 30 days were ordered to turn in their war ration books to local rationing boards to prevent their misuse. (*See* also COFFEE; RATIONING.)

Manpower Problem.—The problem of critical shortages applied to manpower as well as to raw materials and consumers' goods. Perceiving industrial mobilization for mechanized warfare as equal in importance to military mobilization, the president, on Jan. 12, 1942, created a 12-man War Labor board (*q.v.*) to deal with labour problems growing out of war production. The president stated that "it is not that we do not have enough people in this country to do the job, but the problem is to have the right numbers of the right people in the right places at the right time." In April the War Manpower commission was established "to assure the most effective mobilization and maximum utilization of the nation's manpower in the prosecution of the war."

Among the chief causes of the lack of manpower were voluntary enlistment, drafting of men for military service, labour pirating, absenteeism, 40-hr. week, labour migration, inadaptability of specialized skills, excessive military training periods, strikes and uncertainty of military manpower needs. (*See* also WAR MANPOWER COMMISSION.)

Concentration Problem.—Concentration was applied to the production of bicycles, stoves, typewriters and farm equipment for experimental purposes, and the War Production board planned later in 1942 to extend this principle by "two or three" added orders. The output of farm machinery and equipment was concentrated largely in the smaller factories and with intermediate producers under a production quota arrangement, so that larger producers were relieved for war orders. Production cuts of 50% accompanied this concentration order. Quotas were allotted on the basis of three classifications according to size, and were held to 20% of the 1940 production in the case of new machinery, but expanded to 130% for repairs and replacement.

The principle of concentration was first applied to the stove industry. In this industry, if all plants had been uniformly curtailed, none would have received more than 25% of the steel formerly used, but by concentration in smaller plants the latter were allowed from 50% to 75% of the steel they formerly processed. Final decisions concerning the suitability of the industry for concentration were left to the War Production board upon consultation with both labour and management, while industrial concentration committees decided which plants would discontinue production. No solution for the fate of closed plants was forthcoming in 1942; the War Production board contended this problem was outside its jurisdiction.

Standardization and simplification accompanied concentration. The Office of Price Administration (*q.v.*) made many sweeping changes in the number of products that industries could turn out.

"WHAT PRICE CEILING?" Russell's appraisal in the *Los Angeles Times* o U.S. labour's demands for higher wages before congress passed the anti-inflatio bill Oct. 2, 1942

Two typical examples of this policy were the reduction from 27,000 to 3,000 items in builders' hardware and from 450 to 2 items in the enamelware industry.

Contract Renegotiation Problem.—When the Sixth Supplemental National Defense Appropriation bill was before the hous in March 1942, the Case amendment was passed limiting wa profits to 6% after taxes. Because industrial conversions ha taken place so abruptly, many manufacturers had no preceden upon which to rely in determining accurately the unit costs o production for contracts in which cost-plus was not used. Estimates, intended to be conservative, proved after production ha once begun to have been excessively high. In order to take th profits out of war, and, from the viewpoint of the manufacturers in order not to penalize the governmental war effort, many firm willingly entered into the renegotiation of contracts upon th basis of unit costs determined from experience.

Each contractor in renegotiation proceedings considered hi most recent contract as forcing upon him the tax liability imposed by an extremely progressive excess-profits tax. So the wa department considered almost every contract as coming withi the excess-profits tax brackets, and hence was compelled to allow about 30% net profit before taxes in order to obtain a 6% ne profit after taxes. Renegotiation introduced into government contracts an element of uncertainty, since uniform standards for th determination of excessive profits were lacking, revisions too place at the expense of the contractor, uncertainty dominated hi corporate financial position, and producers' concessions were influenced by varying degrees of patriotism. Although designe originally as a temporary expedient to supplement the normal work of the budget bureau in careful contract supervisions which had become impossible as a wartime procedure, renegotiation proved to be exceptionally advantageous from the public point of view. The Office of War Information announced in Dec. 1942 that about $523,000,000 had been saved on navy contracts alone, with about $122,000,000 secured by refunds and $401,000,000 by price reductions.

Industrial Groups.—*Railroad Transportation.*—Transportation shortage was a serious bottleneck for U.S. production in 1942. Submarine warfare was predicated on the assumption that the railroads could not supply the industries of the east with fuel oil and coal essential to war plants, but the railroads won this battle. The most efficient use in railroad history was made of rolling stock, trackage and terminal facilities. Boxcars moved farther and faster and carried heavier loads. Except for tank cars, one-way traffic was reduced to a minimum. Boxcar storage was almost eliminated, high-speed freight abolished, passenger schedules slowed down, cross hauls reduced, unused lines scrapped and their rails moved to places of acute need.

The index of freight car loadings (Table I) shows that the amount of freight carried had doubled since the war began, but fails to show the increase in average load and length of haul. Although freight car loadings were up 51% above the 1935–39 average, ton miles had increased 221%. Ton mileage for all Class I roads amounted to about 630,000,000,000 tons for 1942, compared to the peak of 447,000,000,000 tons in 1929. Cost per ton mile dropped to six mills, the lowest in railroad history, primarily because the largest type of freight shipments, like coal and ores, were hauled great distances. (*See* also RAILROADS.)

Automobile Transportation.—On Jan. 1 the Office of Price Administration froze the retail sale of automobiles; on March 20 gas sales were reduced 20% in 17 eastern states, Oregon and Washington; on May 12 all motorists in those states registered for gas coupons allowing them at first 4, then 3.8 and later 3 gal. per coupon. The Baruch committee reported on Sept. 10 in favour of nation-wide gas rationing, a national speed limit of 35 m.p.h., a national scrap drive for rubber, and the appointment of a rubber czar. On Dec. 1 gas rationing became nation-wide. (*See* also AUTOMOBILE INDUSTRY IN THE WAR.)

Bus Transportation.—Because of the unsatisfactory results of special rationing the Office of Defense Transportation (*q.v.*) on Nov. 15, 1942 required all commercial carriers to be covered by a "Certificate of Necessity" before they could obtain gas, tires, equipment and repairs. These certificates limited mileage, minimum loads, and required periodic inspection. Intercity traffic dropped about 40%, but traffic within cities rose abruptly after compulsory gas rationing. (*See* also MOTOR TRANSPORTATION.)

Building.—The year witnessed a rapid drop in private and a still more rapid increase in public construction. The department of commerce estimated that $13,500,000,000 were spent for new buildings in 1942 compared with the peak of $11,000,000,000 in 1941. In Nov. 1942 public projects for military establishments accounted for 90% of the month's building activities. For the year as a whole military and naval building more than doubled that of the preparedness year of 1941, factory construction rose 80% while new private building dropped 66% from the first to third quarters and was estimated to be 90% less in the fourth quarter. (*See* also BUILDING INDUSTRY; HOUSING.)

Company Earnings.—The quarterly earnings and dividends of the 629 industrial companies reporting to the Federal Reserve board were distinctly less favourable in 1942 than in 1941, despite exceptionally large output and favourable market prices. For the first nine months of 1942 these corporations reported a net profit of $1,252,000,000 as compared with $1,620,000,000 for the corresponding period of 1941. Operating revenues for the first three-quarters for Class I railroads rose from $3,892,000,000 in 1941 to $5,327,000,000 in 1942, an increase of about 37%. Railroad dividends for the same period, however, rose from $89,000,000 to $98,000,000, or about 10%. The electric power utilities experienced a rise in operating revenue from $588,000,000 in 1941 to $626,000,000 in 1942, an increase of about 7%, but their quarterly dividends dropped from $60,000,000 in 1941 to $57,000,000 in 1942—a reflection of the increased tax burden. The net profits, after all charges and taxes, but before dividends, for the 629 corporations fell from $867,000,000 in 1941 to $593,000,000 in 1942, or about 24%.

Wholesale and Retail Trade.—During the 12-year period from 1929 through 1940, about 56% of all individual income was spent in the retail trades. During the first seven months of 1942 retail sales equalled 65% of total national income. Rising prices accounted for about one-fourth while volume of goods sold represented about three-fourths of the increase in retail sales. Causes of this rise in retail trade were, chiefly, mounting wages, record farm net incomes, fear of inflation and future shortages, and the anticipation of higher future incomes. When the Office of Price Administration fixed the ceiling prices after May 18, 1942, at the March level, mark-ups had already taken place in many commodities in both wholesale and retail trades. For example, in the textile and apparel lines, which constituted as much as 75% of department and variety store sales, the ceiling prices were as much as 10% to 15% below replacement costs, and this difference, which was called the retail "squeeze," was to be "rolled back" upon wholesalers and manufacturers. Part of the squeeze was borne by decreasing the quality and quantity of raw material; part, by subsidies to high-cost producers; and part by reduction of services. Trends in retail sales are shown in Table III.

The retail establishments that felt the pinch of shrinking inventories most acutely in 1942 included automobiles, household appliances and radios, heating and plumbing, paint, electrical supplies, lumber and building materials, farm implements, filling stations, shoes, clothing and variety stores. By October many factories held unfilled orders for durable goods that could have kept them running at current rates of production for eight months.

Chain store sales were substantially in excess of the record year of 1941. Variety chain store sales for 1941 ranged within an index of 110 for January to 125 for September; corresponding sales for 1942 rose from 127 in April to 144 in October. Likewise grocery chains whose sales index for 1941 varied from 128 to 159 in December, opened in Jan. 1942 at a level of 176, dropped to 168 in March—well above the high of 1941—and rebounded to 175 in August. The drug store chains showed less advance but secured a 15% increase in monthly average sales for the first ten months. Retail dollar sales of mail-order houses ran below those of 1941. Gains made in the first quarter were not retained, and for the first 11 months the two largest houses showed gains of only 1% and 6% over 1941.

Cost of Living.—The average cost of living for 1942 was 20% higher than in 1939, the year of the outbreak of World War II.

Table III.—*Indexes of U.S. Retail Trade Trends, 1942*

Month	Food	Filling stations	Apparel stores	Household furnishings	General merchandise	Drugs	Chain stores
January . . .	155	155	177	168	148	142	164
February . .	150	152	157	167	139	138	165
March . . .	151	139	171	176	138	142	169
April	153	134	152	150	136	146	164
May	155	130	147	132	130	152	170
June	156	125	142	123	127	156	171
July	159	141	163	137	139	162	177
August . . .	166	124	181	138	147	169	182
September .	160	125	163	142	142	164	183
October . . .	166	128	165	145	144	173	181

U.S. Department of Commerce.

By 1941 the dangers of inflation became apparent when the government established the Office of Price Administration and Civilian Supply. Pursuant to the First War Powers act of 1941, the president established on Jan. 16, the Office for Emergency Management (*q.v.*) to "exercise general jurisdiction over the war procurement and production program." Following also in January came the Emergency Price Control act of 1942, which enacted the most inclusive regulation of business ever passed by a U.S. congress.

The expressed purposes of the Price Control act were to prevent price and credit inflation, to prevent speculation and increased rents, to prevent labour disturbances and interferences with war production, to eliminate war profiteering and hoarding, to prevent dissipation of defense appropriations by increased war costs, to protect people living on fixed incomes, to prevent a postwar collapse of business, to protect the cost of living, and to stabilize purchasing power.

On April 28 the Office of Price Administration froze the prices of the bulk of the items entering into the cost of living by establishing the highest selling price during March as the ceiling for retail, wholesale, and manufacturing prices, and issued the general maximum price regulation as a wartime measure to apply for the "duration."

Manufacturers and wholesalers were expected to support retail price ceilings. Whenever retail prices of March were lower than wholesale prices of May, the so-called "squeeze" was rolled back upon the wholesalers and primary producers, and only in the case of special hardships did the Office of Price Administration undertake necessary adjustments. The regulations became effective on May 18, 1942. On July 1 every retailer was required to file with his local War Price and Rationing board a "statement showing his maximum prices for all cost-of-living commodities offered for sale in his store," and to display price ceilings of all goods sold.

Special administrative difficulties arose for seasonal summer goods that were not sold in March; for goods that were newly produced and for which cost data were not available in May; for goods having substitutes readily available; for goods in which lowered qualities were imperceptible to customers; for goods in which special services such as returns and repairs were involved; for goods for which geographical quality and customer differentials were ordinarily allowed; and for those farm products which had been expressly excluded by congress. Exceptional difficulty was encountered in the price fixing of commodities produced under conditions of joint cost. Detailed specifications, designed to check evasion and violation in the orders issued by the Office of Price Administration, resulted in confusing legal complexities for business management. On the whole, however, business showed that "patience itself is good patriotism."

President Roosevelt presented to congress on April 27, 1942, a seven-point national economic policy to control the cost of living by: (1) heavy taxes on excess profits; (2) price and rent ceilings; (3) wage stabilization; (4) stabilization of prices of farm products; (5) purchase of war bonds instead of nonessential goods; (6) rationing of essential goods; and (7) discouragement of instalment buying.

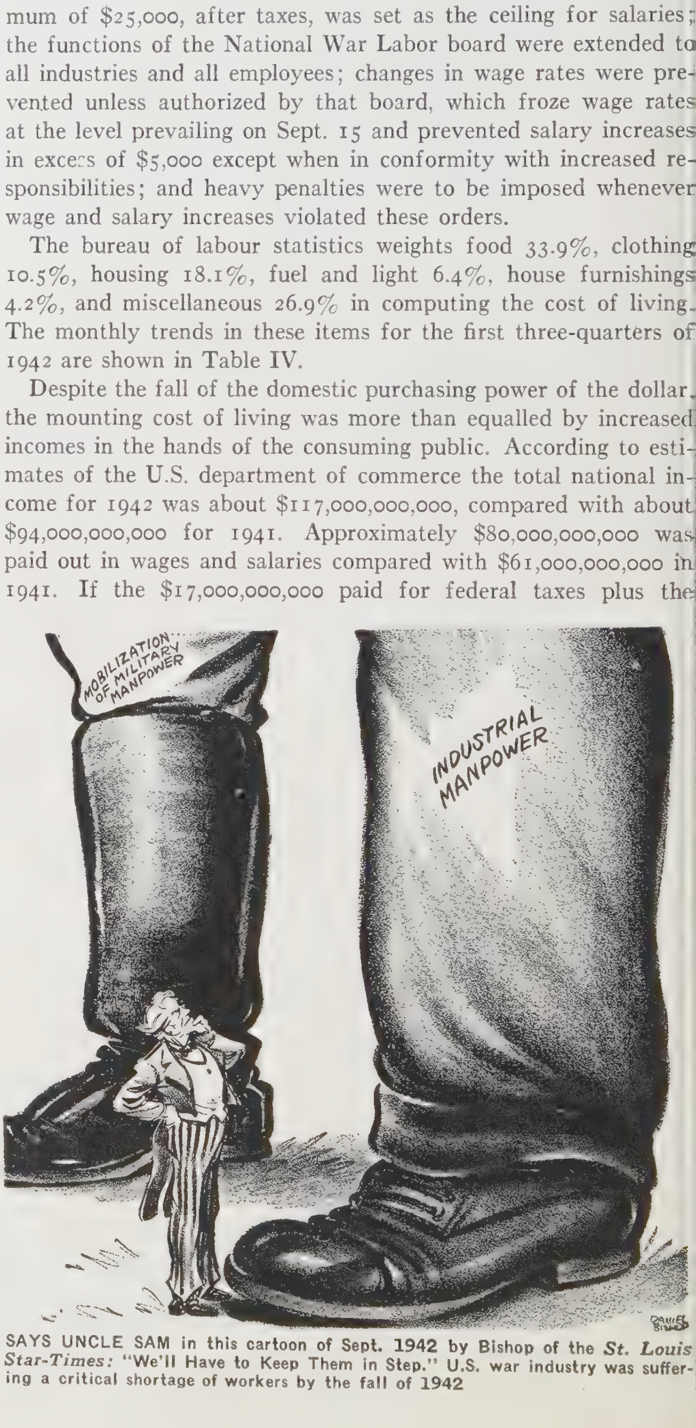
Wages and expressly exempted farm prices became the focal point in costs. Powerful labour unions opposed wage ceilings, and equally powerful farm groups opposed farm price ceilings that violated existing farm parity prices. Factory pay rolls for 1942 were more than three times as large as those of 1939, and rising farm prices brought farm cash income to a level 80% higher than in 1939, so that by the end of 1942, wage costs had become a more powerful factor in augmenting the cost of living than food costs. The average wage income in industry was $1,203 (100) in 1939, $1,268 (105) in 1940, $1,484 (123) in 1941, and was estimated at $1,766 (146) in 1942. The average income per worker engaged in agriculture was $498 (100) in 1939, $527 (105) in 1940, $742 (148) in 1941, and was estimated at $1,052 (212) in 1942. Repeatedly the Office of Price Administration pointed with alarm to the spiralling wage and food costs menacing the effectiveness of price controls.

The Emergency Price Control act on Oct. 2, 1942 amended the former law by providing for the stabilization of wages and farm prices, by checking the pressure of wages and food costs on supply, and by checking their effects on demand and excessive spending. The day following, the president named a director of economic stabilization, and on Dec. 6 made the secretary of agriculture the food czar.

The director of economic stabilization was ordered to formulate a comprehensive national economic policy to prevent avoidable increases in the cost of living, to reduce unnecessary migration of labourers from one industry to another, and to facilitate the prosecution of the war. Complying with this order, a maximum of $25,000, after taxes, was set as the ceiling for salaries; the functions of the National War Labor board were extended to all industries and all employees; changes in wage rates were prevented unless authorized by that board, which froze wage rates at the level prevailing on Sept. 15 and prevented salary increases in excess of $5,000 except when in conformity with increased responsibilities; and heavy penalties were to be imposed whenever wage and salary increases violated these orders.

The bureau of labour statistics weights food 33.9%, clothing 10.5%, housing 18.1%, fuel and light 6.4%, house furnishings 4.2%, and miscellaneous 26.9% in computing the cost of living. The monthly trends in these items for the first three-quarters of 1942 are shown in Table IV.

Despite the fall of the domestic purchasing power of the dollar, the mounting cost of living was more than equalled by increased incomes in the hands of the consuming public. According to estimates of the U.S. department of commerce the total national income for 1942 was about $117,000,000,000, compared with about $94,000,000,000 for 1941. Approximately $80,000,000,000 was paid out in wages and salaries compared with $61,000,000,000 in 1941. If the $17,000,000,000 paid for federal taxes plus the



SAYS UNCLE SAM in this cartoon of Sept. 1942 by Bishop of the *St. Louis Star-Times:* "We'll Have to Keep Them in Step." U.S. war industry was suffering a critical shortage of workers by the fall of 1942

Table IV.—*Indexes of the U.S. Cost of Living, 1942 (1935–39 = 100)*

Month	Total	Food	Clothing	Housing	Fuel and light	Miscellaneous	Value of 1935–39 dollar
January	112.0	116.2	116.1	108.4	104.3	108.5	89.3
February	112.9	116.8	119.0	108.6	104.4	109.4	88.6
March	114.3	118.6	123.6	108.9	104.5	110.1	87.5
April	115.1	119.6	126.5	109.2	104.3	110.6	86.9
May	116.0	121.6	126.2	109.9	104.9	110.9	86.2
June	116.4	123.2	125.3	108.5	105.0	110.9	85.9
July	117.0	124.6	125.3	108.0	106.3	111.1	85.4
August	117.5	126.1	125.2	108.0	106.2	111.1	85.1
September	117.8	126.6	125.8	108.0	106.2	111.4	84.8
October	119.0	129.6	125.9	108.0	106.2	111.4	84.0
November	119.8	131.1	126.0	107.9	106.2	112.6	—

U.S. Bureau of Labor Statistics.

$9,000,000,000 paid as state and local taxes are considered as fixed charges on the national dividend there still remained about $100,000,000,000 for consumers' expenditures. But this picture became inadequate in times when war production of the nation consumed about 50% of total productive capacity, since war goods do not raise standards of living, but are designed to protect it.

The trend in income payments, wholesale prices, pay rolls, factory employment, farm price ratios and prices of farm products, portrays a more precise explanation of the incomes used to defray rising costs of living. The data in Table V are combined from reports of the bureau of labour statistics, the Federal Reserve board and the bureau of agricultural economics and indicate the relative significance of incomes and food costs in the cost of living.

Table V.—*Trends in U.S. Income, Prices, Pay Rolls, Employment and Farm Prices*

Month	Income payments (value) 1935–39 = 100	Wholesale prices 1926 = 100	Pay rolls 1923–25 = 100	Factory employment 1923–25 = 100	Ratio of farm prices received to prices paid	Prices of farm products
Jan.	156.1	96.0	173.5	135.7	102	149
Feb.	157.4	96.7	178.3	135.1	99	145
March	157.8	97.6	182.9	134.7	97	146
April	160.9	98.7	186.7	136.0	99	150
May	161.9	98.8	193.5	137.7	100	152
June	165.8	98.6	198.1	140.1	99	151
July	168.7	98.7	204.3	143.9	101	154
Aug.	171.6	99.2	214.7	145.0	107	163
Sept.	173.0	99.6	220.5	145.0	107	163
Oct.	175.5	100.0	222.0	145.8	110	169
Nov.	—	100.1	—	—	109	169

Labour resisted wage ceilings partly because of lack of governmental control of farm prices and partly because of lack of profit control. The answer to profit control came in the revenue act of 1942, which added $7,000,000,000 to federal taxes for 1943 plus a 5% victory income tax on all incomes over $624 per year.

On Oct. 2 temporary maximum prices were set for various foods, including butter, cheese, eggs, poultry, mutton, flour, beans, onions, potatoes, citrus fruits, and canned and dried milk products. Fresh vegetables, apples and fish were the chief foods exempted from price control. (*See* also PRICES; WAGES AND HOURS.)

Securities.—Corporation bond indexes for 1942 were relatively few points removed from the levels of 1941. Closing figures for the Dow-Jones combined index of 40 representative industrial issues on Dec. 24 was 90.14 compared with the closing figure of 88 for 1941.

Corporate stock during the year became classified by the market into war, peace and "straddle" stocks. During the first quarter, with Allied reverses, war stocks rose and peace stocks fell, while the outlook for taxes on corporate incomes appeared especially dismal. With increasing Russian resistance and a check to Japanese advances in the Pacific during the summer of 1942, peace stocks rose and war stocks fell, but all types tended upward as discussions of inflation became more widespread. During the third quarter, with improved outlook for peace, rapid expansion in bank deposits, tax concessions on corporate incomes by congress, and lowered tax reserve requirements, the stock market reflected growing confidence, despite the decline in war stocks. (*See* also STOCKS AND BONDS.)

About seven-eighths of all new plant and war facilities constructed during the year had been financed by the Reconstruction Finance corporation (*q.v.*) and its subsidiaries. This involved the construction, equipment and expansion of 1,337 plants engaged in the manufacture of ships; bombing, fighting, transport and cargo planes; tanks, heavy guns and ordnance; magnesium; aluminum; steel; tin; copper; aviation gasoline; machine tools; pipe lines and other less vital industries, at a cost aggregating about $8,300,000,000.

Banking.—In Dec. 1940 money in circulation amounted to $8,500,000,000; in Dec. 1941, $10,600,000,000; and in Dec. 1942, $15,300,000,000. This astonishing increase may be accounted for by the expansion of the wage earners' share of the national income to almost 80%; by the great increase in the number of wage earners who had made no banking connection since the depression and who retained their savings in the form of cash; by the rise in consumer prices that demanded more pocket and purse money; and by the fear of uncertainties in business and banks that accompany war alarms. The entire increase in the circulating medium was in the form of federal reserve notes, since gold and silver certificates outstanding remained about the same, while national and federal reserve bank notes declined.

The total excess reserves of all member banks of the federal reserve system in Jan. 1942 was $3,500,000,000—about half of the peak of $7,000,000,000 in Jan. 1941. The low point for the year was reached late in September, when credit expansion had reduced excess reserves to $1,700,000,000 followed by a year-end rebound to about $2,500,000,000. The volume of discounts continued to be relatively small despite the lowering of rediscount rates in the fourth quarter. Bank borrowings from federal reserve banks on any great scale had become unnecessary so long as excess reserves were well above legal minimum requirements, and member banks were in an exceptionally liquid position with their huge purchases of governmental securities which they could promptly sell to the federal reserve banks.

Commercial banks gradually augmented their holdings of U.S. securities until the third quarter, when an added $6,000,000,000 was purchased, of which about one-half was absorbed by the New York city banks, chiefly in the form of treasury bills. In December the treasury floated a $12,000,000,000 loan with private investors taking about 60%. Bank deposits continued to rise with the governmental spending of the proceeds of these loans and the redeposit by corporations and individuals. (*See* also BANKING.)

Bankruptcy.—War adjustments had inflicted heavy penalties on small businesses, and the senate small business committee reported as late as Sept. 1942 that while not a single government agency had been able to supply reliable data on mortality trends of small plants, it was estimated that about 300,000 had closed on account of war conditions, while only 9,414 firms closed because of bankruptcy. The monthly average shown by Dun's insolvency index was the lowest in six years. Apparently the rate of failures was about 46.2 for each 10,000 enterprises, compared with 54.4 in 1941. The highest number of failures in 1942 occurred in March, the lowest in September. One-fifth of all failures in October occurred in food and liquor businesses, one-eighth in eating and drinking establishments, two-thirds in retail trades, and only one-sixth in mining and manufacturing. Larger firms evidently found it less difficult to adjust to war markets, since only one of the firms going into bankruptcy had liabilities in excess of $1,000,000, while 54% had liabilities under $5,000, and 38% had liabilities between $5,000 and $25,000.

Legislation Affecting Business.—Pursuant to the First and

Second War Powers acts, the Price Control act, Appropriation acts and other special legislation, the president established such agencies as the Office for Emergency Management, War Production board, War Manpower commission, Office of Alien Property Custodian, Defense Communications board, National War Labor board, Office of the Coordinator of Inter-American Affairs, Office of War Information, Office of Lend-Lease Administration, Office of Defense Transportation, Office of Civilian Defense, and War Shipping board. The activities of each of these agencies exercised varying controls over business and industry in 1942, because of the conviction that victory in modern war depends vitally upon economic strength expressed in terms of production, finance and consumption. At the same time such regular agencies of the government as the war, navy, and interior departments increased activities that affected industry both favourably and adversely, and perhaps most of all, the treasury through its recommendations of fiscal planning for total war, endorsed by congressional assent, modified the normal operations of the U.S. economy.

Business was loaded with responsibility for a multitude of questionnaires, reports and tax returns. The questionnaires issued by the War Production board alone required every manufacturer to fill out 512 ft. of reports during 1942 relating to priorities, allocations, federal assistance, inventories, wages, hours and social security payments. Legal fees, accountants' stipends, expert opinion for filling out forms became a sort of new tax on business.

Not only did regulation of business expand but taxation dipped deeper into pockets and tills than ever before in U.S. history. The Revenue act of 1942 relied chiefly upon direct taxes on individuals and corporations, with individuals contributing about $6,100,000,000 more than heretofore, including $3,000,000,000 for victory taxes having postwar refunds estimated at $1,100,000,000. Corporate taxes were increased about $1,800,000,000 with postwar rebates of $550,000,000, while indirect excise taxes were raised about $650,000,000. Even with such a tax increase there was ample reason to conclude that the use of taxes for anti-inflationary purposes had not been adequately augmented. (*See* also LAW; TAXATION.)

U.S. Foreign Trade.—War considerations dominated foreign trade in 1942. For the 12 months ending Nov. 30, lend-lease aid totalled $6,526,000,000. From the beginning of the program on March 11, 1941 to Nov. 30, 1942 the dollar value of goods transferred and services rendered reached a total of $7,496,000,000. During Oct. 1942, about 40% of lend-lease exports were sent to the United Kingdom, 39% to the middle and far east and about 21% to Russia.

The three leading types of merchandise exports were military supplies, industrial products and foodstuffs. The total export value of military supplies rose sharply but the exact figures for specific items were not available in 1942. Nevertheless it was known that the total monthly lend-lease exports had increased sixfold over those of 1941, while military supplies had risen fourteenfold. Relatively, the volume of food and industrial items had substantially diminished, but the dollar value had risen about 22%.

Services rendered accounted for about 22% of the total lend-lease aid, or $1,642,000,000. Of these invisible items of trade, approximately 50% had been used for shipping and supply services, air ferry routes, ship rentals, supply bases and the labour necessary to erect docks, warehouses, supply depots, and harbours. Another 15% was spent in domestic shipyards for services to repair hundreds of damaged Allied merchant and naval vessels. The remaining 35% represented outlays for production facilities such as factories and shipyards built to produce certain types of lend-lease items. (*See* also INTERNATIONAL TRADE; LEND-LEASE ADMINISTRATION, OFFICE OF.)

Table VI shows the month-by-month trend in U.S. merchandis export and import values for 1941 and 1942.

Table VI.—*U.S. Monthly Merchandise Export and Import Trade for 1941 and 1942 (in millions)*

Month	1942		1941	
	Exports	Imports	Exports	Imports
Jan.	$479	$254	$325	$229
Feb.	478	254	303	234
March	611	272	357	268
April	695	234	387	287
May	525*	191	385	297
June	619*	220	330	280
July	629*	214	365	278
Aug.	702*	184	460	282
Sept.	718*	190	425	262
Oct.	776*	199	666	304
Nov.	785	168	492	281
Dec.	—	—	653	344

*Preliminary figures. Federal Reserve *Bulletin*.

Business Conditions in Other Countries.—*Great Britain.*—The *London Economist* index of wholesale prices of all commodities registered 156 in Jan. 1942 and rose to 160 by October, whil the index of retail food prices for the same period dropped from 163 to 162. The cost-of-living index opened in January and closed in October at exactly 200, although monthly variations were recorded.

Company earnings for 474 industrial companies rose about 2% for the first three-quarters. For the first half-year profits had been "bumping along the bottom" because companies were building up reserves for taxes, but larger allotments of net profits wer made for dividends during the third quarter after the busines tax-reserve policy had been stabilized. The most favourable showing was made in the consumption trades, the poorest, in rubbe and shipping. From the beginning of 1941 company profits had dropped each successive quarter until a reversal of the trend in the third quarter of 1942.

Industrial share prices moved upward and bond prices held about the same level during the year. *The Financial News* index of 30 industrial shares, based on July 1, 1935 as 100, registered 9 at the close of 1942 compared with 77.5 at the beginning of the war. The year's low of 66.5 was reached in April 1942—about the same time as the low in the New York market. By way of contrast, the bond index, based on 1928 as 100, closed the year at 134.2, at about the year's opening level of 134.4.

Five types of rationing had developed. (1) Differential rationing was established to meet the special needs of invalids, persons suffering from particular diseases, vegetarians, women and children and certain classes of workers. (2) Ordinary rationing, resembling the U.S. procedure of sugar and coffee rationing, provided a fixed quantity for stated periods, usually one month (3) Group rationing was based on a fixed amount in portions of groups of foods such as jams, jellies, and syrups, or butter and margarine. (4) Point rationing applied wherever foods could not be separately rationed because of changing supplies, like canned foods, so that each consumer was allotted 20 points every four weeks, the point value varying with the scarcity of the food (5) Registration rationing was required for certain foods, the Food Minister announcing the minimum to be distributed, thus allowing flexibility for surplus foods.

Britain devised three controls of war production of primary significance. After the outbreak of the war in 1939, "limitation controls" were imposed upon the total amount of raw materials used for civilian production. This was supplemented in March 1941 by "concentration of production" in which a few factories were chosen and assigned quotas of the closing firms. By July 1942 concentration had released about 250,000 workers and 55,000 sq.ft. of factory floor space for war production. A third system, known as the standardized price "utility" control, was instituted in Feb. 1942. It was first applied to the clothing industry with about 2,000 of the 25,000 firms in this field selected to produce standard fixed-price garments; in June it was extended to the soft drink business, and in August to furniture, releasing 30,000 more workers. Production of certain goods that could not be standardized such as cash registers, lawnmowers, toys, games, trunks, certain kinds of leather goods and jewellery, was prohibited.

The Oxford Institute of Statistics estimated that between Oct. 1938 and Oct. 1942 the average gross earnings of workers rose 56%, of which 32% was the result of higher wages and 24% of longer hours, while increased income taxes trimmed this gain to 40%.

Germany.—Information related to industrial and commercial developments in Germany during 1942 was coloured by war propaganda and therefore unreliable. For example, the official figures of wholesale prices showed that the index stood at 114 in January and six months later at 115, evidence of the "price-stop" system, which concealed the maximum and minimum prices and state subsidies for a wide variety of goods. The wage system was vitiated by importation of prisoners of war into vital war industries only at food and shelter costs. The adoption of the Speer plan in September, whereby every man was called to the front regardless of his industrial worth, indicated a manpower shortage in the army and led to one in industry.

France.—Original nazi "collaboration" plans called for the de-industrialization of France and the restoration of specialized agriculture, but in 1941 this plan was modified to make France a "subsidiary arsenal" because the area was presumably bombproof. Private orders with French industrialists amounted to 100,000,000,000 marks by April, but in July the chief of the German War Economic administration in France declared that the placing of contracts "had passed its zenith" and expressed dissatisfaction with the collaboration policy. After July industrial orders in France dropped, but war orders for airfield equipment and cement fortifications rose. By the middle of August about 4,000 factories had closed for want of raw materials or labour. In September a German order closed all factories unless 75% of the orders came from Germany. Failure of the collaboration policy led to a resumption of the de-industrialization policy.

Italy.—Collaboration in 1942 took the form of exports to Germany of silk, rayon, sulphur, mercury, hemp and bauxite, and in return Italy demanded iron and steel—two of Germany's most precious sinews of war. The wartime fascist policy called for the furtherance of Italian self-sufficiency, and the industrial development of Genoa, Turin and Milan depended largely on iron imports. This did not accord with nazi plans for the de-industrialization of Italy, whereupon efforts to improve agriculture met with both fascist and nazi support. Amalgamation took place in the dye, textile and electrical industries of Italy, whose industrialists feared German alliance and domination because they were potential competitors of those German industries. Italian industrial ambitions received severe setbacks with the bombing of the Caproni, Fiat and Ansaldo works—the leading arsenals of Italy.

Canada.—The year 1942 began with the virtual pooling of the productive resources of Canada and the U.S. when President Roosevelt announced in Dec. 1941 that wartime collaboration with Canada required the removal of tariff barriers for free flow of war supplies. Upon U.S. entry into the war, Canada could no longer call upon its neighbour for war supplies and hence was compelled to contract her economy in other directions. By February, Canada had an armed force of 500,000, with 150,000 already overseas, and had spent $600,000,000 on war plant construction.

Methods of Canadian price control proved so effective that they influenced U.S. price policy in 1942. In the four months ending March 1942, the Canadian price index advanced but 1%, while for the same period wholesale prices in the U.S. rose 6%. The Canadian cost of living index also remained practically unchanged. The manpower crisis was reached in October, when 5,500,000 or about half the population were engaged in war work or in the armed services.

On Nov. 1 business was frozen by the general order prohibiting the creation of new business outlets, moving to larger premises, and adopting new lines of trade except by special permit from the dominion government. That order applied to all manufacturers, wholesalers and retailers and ten service trades. On Oct. 6 the Wartime Prices and Trade board decreed that distribution of goods should follow certain requirements; that retailers might buy in the same proportions as in 1941; that no new retail customers for scarce lines could be accepted by wholesalers except at the request of the administration; that the manufacturers' or wholesalers' own retail stores could not be given preference; and that areas with greatly increased population were to be given special treatment. (E. H. He.)

Butter.

Civilian consumption of butter in the United States was to be reduced from 16 lb. per capita in 1942 to 13 lb. per capita in 1943, Food Administrator Claude R. Wickard predicted Jan. 5, 1943, at which time he announced an order reserving for military use 30% of all butter produced in the United States after Feb. 1, 1943. Previously, to meet immediate lend-lease needs, the government on Nov. 20, 1942, froze until March 6, 1943, 50% of the supply of cold storage butter in the 35 principal storage markets, representing about 75% of the cold storage supply. Regardless of existing contracts, holders of storage butter were prohibited from delivering butter except by specific permission of the WPB or for delivery to the armed forces, to lend-lease or other specified government agencies. Later it was revealed the government acquired only about 18,000,000 lb. of butter by this impounding order, an amount sufficient to meet war requirements for only two weeks. But for the order, however, it was estimated that storage stocks would have approached zero by Dec. 1942. The cold storage supply of butter Jan. 1, 1943, was 25,104,000 lb., the lowest since Jan. 1933, and the second lowest on record. Stocks in storage Jan. 1, 1942, were 114,436,000 lb., and the five-year (1938–42) average for that date was 76,624,000 lb. Butter stocks of May 1, 1942, were 70% above those of May 1, 1941, and production at the same approximate rate as that of 1941 seemed ample for all domestic needs. Increased civilian consumption, a 3% decline in butter production during the last half of 1942, and a growing demand for military and lend-lease supplies made it apparent in the autumn of 1942 that curtailment of home butter supplies was impending. Butter prices had averaged around 40 cents in the first half of 1942. In Nov. 1942, to encourage production, the government announced it would support butter prices at 46 cents per lb. for 92 score butter, Chicago basis, through June 1944. Although possible rationing of butter was rumoured frequently late in 1942, no formal order was issued. Retailers, however, quite generally adopted a policy of limiting purchases in order to conserve the supply.

It was estimated that the government order reserving 30% of all butter produced after Feb. 1, 1943, would set aside 510,000,000 lb., of which more than two-thirds would be sent to United States military forces. Most of the remainder, Secretary Wickard said, would go to Russian armies. This left for civilian use in 1943 an estimated 1,910,000,000 lb. Since the government had agreed to pay fixed prices for butter throughout 1943, the possibility arose that the government would also have to store the civilian supply as well as the military and lend-lease supply. With prices fixed, there could be no margin that would enable private interests to buy butter at lower prices during the months of surplus production and store it for higher prices during the months of low production. (*See* also CHEESE, DAIRYING, MILK.)

(S. O. R.)

Byrnes, James F.

(1879–), U.S. jurist, was born May 2 in Charleston, S.C., of Irish parentage. At the age of 14 he left school to become office boy of a law firm. By studying stenography, he advanced to the position of court reporter. In 1910, he was elected to the house of representatives on the Democratic ticket and was re-elected six times, serving from 1911 to 1925. As a member of the deficiency committee during World War I, he formed a lasting friendship with Franklin D. Roosevelt, then an assistant secretary of the navy. In 1930 he was elected to the U.S. senate and was re-elected in 1936. In June 1941 he was appointed associate justice of the U.S. supreme court. After serving 16 months on the supreme court bench, he was named by President Roosevelt to head the newly created Office of Economic Stabilization on Oct. 3, 1942. Byrnes, who had helped frame the amended emergency price control act of 1942, was familiar with his new tasks, which were to formulate a national policy covering profits and prices, wages and rentals, and rationing and subsidies. President Roosevelt on Dec. 15 widened Byrnes' power by authorizing him to act as mediator in disputes arising over the administration of food supplies.

Cabinet Members.

The following members of President Roosevelt's cabinet held office on Jan. 1, 1943:

Post	*Name*	*State*
Secretary of State	Cordell Hull	Tennessee
Secretary of the Treasury	Henry Morgenthau, Jr.	New York
Secretary of War	Henry L. Stimson	New York
Attorney-General	Francis Biddle	Pennsylvania
Postmaster General	Frank C. Walker	Pennsylvania
Secretary of the Navy	Frank Knox	Illinois
Secretary of the Interior	Harold L. Ickes	Illinois
Secretary of Agriculture	Claude R. Wickard	Indiana
Secretary of Commerce	Jesse H. Jones	Texas
Secretary of Labor	Frances Perkins	New York

Great Britain.—At the close of 1942 the war cabinet was composed as follows:

Post	*Name*	*Party*
Prime Minister, First Lord of the Treasury and Minister of Defense	Winston Churchill	Conservative
Secretary of State for Dominion Affairs and Deputy Prime Minister	C. R. Attlee	Labour
Lord President of the Council	Sir John Anderson	Conservative
Secretary of State for Foreign Affairs	Anthony Eden	Conservative
Home Secretary and Minister of Home Security	Herbert Morrison	Labour
Minister of Labour and National Service	Ernest Bevin	Labour
Minister of Production	Oliver Lyttelton	Conservative
Minister of State (Cairo)	R. G. Casey	(from Australia)

For other ministers and members of the government, *see* GOVERNMENT DEPARTMENTS AND BUREAUS.

Cacao: *see* COCOA.

Cadmium.

Primary cadmium production in the United States in 1941 increased 14% over 1940, to 6,937,900 lb., while shipments totalled 7,368,300 lb., and apparent consumption 7,469,800 lb. In addition, there was a recovery of 245,000 lb. of secondary cadmium in 1940 and 381,000 lb. in 1941. The cadmium content of Mexican flue dusts increased from 815.7 metric tons in 1940 to 906.6 tons in 1941, all of which was shipped to the United States for treatment.

(G. A. Ro.)

Caldecott Medal: *see* AMERICAN LIBRARY ASSOCIATION.

Calendar of Events, 1942: *see* pages 1–16.

California.

The most southerly Pacific coast state of the United States, frequently called the "Golden state." It was admitted to statehood Sept. 9, 1850. Area 156,803 sq.mi.; pop. (1940) 6,907,387; unofficially estimated at 7,660,000 in 1942. In 1940 only 29% of the pop. was rural. Capital, Sacramento (105,958); other leading cities, Los Angeles (1,504,277); San Francisco (634,536); Oakland (302,163); San Diego (203,341); Long Beach (164,271); Berkeley (85,547); Glendale (82,582); Pasadena (81,864).

History.—California had its first attack of the war when a Japanese submarine shelled oil fields at Ellwood on Feb. 23, 1942 doing little damage. Blackouts in coastal cities took place on several occasions; on Feb. 26 there was anti-aircraft firing in Los Angeles. As a defense measure all Japanese (approx. 95,000) were ordered removed from a coastal zone under date of March 17 by the commander of the western defense area, Lt. Gen. John A. Dewitt; the most important relocation centre was at Manzanar in the Owens river valley. All Japanese were out of the coastal zone by fall. Other defense measures included the dimming of lights visible at sea along the coast on Aug. 5, and later (Oct. 10) a general dimout for a zone extending 50 miles inland.

Greatest interest in the political field centred around the general election in November. The incumbent governor, Culbert L. Olson (Democrat), lost to former Atty. Gen. Earl Warren (Republican) in an election in which 2,264,288 persons cast ballots. Both the lieutenant-governor and the secretary of state chosen were Republicans. The Republicans also won a majority in both houses of the state legislature. The electorate approved an anti-hot cargo initiative measure, and defeated a proposal to repeal the state income tax.

EARL WARREN, Republican governor of California, elected Nov. 3, 1942

The tremendous industrial expansion started in 1940–41 continued in 1942 and taxed housing, educational and health facilities in many areas; San Diego was particularly affected. The last month of the year saw shortages in food supplies, notably of meat, eggs and butter.

Education.—Expenditures for the fiscal year 1940–41 for education were $156,540,303. The average daily attendance was 998,836, and the teaching staff numbered 43,200. Total number of secondary schools (Oct. 1942) was 737. Budget (1941–42): elementary schools $41,903,516; secondary $37,081,738.

Public Welfare, Charities, Correction.—State and county contributions to old age security (Dec. 1942) amounted to $3,966,080 (additional federal contribution $3,148,456); for aid to the indigent blind $185,407 (federal contribution $131,535); for aid to needy children $513,151 (federal contribution $178,607); and for county indigent $411,411. Seven institutions for the insane (normal capacity 20,611 patients) were maintained, also two homes for mental defectives (normal capacity 4,390); three correctional schools (normal capacity 1,154); and one each for adult blind and for narcotic addicts. Three state prisons for men and one for women were in operation.

Finance.—The state budget for the 1941–43 biennium, including special appropriations, was $521,297,039, of which $290,720,244 was to go to local governments for various purposes. Total income for the fiscal year 1941–42 was $345,443,602, 15.3% higher than for 1940–41. The sales tax produced most revenue ($132,576,351), next ranked the motor vehicle fuel taxes and licences ($58,517,778). Other major income sources were: bank and corporation franchise tax $34,065,799; personal income tax $29,038,934; alcohol beverage revenue $17,806,971. All major sources of revenue, except inheritance taxes, horse race revenue, and in lieu taxes increased during the year. The state general fund showed a surplus in Dec. 1942, of approx. $60,000,000. Bonded indebtedness on July 1, 1942, was $147,085,500. Property value in the state (Dec. 1942) was assessed at $7,679,695,000. On July 1, 1942, there were 192 banks, with an additional 847 branches (resources approximately $5,762,286,000; deposits $5,279,200,000).

Communication.—California had in 1940 steam railroads amounting to 14,088 mi.; 2,768 mi. electrified railroad; approximately 900,000 mi. of public highway. Motor vehicles registered in the state Jan.–Oct. 1942, numbered 3,014,247 compared with 3,113,528 for the same period in 1941. Traffic deaths decreased 16.7% in the first 9 months of 1942.

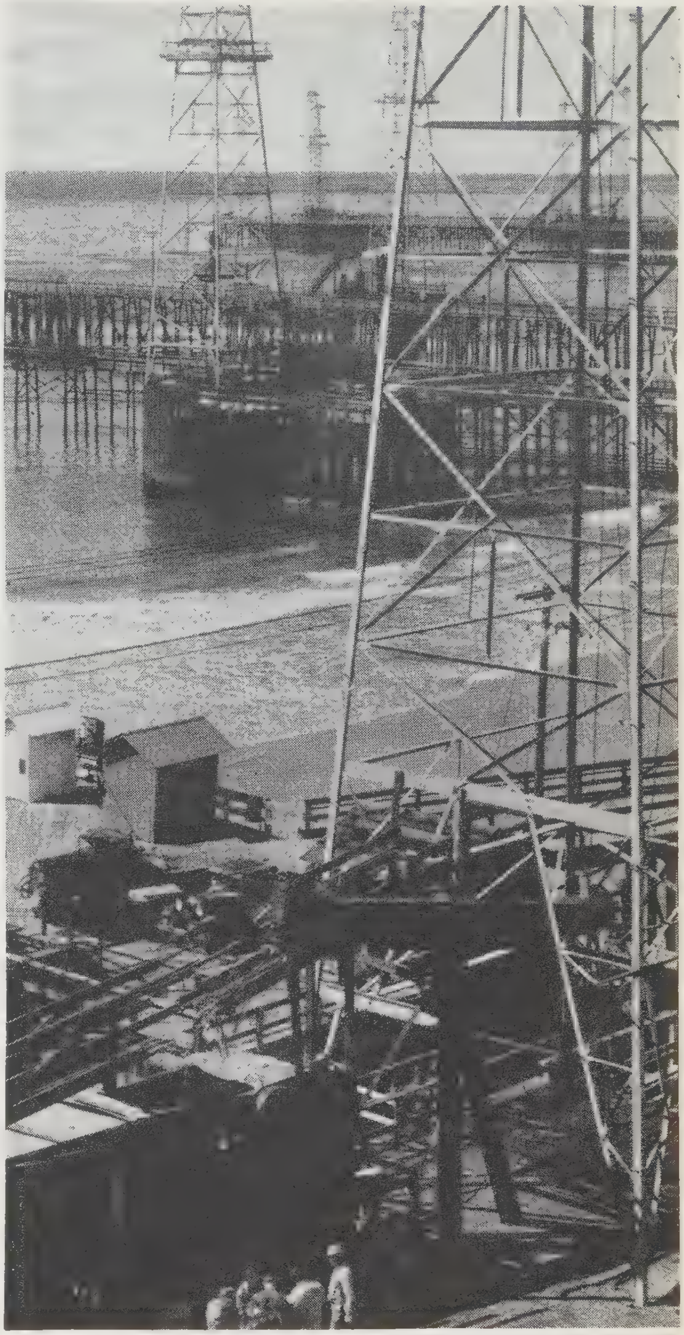
Agriculture.—In 1942 California harvested the greatest crop of fruit and nuts in its history; the total value was estimated at $325,539,000 (30% more than in 1941). Oranges were highest in value at $80,985,000 ($69,087,000 in 1941). Other crop values: grapes $75,857,000; almonds $9,240,000; apples $6,455,000; apricots $14,331,000; avocados $1,879,000; cherries $3,996,000; figs (dried and fresh) $5,150,000; lemons $18,922,000; olives $6,786,000; peaches $25,677,000; pears $14,948,000; prunes $24,360,000; walnuts $16,530,000. The value of agricultural products in the state (1941) amounted to $563,735,000 (fruits and nuts $240,827,000; commercial vegetables $107,047,000; field crops and cotton $215,861,000). Livestock valuation (1941) was $288,253,000.

Manufacturing.—California continued the expansion in production of durable goods started in 1940–41, with shipbuilding and aeroplane construction leading in output. The total number of nonagricultural wage-earners in Nov. 1942 was 2,647,000 as against 2,238,000 in 1941. Employment in durable goods factories (602,000) was nearly double that of the previous year (337,000). In nondurable goods industrial employment there was a slight decline (172,000 in Nov. 1942; 175,000 in 1941). The Los Angeles industrial area employed 389,000 workers, the San Francisco area, 243,000. Average weekly earnings of workers was $48.86 (durable goods industries: $37.10; nondurable: $52.12). In Nov. 1942, 25% of the labour force in the state was made up of women (11% in 1941).

Mineral Production.—The output in 1941 was valued at $367,784,000 (1940 production: $342,825,817). As in the previous year, petroleum accounted for the greatest amount: $220,260,000 for 230,157,000 bbl. (1940: $207,479,800 for 223,294,805 bbl.); natural gas was next, with 363,025,000 M. cu.ft. valued at $21,055,000. Salines and borates output for 1941 was worth $12,200,000; brick (all types) and tile $3,598,797. Cement produced amounted to 19,551,608 bbl. (value $26,248,694).

Principal Metals of California, 1941 and 1940

Product	Value, 1941	Value, 1940
Gold	$49,420,000	$50,948,485
Quicksilver	4,505,916	3,209.754
Tungsten	4,080,628	2,267,135
Silver	527,000	1,678,063
Copper	913,000	1,450,170
Lead	370,000	154,632
Chromite	342,218	32,796
Manganese ore	75,057	3,260



THE FIRST ENEMY SHELLS to fall on U.S. soil in World War II were fired by a Japanese submarine which bombarded the oil fields at Ellwood, Calif., near Santa Barbara, on the evening of Feb. 23, 1942. The only material damage was to the rig and pump house of one well, shown in lower centre of the picture

Bibliography.—C. E. Chapman, *A History of California: The Spanish Period* (1921); R. G. Cleland, *A History of California: The American Period* (1922); R. D. Hunt and N. Sánchez, *A Short History of California* (1929); J. W. Caughey, *California* (1940). (D. Rd.)

California, University of. A state-supported, coeducational university, with headquarters at Berkeley, but with six other campuses, at Los Angeles, San Francisco, Davis, Riverside, Mt. Hamilton and La Jolla. During the year 1942, the University of California adopted a full war-time schedule. In keeping with advice from the War department and the Navy department its object was to maintain all of its basic educational services and to streamline them in conformity with war needs. The principal changes were as follows:

A list of War Service courses considered to be basic to effective participation in the war effort, either in the armed forces or in industry, was prepared, and inclusion of one of these courses in each student's study program was made mandatory. The calendar of the university was drastically altered, from two 16-week semesters a year to three terms of approximately the same length. Under this so-called "speed-up" program the university is in operation, with brief intervals of a few days between terms, for twelve months a year, and students may complete a normal four-year course for a degree in two years and eight months. The normal 7-year medical course may be completed in four years and eight months. There was no diminution of subject requirements or lowering of standards of instruction.

A survey made by the university in 1942 indicated that as a result of its compulsory military and naval training program, there were available among alumni of draft age, at the outbreak of the war, approximately 4,000 men who had satisfied requirements for reserve officers' commissions and 40,000 who had received two years of basic military training. Comparative figures indicated, also, that the University of California had put into operation the largest university program in engineering, science and management war training in the country. By the end of the summer of 1942, more than 20,000 men and women had been given technical training for war industries, particularly aeroplane and shipbuilding plants. (R. G. S.)

Callaghan, Daniel Judson

(1890–1942), U.S. naval officer, was born July 26 in California. He was graduated from Annapolis naval academy in 1911 and served in the Nicaraguan campaign in 1912. During World War I, he served on a cruiser convoying merchantmen across the Atlantic. He was naval aide to President Roosevelt, 1938–41, and then was assigned to independent command at sea aboard the cruiser "San Francisco," which was in Pearl Harbor for repairs when the Japanese struck on December 7. Later, he took the vessel to the South Pacific and was subsequently made chief of staff to Vice-Adm. Ghormley, then commanding U.S. naval forces in that area. Rear Adm. Callaghan was in command of a flagship (presumably the "San Francisco"), during the big Solomons naval battle, Nov. 13–15, and was killed when a shell hit the ship's bridge.

Calvé, Emma

(Emma de Roquer) (1858?–1942), French opera singer, was born in Decazeville, Aveyron, France, but spent her early childhood in Spain. At 14 years of age she began to study voice. In 1882 she made her debut in Brussels as Marguérite in *Faust*. She sang in Rome and at Covent Garden, London, gave a command performance for Queen Victoria, and in 1893 made her debut at the Metropolitan in New York city in *Cavalleria Rusticana*. She created a sensation in New York in the role of Carmen and remained at the opera for 13 consecutive seasons. She retired from the stage shortly after World War I and later taught singing in France. News of her death in Millau was released from Vichy, Jan. 6. (See *Encyclopædia Britannica*.)

Camacho, Manuel Avila: *see* Avila Camacho, Manuel.
Cambodia: *see* French Colonial Empire.

Cambridge University.

The number of matriculations in the academic year 1941–42 was 1,759. The corresponding numbers for 1939–40 and 1940–41 were 1,923 and 1,513, as compared with the average in prewar years of 1,800. The number of men in residence was 2,750, about half the prewar total, which may be contrasted with 444 in Oct. 1917 one-eighth of the normal number. This showed the efficacy of control of man power in World War II. The evacuated London colleges were still in residence.

The following occupants of chairs retired: Dr. H. D. Hazeltine (law), G. H. Hardy (mathematics), W. B. Anderson (Latin) R. S. Hulton (metallurgy). The mistresses of Girton, Miss Wodehouse, and of Newnham, Miss Strachey, also retired. There were 16 vacant chairs and 16 other professors absent on national service.

During an air raid the Union society library was partially destroyed. Civil defense duties made demands on students' time and the senior training corps and air squadron gave preliminary training for fighting services.

King Peter of Yugoslavia was in residence as an undergraduate and an honorary degree was conferred on the king of the Hellenes. The Order of Merit was conferred on Prof. E. D. Adrian. (C. Fo.)

Cameroons: *see* British West Africa; French Colonial Empire.

Camp Fire Girls.

In 1942 the Camp Fire Girls began work on their new "Service for Victory" program, a conversion of their normal program to wartime service. To direct their efforts to the need of conservation, a "Serve by Saving" project was launched in Nov. 1942, developed in cooperation with such government agencies as the war savings staff of the treasury department, the salvage section of the War Production board, the consumers' division of the Office of Price Administration, etc.

The Horizon club, senior Camp Fire organization for high school girls which was formally launched on a nationwide basis in Oct. 1941, increased in membership to approximately 4,700 during 1942. Their special project for 1942, "America's Children," led Horizon club members to ascertain the needs of handicapped children in their communities, what was being done for them, and what they could do to help.

An intensive campaign for volunteer leaders was conducted throughout 1942, to offset the shortage of leaders caused by women moving to centres of war industry, going into industrial or other war employment or volunteering for the more obvious war services.

During the summer of 1942 all but three Camp Fire camps were in operation, the directors having found resourceful ways of meeting the problems of transportation and adequate staff. Every effort was made to provide this experience in camp because it was felt that girls needed it more than ever to offset nervous tensions and increase physical fitness.

At the meeting of the National Council of Camp Fire Girls held in New York city Oct. 9–10, 1942, Mrs. Quade C. Weld of Minneapolis, Minn., was elected president. The other officers in 1942 were: Mrs. Elbert Williams, first vice-president, Mr. Earle W. Brailey, treasurer, Mr. Lester F. Scott, secretary and national executive. President Franklin D. Roosevelt was honorary president of Camp Fire Girls and Mrs. Roosevelt honorary chairman of the advisory committee. (C. F. Lo.)

Canada, Dominion of.

A dominion of the British Commonwealth of Nations (Statute of Westminster, 1931, 22. Geo. V.c.4.) covering all the portion of North America north of the United States, except Newfoundland, Labrador and Alaska. The Dominion is a federal union of nine provinces united under the terms of the (imperial) British North

America Act of 1867—Ontario, Quebec, Nova Scotia and New Brunswick in 1867, Manitoba 1870, British Columbia 1871, Prince Edward Island 1873, Alberta and Saskatchewan 1905. Outside the provincial boundaries, the Yukon and Northwest Territories are under the federal government. Area, 3,729,665 sq.mi.; pop. (1941) 11,505,898. Capital, Ottawa (pop. 154,585). Montreal is the largest city (city proper 890,234). Provincial capitals in the order of the provinces listed above are Toronto (city limits 657,612); Quebec (147,908); Halifax (69,326); Fredericton (9,905); Winnipeg (225,437); Victoria (42,507); Charlottetown (14,460); Edmonton (92,404); Regina (56,520). Other leading cities are Vancouver (271,597); Hamilton (167,830); St. John, N.B. (50,084); Kingston (29,545); Fort William (30,370); Port Arthur (24,217); Saskatoon (42,320).

The governor general in 1942 was the earl of Athlone; prime minister, William Lyon Mackenzie King.

History.—The year 1942 marked the 75th anniversary of confederation, July 1. The dominion government continued under the leadership of Prime-Minister Mackenzie King and the Liberal party, re-elected March 26, 1940. Arthur Meighen was leader of the opposition from Nov. 13, 1940, upon the resignation of R. B. Hanson, until his resignation Dec. 9, 1942, at the Conservative convention held in Winnipeg Dec. 9–12, at which John Bracken, premier of Manitoba, was elected leader of the party. Bracken, who had never been affiliated with the Conservative party, had announced that he would not accept the nomination unless the party name were changed. He was persuaded to run for the leadership, and if successful to ask for the change of party name. Shortly after he was elected it was decided to abandon the historical name "Conservative" in favour of "Progressive Conservative." Other men in the field for leader were M. A. MacPherson, J. G. Diefenbaker, Howard C. Green and H. H. Stevens. Still others considered were Col. George A. Drew and Sidney Smith, who withdrew in favour of Bracken. At the close of 1942, Bracken still had no seat in the federal parliament. The constituency of Selkirk (Man.) was opened to a by-election by the announcement (Dec. 15) that the sitting member, J. T. Thorson, minister of national mines, had been made president of the exchequer court. M. J. Coldwell succeeded J. S. Woodsworth, who died March 21, 1942, as leader of the Co-operative Commonwealth Federationist party.

In the provincial governments no general elections were held during 1942. On Oct. 21, 1942, Mitchell Hepburn resigned as premier of Ontario. The attorney-general, Gordon Daniel Conant, was named to succeed him. Much controversy had arisen over Mr. Hepburn's campaign against the federal government plebiscite on conscription, and his defense of various communist leaders in Canada. In Feb. 1942 a caucus of Ontario Liberals in Ottawa formally repudiated Hepburn for his stand on these questions.

Several important by-elections were held during 1942. On Feb. 9 in by-elections for the federal parliament, three Liberals were elected: Gaspard Fauteux (Que.); Louis St. Laurent, minister of justice (Que.); Humphrey Mitchell, minister of labour (Ont.); and in Ontario the C.C.F. candidate, J. W. Noseworthy, defeated Arthur Meighen, Conservative party leader. In the Quebec elections, the conscription issue was dominant. In both cases the new anticonscription party, the "Canadian party," was defeated. After the by-elections of February the house of commons in the dominion government stood: 177 Liberals, 38 Conservatives, 10 Social Credit, 9 C.C.F., 3 Liberal Independents, 3 Liberal Progressives, 2 Independents, 1 Independent Conservative, 1 Unity party, 1 Canadian party (anticonscription), 1 vacant. On Dec. 14, 1942 the standing of the senate was 46 Liberals and 38 Conservatives, with 12 seats vacant.

On July 25, 1942, the Canadian house of commons rejected, 130–34, an opposition amendment demanding the complete reorganization of the department of national defense at the end of the debate on the findings of the Royal commission on the Hongkong expedition.

On Jan. 22, 1942, after much controversy on the question of conscription, it was announced at the opening of the session of parliament by the governor general, the Earl of Athlone, that a plebiscite would be held and that an affirmative vote would release the prime minister from the anticonscription pledge he gave when he was returned to power in March 1940. A plebiscite was held on April 27, in which Canadian voters approved releasing the administration from its pledge, two to one: 2,633,284 for, 1,506,412 against; 72% of the people from Quebec voted against this; of the armed forces, 251,118 for, 60,885 against. On May 11, Prime Minister Mackenzie King introduced a bill in the house of commons to amend the Mobilization act and remove the ban on conscription for overseas service. P. J. A. Cardin, leader of the Quebec Liberals and minister of works and transport, resigned from the cabinet in protest against total draft, and a subsequent split in the Liberal ranks was threatened. The bill was changed to permit sending drafted men overseas "if necessary," and was passed by both the house of commons and the senate with little opposition except from the members from Quebec province.

On Sept. 30 compulsory military service was extended to include 19 year old males and to include all unmarried men of military age except enemy aliens. Nationals of all belligerents, including Americans, who had declared their intentions to become Canadian citizens were made liable for service. The United States government agreed to the action in an exchange of notes. On Dec. 15, it was announced that married men between the ages of 19 and 25 would be called up beginning January 1, 1943.

On May 27 J. H. King (B.C.), acting government leader of the senate, was appointed minister without portfolio, on the death of Raoul Dandurand. On Oct. 6, other federal cabinet changes were announced; Joseph T. Thorson, minister of war services, was made president of the exchequer court of Canada. He was succeeded as minister of war services by Major General L. R. LaFleche, associate deputy minister. Ernest Bertrand, Liberal member of parliament for Montreal-Laurier, was appointed minister of fisheries, and Alphonse Fournier, Liberal member for Hull, Que. was named minister of public works.

Ministers were exchanged with three new countries for the first time during 1942—the U.S.S.R., China and Chile. On June 12, the high commissioner of Canada in England, and Ivan Maisky, the Russian ambassador to England, signed an agreement in London for a soviet minister to Canada. Russia also opened a consulate in Halifax. On Nov. 4, it was announced that L. D. Wilgress, deputy minister of trade and commerce, had been chosen as minister to Russia, Maj. Gen. Victor W. Odlum minister to China, and Warwick Chipman to Chile. Justice T. C. Davis was named to succeed General Odlum as high commissioner to Australia.

Norwegian, Polish and Yugoslav legations were opened in Ottawa during the year, the respective ministers being Daniel Steen, Victor Podowski, and Dr. Isidore Cankar, former consul at Ottawa.

In May, Prime Minister King announced that all French consulates and consular agencies in Canada had been asked to close, as under existing conditions they were of little value and objects of suspicion. On Nov. 9 relations with the Vichy government were completely broken, and on Nov. 30, Brig. Gen. George P. Vanier, Canadian minister to the exiled United Nations government in London, was designated Canadian representative to the French National committee (the Fighting French).

In May Col. O. Biggar, chairman of the Canadian section of the U.S.-Canadian Joint Defense board, was named director of censorship, and a Wartime Information board was established under C. Vining, head of the newsprint association in Canada, with Philippe Brais, minister without portfolio in the Quebec government, as vice-chairman. Lawrence Weldon was named to succeed Vining. On March 30, Hume Wrong was chosen Canadian representative on the new Pacific War council formed in Washington. In September changes in the Canadian Broadcasting corporation were announced. Major Gladstone Murray, former general manager, was appointed director-general of broadcasting, and Dr. J. S. Thomson, president of the University of Saskatchewan, was appointed general manager for one year.

Among other appointments during 1942 were (Sept.) Maj. James E. Hahn as director-general of the Canadian Army Technical Development board, and Harry J. Carmichael as co-ordinator of production for the department of munitions and supplies (Sept.). On Nov. 18, Elliott M. Little resigned as director of the Canadian National Selective service because of "friction and obstructionism." He charged that confusion existed over the manpower policy.

In Dec. Austin Wright resigned from the post of assistant director to return to his former position as general secretary of the Engineering Institute of Canada. Adheman Raynault was re-elected in Dec. as mayor of Montreal by a sweeping majority.

In November, at a ceremony in Ottawa, 58 Canadians were decorated by the Earl of Athlone on behalf of the king, for services done for their country.

Numerous representatives from Great Britain and the United States visited Canada during 1942. In March General Sikorski, prime minister of Poland, arrived in Canada, and in June Queen Wilhelmina of the Netherlands and King Peter of Yugoslavia. Oliver Lyttelton, England's minister of production, visited Canada, and in Sept. Clement Attlee, British deputy-premier and dominion secretary. Prime Minister Mackenzie King went to Washington to attend the Pacific war council in June, and again in Dec., when postwar problems were discussed. At the end of September a government commission went to England—C. D. Howe, defense minister, Ralf Bell, director-general of aircraft production, and Desmond Clark, director-general of shipbuilding.

In Sept., Tim Buck, general secretary of the Communist party in Canada, and 12 other leaders surrendered to the Royal Canadian Mounted Police in Toronto, after having been in hiding since June 1940, when the government banned the party. St. Laurent, minister of justice, announced on Oct. 6 that these men had been granted a conditional release from custody. On Oct. 10, the Canadian department of external affairs ordered the shackling of 1,376 German prisoners in Canada as reprisal for the shackling of British and Canadian prisoners of war. On recommendation of Geneva these men were unshackled Dec. 12, although it was not known whether a similar action was to be taken by Germany.

GIRL WORKERS OF THE EVENING SHIFT entering the Canadian arsenal on the outskirts of Quebec in 1942

On Dec. 17 Prime Minister King announced a four-point temperance program designed to help achieve a maximum war effort. He ordered: (1) Reduction of the amount of beverage alcohol released from bond during the year beginning Nov. 1, 1942, from the previous 12 months, by the following percentages—beer, 10%; wine, 20%; spirits, 30%; (2) Prohibition of all liquor advertising for the duration of the war, after a six weeks' adjustment period; (3) Reduction in the alcoholic content of all distilled spirits to not greater than 30% under-proof, effective as soon as stocks packaged and ready for sale were exhausted; (4) Limitation of the hours of sale of spirits, wine and beer to eight hours per day.

With the United States in the war, numerous joint boards were set up during 1942 to pool the various resources of the two countries for the most effective prosecution of the war effort. One of the most important of the actions was the building of the new Alaska highway. On March 18 it was announced that under the auspices of the Joint Defense board, an agreement had been reached for the construction of a highway to Alaska, linking continental United States with Alaska, through British Columbia and the Yukon, and connecting also with road systems at each terminal. This highway, 1,671 mi. long from Dawson Creek, Alta., to Fairbanks, Alaska, was constructed under the direction of the United States army with extraordinary speed. It was opened to traffic on Oct. 28 and was officially dedicated Nov. 20. It served as an important line of communication for reinforcing U.S. troops in the Pacific, and naval bases at Kodiak, Sitka, Dutch Harbor, and the Aleutians, and supplies thereby to Russia and China. The construction was undertaken and paid for by the U.S. government. After the end of World War II, the Canadian part of the highway was to form an integral part of the dominion's road system.

In Dec. 1941 a joint Canadian-United States War Production committee was formed. During the first six months of 1942, duplication of production had been greatly reduced, and many materials in which shortages occurred were exchanged. The head of the Canadian committee was G. R. Sheils, deputy minister of the department of munitions and supplies. Ten joint technical sub-committees were appointed, also three other joint committees; the permanent joint board of defense, the materials co-ordinating committee and the joint economic committee. Thus in June, in order to relieve the metal shortage, the Reconstruction Finance corporation of the U.S. began to finance the development of marginal and sub-marginal copper, zinc, lead and graphite mines in Canada, and to finance the opening of new mines and enlarge old ones in British Columbia, Ontario, Quebec and New Brunswick. The project, which was estimated to value millions of dollars, was handled on the Canadian end through George Bateman, Canadian Metal comptroller and the Wartime Metals, Ltd., a dominion government corporation. It was expected that this scheme would be extended to other strategic metals such as tungsten and vanadium but not, however, to gold, silver and other precious metals.

In Dec. 1942 the United States, the United Kingdom and Canada created a combined committee to recommend means of increasing steel output and obtaining the most efficient possible use of steel in 1943. D. B. Collyer was named Canadian representative.

Canada also participated during 1942 in a joint income tax convention, in an air training conference of 14 nations held in Ottawa in May, and in the wheat pool formed in June in Washington under which Canada was to contribute for relief purposes in war-stricken areas. Newsprint allocation also came under the joint United States-Canada board during 1942.

In March the United States and Canada made arrangements whereby about 15,000 Americans serving in the Canadian army might transfer to the United States army after April 1.

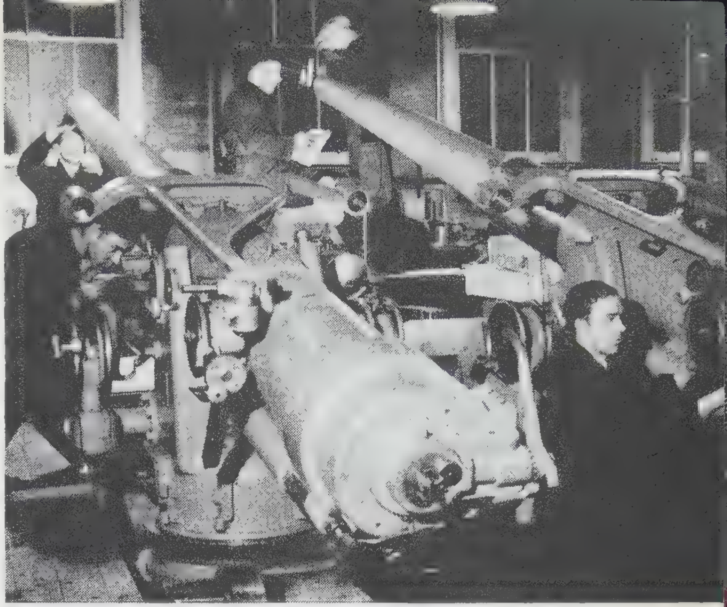
Canada at War.—All information in regard to the operation and occurrences of the war which could be of service to the enemy was withheld by the government in 1942. The facts and figures here given are strictly confined to information disseminated by the government itself, as found in the official monthly publication *Canada at War* and in the departmental reports, bulletins and general summaries in the *Canada Year Book* (Bureau of Statistics, Ottawa).

The third year of World War II witnessed the Canadian military effort at a very high level. During 1942 the prime minister declared that the army overseas numbered upwards of 180,000 men. It comprised one corps of three infantry divisions and another corps of two armoured divisions, along with auxiliary troops. At home, the army approximated 200,000 men on active service, with about the same number in the reserve army. Lieut. Gen. McNaughton became army commander, and Lieut. Gen. Crerar was given the command of one of the corps. In March, the army, air force and naval commands on the east and west coasts and in Newfoundland were unified. Gen. Alexander, Gen. Elkins, and Gen. Page became the respective commanders of these areas. One feature of army development was the emphasis placed on winter training, the use of skis, skill in patrol fighting, and the technique of living off the country. Facilities for training officers were greatly extended; to the original training centres at Gordon Head, B.C. and Brockville, Ont. were added temporary schools at Three Rivers, Que. and Camp Borden, Ont. The training schools overseas were abandoned, and all men recommended for commissioned ranks were asked to return to Canada.

The age for compulsory military training was progressively extended to include all single men and widowers between the ages of 19 and 30. In Dec. 1942, it was announced that married men between the ages of 19 and 25 would be called up in 1943.

The principal military event of 1942 in which Canadian troops participated was the raid on the nazi-occupied town of Dieppe on the French coast (Aug. 19). In all, 5,000 Canadian troops took part under the command of Maj. Gen. J. H. Roberts. He had with him, in addition, United States rangers, royal marine commandos, and Fighting French units. Under cover of naval and air attack, the landing force maintained itself for nine hours in the face of the enemy. A number of local successes were scored, and some important military objectives were destroyed. That greater success was not achieved was attributed to a chance encounter with a nazi convoy, previous to the landing, and the failure, after the landing, of some of the supporting troops to reach their objectives. Nevertheless, lessons were learned, and the practicability of attacking a well defended area was successfully demonstrated. Canadian losses were heavy, 3,500 men being listed as killed, wounded, prisoner or missing.

In 1942, the strength of the Canadian navy reached 48,000 officers and ratings manning 500 ships, including 13 destroyers, more than 80 corvettes, 3 auxiliary cruisers, minesweepers, submarine chasers, patrol ships, as well as smaller craft. Thanks to this much augmented fleet, Canada in 1942 carried 40% of the burden of patrolling the Atlantic. In this duty, it had convoyed more than 64,000,000 tons of cargo to Britain. The Canadian navy also took part in the Dieppe raid, and in Nov. 1942 supplied part of the covering force for the United States attack on North Africa. Seventeen corvettes, and more than 1,200 officers and men took part. Six Canadian floating convoys carried United States troops and equipment in the assault on Oran. Elsewhere, Canadian ships took part in the sea fighting near the Aleutian Islands, off the Alaskan coast. Close to home, Canadian naval and air forces parried nazi submarine attacks in the Gulf of St. Lawrence and in the West Indies. In the former area, 16 Allied vessels were lost. The most spectacular loss was that of the S.S. "Caribou," of the Nova Scotia-Newfoundland ferry service, on Oct. 14, when 238 persons perished.

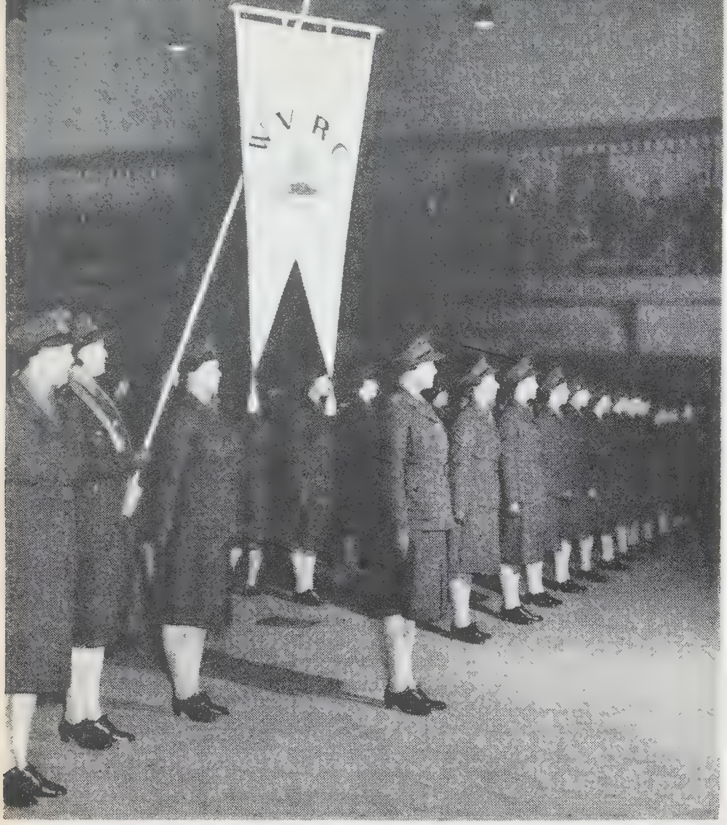


CRAFTSMEN of a Canadian naval repair station overhauling heavy naval guns in 1942

The Royal Canadian air force saw service on all fronts in the course of the year. The Commonwealth Air Training scheme, due to expire early in 1943, was extended to 1945. Under the new scheme, Canadian air training facilities were to be employed on a much larger scale in order to provide a single pool of personnel to be drawn on when required. The cost of the plan was to be borne by Canada and Great Britain, less payments for their own pupils by Australia and New Zealand. Significant changes were also made in Canadian air force administration overseas, enlarging Canadian control, and providing for the creation of exclusively Canadian units, bomber groups, fighter squadrons, coastal command squadrons, and so on, with ground staffs and operating as far as possible from Canadian stations overseas. In the middle east, the Canadian air force set up its establishment, comprising administrative services, auxiliary groups, and other specialist categories. In the North African campaign, opened in Nov. 1942, a number of Canadian air gunners, navigators and wireless operators served with the United States army air corps. Canadian airmen made extensive sweeps over western Europe in 1942.

Indicative of Canada's share in hemisphere defense was the co-operation of Canadian troops and airmen in the Alaskan area. In July 1942, a Canadian joint staff was formed in Washington under Maj. Gen. Maurice Pope, Rear Admiral V. G. Brodeus, and Air Marshal G. V. Walsh. A combined force of Canadian and United States troops was formed at Helena, Mont., to train in parachute tactics, under the command of Col. Robert T. Fredericks, United States army, with Col. J. G. McQueen, Canadian army, as second in command.

On the domestic front, the third year of the war opened with Canadian industry completely geared for war purposes. Fundamental to most of the war production was the development of the



CEREMONIAL PARADE of the Women's Volunteer Reserve corps, commonly called the "Beavers," at an armory in Montreal, Canada, in 1942

iron and steel industry. Much of this was centred in central Canada where, in the Niagara peninsula, electrical power is readily available. The estimated production of steel in 1942 was 463,000 tons, roughly four times the production of 1939. The production of pig iron rose from 1,528,000 tons in 1941 to 2,000,000 tons (estimated) in 1942. In order properly to co-ordinate national effort with that of the other allied states, Canada became a member of the steel committee with the United States and Great Britain. The committee proposed to pool production methods, technical information, and methods of distribution. Shipbuilding assumed the proportions of a great national industry with a program of 1,000,000 tons, in addition to the production of 200 or 300 naval craft. At the end of 1942, contracts called for the building of 300 10,000-ton merchant ships at an outlay of $600,000,000. In the last week of September, the 51st of these vessels was delivered, although only one had been completed before Jan. 1, 1942.

On the domestic scene, the most far reaching regimentation of 1942 was the establishment of the National Selective system in March. In order equitably to allocate Canadian man and woman power, a degree of compulsion was adopted, along with the gradual elimination of non-essential industries. The age for calling men up for the services was extended, and certain occupations were declared closed to physically fit men in the appropriate age categories. In August, the sole responsibility of mobilizing and allocating manpower was turned over to selective service, and in December, the calling up of men for the armed services was entrusted to it. At much the same time, the direction of the service was put into the control of the department of labour. In this way, parliamentary responsibility for the employment of Canada's most vital resource was assured. Under this administration, the employment of workers in non-essential jobs was rigidly controlled, and the casual drift of labour from one job to another was checked by requiring a seven days' notice before terminating employment. In a similar fashion, employers were prohibited from attracting workers from other jobs. Selective service possessed the right of summoning anyone, without exception, for interview, and indicating more essential war work. Compulsion was still withheld, except in the case of unemployed persons; when, however, a worker was transferred, he was guaranteed reinstatement in his old job at the termination of the war. The registration of Canadian woman power commenced in September; the first group to register was the 20–24 age group. To ease the burden on women already employed, the Canadian government, in collaboration with the provincial administrations of Quebec and Ontario, laid plans for day nurseries. In other ways, the health of women workers was being safeguarded. Women had already appeared in the armed services. The Canadian Women's Army corps totalled about 10,000 by the end of 1942. The women's Royal Canadian Naval service reported some 3,000 members in the same period, and on August 18, 1942, the first woman's contingent of the R.C.A.F. reached England. (J. I. C.)

Education.—The statistics collected in 1942 showed for all Canada an enrolment in ordinary and technical day schools (school year 1939–40) of 2,110,055; in private day schools, 88,397; in college preparatory courses, 19,803; university courses, including all summer schools, teachers' courses, etc., 102,833 students. These, together with night schools, correspondence schools and the 19,803 pupils enrolled in dominion Indian schools, made up a total school population, estimate of 1940, of 2,485,127 as against a national population of 11,505,898 of the census of 1941.

Defense.—See *Canada at War,* above.

Finance.—The fiscal year of the Dominion of Canada runs from April 1 to March 31. For the fiscal year 1942–43 the budget estimate was $3,900,000,000, of which $3,330,000,000 was for the war. It was expected that taxes would cover $2,050,000,000, leaving $1,850,000,000 to be added to the national debt. Receipts till Nov. 30 reached $1,453,760,000, of which income and excess profits taxes contributed $896,810,000, or more than double the receipts of the same period one year previously. The finance minister estimated at the close of the calendar year 1942 that the fiscal year outlay, owing to the speeding up of war production, would reach some $4,500,000,000. The calendar year 1942 witnessed the flotation of two successful war loans, each representing, though on various bases, an interest cost of about 3%. The loan of Feb. 1, 1942 (Second Victory Loan), announced with a minimum objective of $600,000,000, brought in subscriptions of $843,127,900 with conversions of $153,579,000 in addition. The number of subscribers was 1,680,000. The loan of Oct. 19, 1942 (Third Victory Loan), aiming at $750,000,000, brought in a total of $991,536,500 with 2,041,610 individual subscribers. The budget of 1942–43 contained special provisions raising excess profits taxes from 75% to 100% with 20% refundable after the war. The personal income tax was also increased, with provision for an additional levy, the "refundable" income tax, practically a forced loan, repayable with accrued 2% interest after the war.

The credit of the country despite this heavy taxation stood firm on a 3% basis. But the huge government expenditures and the increased rate and volume of wages created an unprecedented purchasing power. Thus, by the autumn of 1942, the price-control system established in the preceding year was visibly strained. To meet this problem, the minister of finance undertook to reduce retail prices of tea, coffee, oranges and milk by means of subsidies, at an estimated treasury cost of $40,000,000 a year.

As the result of negotiations between the minister of finance and the provincial premiers, it was announced on Jan. 15 that the Canadian provinces and municipalities will not collect personal income taxes and corporation taxes until one year after the war. A provision was made for annual compensation payments by the federal government to the provinces.

Trade and Communications.—The external trade of Canada was of necessity entirely altered in 1942 by the needs of a war economy. Information as to many things, shipping direction and ature of exports, etc., was withheld. Information given in Dec. 1942 by the department of trade and commerce showed domestic exports (10 months) valued at $1,890,000,000, more by $270,000,000 than the whole total of 1941. Total trade of the year was estimated at $4,000,000,000, as compared with $1,687,000,000 prior to World War II. Exports were made up of enormous quantities of food products to Great Britain and of munitions to various war fields.

In the field of transport, the outstanding feature of 1942 was the great increase in railway traffic, both freight and passenger. Car loadings bearing revenue numbered 3,189,447 in 1941 and had reached 3,261,418 by Dec. 12, 1942. The combined gross earnings of Canadian Pacific and Canadian National amounted to $571,000,000 for 11 months of 1942. In air transport the nationally-organized Trans-Canada Air Lines greatly extended its operation. It covered a route of 4,857 mi. in 1942, with 22,790 mi. of daily flight. The mail load of 1942 was 2,260,000 lb.—an increase of 63% over 1941; express, 396,000 lb.—an increase of 128%; passengers, 106,000—an increase of 24%. Service was extended to Newfoundland May 1, 1942. The principal feature of the year in regard to highway traffic was the completion late in 1942 of the final link in northern Ontario of the Trans-Canada highway, extending 4,000 mi. from the Atlantic to the Pacific. Restrictions on the use of motor cars permitted very little traffic in 1942. The building of the military Alaska highway is noted on p. 150.

Agriculture.—Many new records of production and marketing were made by Canadian agriculture during 1942. Grain production reached a new all-time high. Favourable weather conditions in the prairie provinces resulted in a wheat crop of 587,000,000 bu., 607,688,000 bu. for all Canada. The average yield per acre was 28.4 bu., compared with the previous high record of 26 bu. in 1915. An increase of 1,500,000 ac. in the area devoted to oats, combined with high yields, resulted in a crop of 651,976,000 bu. for all Canada, more than double the 1941 output. Increased acreage and higher yields resulted in a record barley crop of almost 259,234,000 bu.; flaxseed output, the largest in many years, was 14,991,000 bu., as compared with 6,566,000 bu. in 1941. The rye crop was 24,703,000 bu. The total supply of feed grains on hand at the end of 1942 was more than adequate to meet the requirements of the expanded livestock production. By June 1, 1942, the number of cattle had increased by 5.1%, sheep 11.6% and hogs 17% over the 1941 record. The farm cash revenue was up for 1942 almost to the previous high record of 1928, despite ceiling regulations on most farm commodities. The beef situation in Canada during 1942 was affected by increased military and civilian demands, and by a similar increase in demand in the United States, which attracted cattle to the American markets. Moreover, there was a reluctance of livestock raisers to market their cattle under price ceilings. To ameliorate the situation, all sale of cattle was put under a crown company under the Wartime Food Corp. Ltd.

The dominion government's wheat policy in 1942 provided for an initial minimum price of 90 cents a bushel for western wheat, an increase of 20 cents a bushel. The government moreover contracted to buy 280,000,000 bu. of the 1942 wheat crop. Provision was also made for proportionate assistance in coarse grains, and for a new freight assistant payment. The cost of the new policy was estimated at $100,000,000 for 1942.

After the opening of World War II an outstanding demand was made on the farmers of Canada for greater hog production. As reported in the press by James G. Gardner, federal minister of agriculture, Canada was asked in 1939–40 to supply to Britain 91,000,000 lb. of bacon and pork products; 331,000,000 lb. were shipped that year and, in 1940–41, 425,000,000 lb. From Nov. 1941 to Oct. 1942, 618,000,000 lb. were shipped. Urgent official representations from the government led, in 1942, to a voluntary curtailment of the home consumption. A similar demand for Canadian cheese led to shipment to Britain of 115,000,000 lb. in 1941–42. Shipments of powdered eggs were going to Britain in large volume, the 1942 contracts calling for 45,000,000 dozen. A program of increased sheep raising was also initiated.

Manufacturing.—The direction, scope and volume of manufacturing industry was profoundly affected by the war in 1942. Production generally was enormously increased. Certain industries, as notably the automotive-industry of General Motors and similar concerns, had been converted from their previous operations to the making of war machines, vehicles and munitions. The implement industry underwent similar though lesser change. In regard to the general aspect of manufacture, one notes for 1942 the great increase in the volume of employment; for every 100 hired in 1926 there were 110 in 1938 and 218 in 1942. The award of government contracts for construction had reached its peak in 1941 with a value of $393,000,000; it showed $281,000,000 for 1942. Pig iron production, standing at 846,000 net tons in 1939, reached 2,000,000 tons in 1942; steel production advanced from 1,551,000 net tons of ingots and castings in 1939 to 3,000,000 in 1942.

Mineral Production.—Mineral production for 1942 was greatly hampered by shortage of labour and supplies. Yet the completed returns showed a record annual value of $564,000,000 (an advance of $4,000,000) in spite of a decline in gold output amounting to $20,000,000. Demand throughout the year was greatly increased by British requirements from Canada of nickel, copper, lead, zinc and mercury and by the dependence of the U.S. on the dominion for nickel and asbestos. Home demand of war industries pressed hard. Before World War II, Canada exported 90% of its nonferrous base metal. In 1942, 65% of Canadian copper, 40% of zinc and 25% of lead were used at home. Special attempts were made in 1942 to stimulate the search and recovery of tungsten, chromium, vanadium and other strategic metals which Canada was compelled to import in whole or part. The dominion was producing in 1942 about 10,000,000 barrels of crude petroleum, 95% of it from the Turner valley, Alta., and from 400,000 to 500,000 tons of iron ore, a quantity far short of requirements, the bulk of it from the Michipicoten area, Ont. (S. Lea.)

Canadian Literature.

There were four costume novels of note. Thomas H. Raddall led with *His Majesty's Yankees,* a rollicking yarn of the American Revolutionary era. Grace Campbell wrote delightfully about her childhood locale of Glengarry, Ontario, in *Thorn-Apple Tree,* which described pioneer life in the very early 1800s. Ethel Kirk Grayson also wrote about early Ontario (and pioneering Saskatchewan) in *Fires in the Vine,* a family chronicle of note covering the years 1793 to 1936. *All the Trumpets Sounded,* by W. G. Hardy, continued in the vein of his earlier work, and was acknowledged the best fictional interpretation of Moses to that date. There were three outstanding novels having modern themes. Dyson Carter, a Manitoba scientist, described human undercurrents in hospital life in *Night of Flame,* and achieved memorable suspense. Mazo de la Roche turned from her Jalna saga to write of England and America finding new values when allied against naziism, in *Two Saplings.* The first notable newspaper novel appeared when Herbert Sallans produced *Little Man,* which dramatized Canadian life for a generation beginning with the turn of the 20th century.

Poetry.—The crop of books of collected poems was short in the stock but heavy in the ear. Definitely in the lead was Canon James Edward Ward's *This England,* the Canadian version of *The White Cliffs of Dover,* and marked by a unique combination of refined nostalgia and altruistic patriotism. *Canada at Dieppe,* by Arthur S. Bourinot, caught something of Canada's glorious record during that heroic assault. The 40 lyrics in the posthumous book of Mary McCullough (died March 1942, aged 27), *The Sky Was My Friend,* were hailed all across the dominion, and the volume had the distinction of going into a second edition, a rarity in Canadian verse publication. *For Freedom,* by Wing Commander G. L. Creed, R.C.A.F., was the best of a large number of books of patriotic verse.

Nonfiction.—The *Unknown Country,* by Bruce Hutchison, combined impressionism and realism to produce a masterful portrait of modern Canada. Emily Carr repeated her 1941 success with *The Book of Small,* a series of appealing sketches of her early childhood in British Columbia. Canada in the modern world was the general theme of a number of studies. *Canadian External Relations,* by G. P. de T. Glazebrook, *Canadian Economic Development,* by A. W. Currie, *Canada's Role in Geopolitics,* by Griffith Taylor, were authoritative in their fields. Further books dealing with current affairs, in the international sphere, were *Peace by Power,* by Lionel Gelber, *The War: Third Year,* by Edgar McInnis, *Democracy Needs Education,* by Julia G. Wales, and *Russia's Secret Weapon,* by Dyson Carter. C. F. Klinck's *Wilfred Campbell* was a distinctive contribution to Canadian literary biography, and C. W. Jeffery and T. W. McLean's *The Picture Gallery of Canadian History* gave high lights of Canada's past in text and picture with stirring impact. Clara Dennis added to her reputation as a skilful popularizer of geography with *Cape Breton Over.* The most effective inspirational book of 1942 was Dr. Archer Wallace's *Leaves of Healing.*

Literary Awards.—The governor-general's medals for 1941 went to Anne Marriott for *Calling Adventurers* (poetry), Alan Sullivan for *Three Came to Ville Marie* (fiction), Emily Carr for *Klee Wyck* (general nonfiction). The Ryerson Press award for 1942 (inaugurated in 1942) went to Herbert Sallans for *Little Man.* (C. Cy.)

Canals and Inland Waterways.

The principal canals and inland navigable waterways of the United States in 1942 included the Great Lakes, the Mississippi river system, the Illinois waterway, the New York State Barge canal system, the Atlantic Intracoastal waterway extending from Trenton, N.J. to the Florida keys, the Gulf Intracoastal waterway extending from the St. Marks river in Florida to Corpus Christi, Tex., the Tombigbee waterway, Alabama, the San Joaquin-Sacramento river system in California, and the Columbia river system in the northwest.

The Great Lakes had natural deep water except in the connecting channels which had been artificially deepened where necessary to accommodate deep-draught vessels. These connecting channels were the St. Marys river and canal between Lake Superior and Lake Huron, the Straits of Mackinac connecting Lake Huron with Lake Michigan, the St. Clair river and lake and the Detroit river between Lake Huron and Lake Erie, the Welland canal joining Lake Erie and Lake Ontario, as improved by Canada, and the St. Lawrence river to the sea.

The Mississippi river system embraced the river proper, the Red, Arkansas, Missouri, Illinois, Ohio and other streams. The Mississippi river had a channel suitable for deep-draught, ocean-going vessels upstream to Baton Rouge, La., and thence a channel for modern barge navigation to Minneapolis, Minn., and in its principal tributaries which included the Ohio river and the Missouri river. The Ohio river had several navigable tributaries, the more important being the Allegheny, Monongahela, Kanawha, Muskingum, Kentucky, Cumberland and Tennessee rivers.

The Illinois river and waterway to Lake Michigan had a barge channel which connected the Great Lakes with the Mississippi river system. An additional outlet from the Great Lakes to the sea was via the Oswego and Erie branches of the New York State Barge canal between Lake Ontario and the Hudson river.

The Atlantic Intracoastal waterway and the Gulf Intracoastal waterway provided protected channels for barge and other light-draught coastwise navigation. A dredging program to maintain the project dimensions of the Atlantic Intracoastal waterway had been vigorously prosecuted and in general full project channel depths were available from the Chesapeake bay terminus of the waterway at Norfolk, Va., to the Florida keys. The Gulf Intracoastal waterway had been the subject of a continuous dredging program and a channel for barge navigation was available from the vicinity of Apalachee bay, Fla., to Corpus Christi, Tex. In 1942 the extension of this waterway into Corpus Christi was completed and the construction of flood gates was under way at the Brazos river and Colorado river crossings. To facilitate the movement of barge tows and other waterway traffic, the act of congress approved July 23, 1942, authorized the enlargement of the existing Gulf Intracoastal waterway from the vicinity of Apalachee bay to Corpus Christi and its extension to the Mexican border. That act also authorized the construction of a barge canal across northern Florida connecting the St. Johns river and the Withlacoochee river. A program of dredging operations was initiated to provide the authorized enlarged channel in the section from Carrabelle, Fla., westward to New Orleans, La., and in certain other reaches of this extensive coastal waterway route.

The Tombigbee waterway, one of several feeder channels of the Intracoastal waterway, extended from Mobile harbour, Ala., far inland through the Mobile, Tombigbee, Warrior and Black Warrior rivers. The San Joaquin-Sacramento river system, with an outlet to the sea through San Francisco bay, provided a deep-draught channel to Stockton, Calif., on the San Joaquin river and a moderate-draught channel to Sacramento, Calif., on the Sacramento river and in addition other channel improvements. The Columbia river had a deep-draught channel to Portland, Ore., and to Vancouver, Wash., and depths suitable for commercial vessel traffic to the head of the pool formed by Bonneville dam and thence depths for barge navigation upstream to and including the Snake river.

Other important canals of the United States included the Cape Cod canal, Mass., and the Chesapeake and Delaware canal, Md. and Del., which accommodated ocean-going vessels; and the Okeechobee-cross-Florida waterway which afforded a light-draught barge channel across southern Florida. (E. Rd.)

Great Britain.—In Great Britain during 1942 canals engaged a considerable amount of government attention in the hope of extending their use in war time. The late Frank Pick had been instructed to report upon the carriage of traffic on canals and inland waterways. The report was duly completed but not made public. Subsequently, the minister of war transport took over the control of eight businesses engaged in canal transport and it was announced in the press that all the principal canal undertakings in Great Britain were to be controlled in the same manner as railways. Some 2,500 mi. of canal were affected by this decision.

Apart from the question of operation, certain extension schemes were brought before the public notice. A scheme for connecting the Tay and the Clyde was considered and officially abandoned on the ground that it was not practicable at the moment to carry out the necessary preliminary survey work. Another project for which enthusiasm was revived was that of a ship canal across central industrial Scotland connecting the firths of Forth and Clyde for vessels of sea-going calibre as a through route for shipping from the North sea to the Atlantic. A barge canal effecting this junc tion already existed, but it was only available for craft 68.5 ft. in length, 19.7 ft. in beam and drawing 8.75 ft. of water.

A novel proposal was mooted by J. F. Pownall for a single-level main canal from Newcastle to Southampton. Calling it the Grand Contour canal, the projector claimed that such a canal could be constructed at a uniform level of 310 ft. above sea level and advocated a waterway 30 m. (or 100 ft.) wide at the top, with a depth of about 17 ft., sufficient for craft up to 1,500 tons displacement. The estimated cost was £150,000,000.

River training works in England continued to be pursued by the various catchment boards set up under the Land Drainage Act of 1930; the improvement of the River Nene was completed at a cost of over £1,000,000. It provided safe and convenient navigation for barge traffic from the Wash to towns in the Midlands.

Europe.—On account of the war, little information was forthcoming as to the development of canal construction on the continent of Europe. In Sweden, the official opening had taken place of the Falsterbo canal through the isthmus of Scania. It has a length of 27 km.; at mean water level the depth is 6.7 m.; vessels of 20 m. beam can pass through. From Germany came news that a central association for German inland shipping had agreed on nine types of standard craft for the various waterways in that country, ranging from 85 m. by 9.5 m. by 2.65 m. to 41.5 m. by 5.10 m. by 2.2 m. (B. Cu.)

Cancer.

Neutron Beam Treatment of Cancer.—A very important paper on the treatment of cancer with fast neutrons by Stone and Larkin appeared in Nov. 1942 ("The Treatment of Cancer with Fast Neutrons," Robert S. Stone and John C. Larkin, Jr., *Radiology* 39: 608, 1942). The authors report in detail the results of the care of 120 patients with various types of cancer. The cyclotron used to produce the neutrons was capable of delivering these particles with an energy of 21,000,000 electron volts. It is to be noted that this was not the same thing as 21,000,000 volts of electrical potential, the factor determining the wave length of x-ray. The neutrons were first filtered through 3 cm. of lead. This thickness absorbs almost wholly any x-rays which may accompany the neutrons, but as the latter are uncharged particles, they can, so to speak, slip between the nuclei of the lead atoms without much loss. A considerable thickness of water or paraffin is a much more effective filter for neutrons.

The analysis of the results on patients treated showed that some of them suffered from severe general reactions, such as are seen with x-ray therapy. In about one-fifth, the tumour disappeared within three months, which does not mean that the patients were cured, but merely that the tumour disappeared. Partial disappearance was noted in slightly less than one-half the patients, and in one-fifth no change was observable.

In general, this is no better than can be obtained with suitable x-ray treatment. Originally it was thought that the neutrons offer special advantages, as they give a greater density of electron radiation in a given cubic content of tissue than does x-ray, but the difficulties of measuring the neutron rays with accuracy, and the variable results which have been obtained by those who have attempted to measure the effect of a beam with biologic material have prevented any accurate comparison between the two. The fact that there is no back-scatter from a neutron beam was found to be an advantage in treatment, for it allowed a larger amount to be given through the skin than is the case with x-ray in which the back-scatter in the ordinary type of 200,000 volt machine amounts to something like 35%. The impression gained by those who have the largest experience in the neutron treatment of cancer is that these particles are more destructive of the normal tissues than equivalent amounts of x-ray. But all this study of a new physical agent of this type showed that the fact that a considerable quantity of energy can be set free in a tumour inside the body without great damage to the skin does not necessarily result in a cure of the disease. The experienced radiologist is quite aware that there are as yet many unknown factors in the reaction of malignant tissues to x-ray, and that no two tumours behave exactly alike in their response to x-ray or radium therapy. The only situation where the sensitivity of the tumour is of relatively little importance practically is in the skin, where large doses of x-rays, radium rays or neutrons can be given to small tumours with a reasonable probability that a cure by complete destruction of the tumour may be obtained. Such dosage is impossible in conjunction with internal tumours, unless the growth is so localized and so accessible that radium needles can be directly implanted.

It was hoped when the cyclotron was developed and found to give off heavy beams of neutrons that the fact that these particles were not charged would enable them to penetrate to a considerable distance into the body, and then suddenly discharge locally, so to speak, a large amount of energy in the form of electrons. But whatever occurs, there was no evidence at the close of 1942 that the results are more favourable than those obtained by the use of x-ray. Also there were but few cyclotrons available for neutron beam treatment, and those physicians who were favourably situated, as were the authors, will have to furnish the records of many carefully observed patients and compare the results with those obtained from the same type of tumours after the application of x-ray. If it can be shown after a five year observation of a statistically satisfactory number of patients with varied types of cancer that the neutron treatment is more effective in any type of disease than x-ray or radium, cyclotrons will have to be constructed at no matter what expense in population centres where the maximum number of patients can be treated.

Hormone Treatment of Cancer.—For some 25 years it has been known that extracts from the ovary and placenta when injected into female animals caused an enormous overgrowth of the uterus and breast. Similar studies on the male sex organs have only been completed in the last few years, when it was shown that the glandular tissue of the breast of the female rabbit and rat could be altered by the injection of male sex hormone, and also that the glandular content of a benign breast tumour occurring in the female rat could practically be removed by the administration of male sex hormone, and on the other hand, the glands greatly increased by the administration of the corresponding female sex hormone. These discoveries led to an attempt to reduce the dimensions of the prostate in simple hypertrophies in which the gland substance was superabundant, and a certain amount of at least temporary benefit was unquestionably observed in a few patients.

Considerable benefit followed the administration of female sex hormone to persons with cancer of the prostate, and there is evidence that such treatment does cause shrinkage of the glandular structures in the prostate. ("Carcinoma of the Prostate Treated with Diethylstilbestrol," Norris J. Heckel and Herman L. Kretschmer, *J.A.M.A.*, 119: 1087, 1942.) Also metastatic deposits at a distance, in the bones and elsewhere, have shown a tendency in a certain number of cases to shrink, and therefore lessen the pain due to pressure of the growth. In most instances a synthetic product has been used, diethylstilbestrol. Possibly better results will be obtained with the use of large quantities of theelin, as the latter product has shown itself to be in many instances more effective than the synthetic compounds. No claim has been made that cancer of the prostate can be cured, and it is necessary to be especially cautious in judging results, because it is well known that untreated cancer of the prostate may exist for many years in a quiescent stage. Also the diagnosis of carcinoma of the prostate is not always certain from the small amount of biopsy material which is ordinarily available to the pathologist. But enough benefit has accrued to the few patients who have so far been studied to make it clear that a certain amount of relief may be obtained, and in some instances the total disappearance of the symptoms due to the tumour, at least for a short time. There is no reason why such treatment should not be paralleled by the simultaneous administration of x-ray which also has, in some cases of cancer of the prostate, a considerable palliative effect. Certainly the facts already observed warrant a thorough study of a large number of patients in which the diagnosis has been made not only clinically but microscopically.

The Betatron.—An apparatus based upon principles somewhat similar to that of the cyclotron is the betatron, which also has been suggested by physicists as a useful agent in the treatment of cancer. The statement has been made in the press and in some scientific magazines that these betatrons are produced at a voltage of 20,000,000. This is somewhat misleading, for they are not produced at 20,000,000 volts of electrical potential, but at 20,000,000 electron volts, which is an entirely different thing. Inasmuch as radium gives off beta rays at approximately 6,000,000 electron volts and such electron beams have been found to be extremely destructive to healthy as well as cancerous tissues, their use has been long since abandoned. In almost all applications such rays are filtered off by metal filters so as to leave only the gamma rays of radium which act upon the cancer. The gamma rays have a much more selective effect in damaging the cancer cell and sparing the healthy tissues than have the beta rays. (*See* also MEDICINE.) (F. C. W.)

Candy. It was estimated that about 20% of the candy and chocolate produced in the United States in 1942 was shipped for consumption by armed forces in the U.S. and abroad. The army includes hard candy for Ration K, and the soldier's "last ditch" or extreme emergency food package, known as Ration D, contains hard chocolate and sugar, two of the most important candy ingredients. In addition, varieties of candies, particularly 5-cent and 10-cent bars, were purchased in large quantities for resale at post exchanges.

According to the U.S. department of commerce, 1,200 manufacturers, employing 50,000 persons, produced about 2,200,000,000 lb. of candy in 1942 or a gain in volume of about 10%. This was valued at about $400,000,000 wholesale. The average value of candy in 1942 was about 18 cents per pound compared with 16 cents in 1940, 15 cents in 1939 and 14 cents in 1938. Prices continued to advance throughout 1942. In October the average wholesale value of candy was 19.3 cents per pound as against 16.3 cents in Oct. 1941.

For the first time in its history, the candy industry in 1942 met sharp curtailments of ingredients. Immediately after the Pearl Harbor incident on Dec. 7, 1941, sugar stocks were frozen. In Jan. 1942 a sugar rationing or quota system was announced. At first, the candy industry received 80% of its sugar requirements. The quota was later reduced to 70%. In May 1942 grinding of cocoa beans was limited to 70% of the 1941 tonnage. In July this was reduced to 60%. During most of the year, chocolate manufacturers supplied the candy industry to the extent of 60% of their requirements, based on 1941 purchases. There was no rationing of corn syrup in 1942, with the result that most manufacturers received up to 120% of their corn-sugar requirements. The shortage of chocolate proved to be more of a problem for candymakers in 1942 than the shortage in sugar. In addition to corn syrup, other sugars and sweeteners were used, notable of which were molasses and malt sugar. The latter is a brewery by-product.

On Dec. 4, 1942, the War Production board issued a new chocolate conservation order, prohibiting the use of chocolate in the manufacture of Christmas, Easter and other holiday novelties, hollow moulded goods and chocolate shot (decorative sprinkles). Miniature chocolates were restricted to consist of 60 or more pieces to the pound, and the use of chocolate decorations was banned. Normally, the candy industry uses 222,000,000 lb. of chocolate per year. Shortages of candy were noted during the Christmas season and candy and newsstands were emptying quickly as the year drew to a close.

In 1942, many candy plants were converted for direct war work, with some factories making radio, plane and gas-mask parts as well as other nonedible necessities.

The candy industry's annual tonnage is divided as follows: bulk candy, 33.6%; penny goods, 15.7%; bars, 1-cent, 5-cent and others, 35.4%; plain packages, 8.7%; and 5-cent and 10-cent packages other than bars, 5.5%. (H. D. G.)

Cane Sugar: *see* SUGAR.

Canning Industry. U.S. and territorial canned food production in 1942, including canned vegetables, fruits, fish, meat and milk, totalled about 498,000,000 cases, compared with 512,000,000 cases in 1941. Regular canned food items were packed in somewhat lower quantities than in 1941, but the total pack was greater in 1942 as a result of canning considerable quantities of special rations for the armed forces. Production statistics for rations were not available.

Government restrictions on the use of tin plate markedly affected the composition of the pack of regular items. Nonseasonal products were greatly restricted and some seasonal products were curtailed. The net results of the adjustments were: a 10,000,000-case increase in the pack of seasonal vegetables; a slight lowering of the pack of fruits and fruit juices; a moderate reduction in the fish pack; an increase of about 10,000,000 cases each for canned milk and meat. Of the available packs, government quotas controlled the amounts of canned foods available for civilian use.

The restrictions of critical materials, especially tin, induced a stage of transition in canning technology, particularly in respect to containers. Attention was directed to reduction in the use of tin and research was undertaken to determine how this might be done. These investigations were still in progress at the end of 1942, but already there had begun a gradually increasing use of electrolytic tin plate having a weight of 0.5 lb. of tin per base box as compared with 1.25 lb. for the conventional hot-dipped plate. Also coming into use was "bonderized" plate, having no tin coating but chemically treated (phosphatized) to reduce corrosion, further protection being afforded by enamel. Glass containers were used to a greater extent in 1942 than 1941—14,000,000 cases, or 4% of the total fruits and vegetables in 1941, and an estimated 31,000,000 cases, or 11% of the total in 1942.

In can manufacturing a large quantity of tin was conserved by the introduction of solder composed of 97.5% lead, 2.5% silver; as against the conventional solder made of 60% lead and 40% tin.

Extensive research studies were begun on nutritional values in heat-processed foods. This work, supported jointly by the canning and can manufacturing industries, was planned first to determine dietary factors and, later, to study technological factors which affected these values. This work, which would be carried on through 1943, was organized through financial grants to universities recognized for excellence in the field of nutrition. (E. J. C.)

Canterbury, Archbishop of

(William Temple) (1881–), English divine. For details of his early career *see Encyclopædia Britannica,* under Temple. Since 1929 Dr. Temple had been archbishop of York, and in 1942, on the retirement of Dr. Cosmo Gordon Lang, he was elevated to the see of Canterbury. It was he who organized the Malvern conference of 1940–41, the first report of which created a great sensation. The final report was issued early in 1942. Upon the important sections on the land question and the problem of money and the banks rested the archbishop's claim to public attention during 1942.

Immediately on his elevation the new archbishop found himself surrounded by ecclesiastics and laymen sharing his views, and the Albert Hall meeting of early autumn 1942 was but the signal that the new primate would be a political ecclesiastic of the first order, determined to give a Christian lead to public opinion on fundamental issues in England and the English speaking countries.

Among his numerous publications the following are outstanding: *The Gifford Lectures on Nature, Man and God* (1932–34), important for the chapter on the meaning of history; and *Readings in St. John's Gospel:* 2 vols. (1940–41). The latter, probably his greatest spiritual work, is a translation from St. John, with his own running commentary.

Capablanca, José Raoul

(1888–1942), Cuban chess champion, was born Nov. 19 at Havana, Cuba. He learned to play chess at the age of 4 and at 12 had won the championship of Cuba. At 20 he defeated Frank J. Marshall, then U.S. champion, in a nontitle match, and three years later won an international match at San Sebastian, Spain, against recognized top-flight players. In 1921 Capablanca won the world's chess championship by defeating Dr. Emanuel Lasker at Havana. In 1927 he lost his title to Dr. Alexander Alekhine of Russia in Buenos Aires. Most of the time after 1913 he was in the Cuban diplomatic service and was commercial attaché to Washington at the time of his death in New York city, March 8.

Cape Verde Islands: *see* Portuguese Colonial Empire.
Carbohydrates: *see* Chemistry.

Carlile, Wilson

(1847–1942), British clergyman and founder of the Church Army, an English religious organization, was born Jan. 14 in Brixton, England. At the age of 31 he left his office job to study for the ministry at the London College of Divinity. He was ordained in 1880, served as curate in London, but resigned when his parishioners disapproved of his holding street-corner services. In 1882 he conceived the idea for a Church Army, and with a band of evangelists he started mission work in the London slums. He trained an army of officers and soldiers, made up of lay people, as "Church of England evangelists," and established lodging houses for the poor, employment bureaus, food depots, dispensaries and social service bureaus. The Church Army's activities spread to India, South Africa and Canada, and a training college was established in Rhode Island in 1927. Rev. Carlile was prebendary of St. Paul's cathedral. He died in Woking, Surrey, Sept. 26.

Carnegie Trusts.

Carnegie Corporation of New York, established by Andrew Carnegie in 1911 and endowed with $135,000,000, devotes its annual income to grants to institutions and agencies whose activities aim at the advancement and diffusion of knowledge and understanding among the people of the United States and of the British dominions and colonies. Frederick P. Keppel, president since 1922, retired as of Nov. 18, 1941, and was succeeded by Walter A. Jessup, who serves as president of both the corporation and the foundation.

During 1941–42, the corporation trustees appropriated a total of $2,804,650: library interests, $249,300; adult education, $81,500; fine arts and museums, $445,950; research and publication, $599,515; general educational purposes in schools, colleges, universities, etc., $1,428,385. The amount appropriated since 1911 totals $187,235,199.

The five other separately administered Carnegie organizations in the United States, which were founded by Mr. Carnegie for specific purposes before the establishment of the corporation, with endowments ranging in 1941 from $10,000,000 to $30,000,000, followed their established programs described regularly in their annual publications.

Carnegie Institute of Pittsburgh (1896), which comprises a museum of fine arts, a music hall, a museum of natural history, a public library and an associated institute of technology, with a library school, carried out its normal programs.

Carnegie Institution of Washington (1902), devoted to scientific research, has expended since its organization $47,341,373 in its program of encouraging investigation, research and discovery, and the application of knowledge to the improvement of mankind, specifically by work in astronomy (Mt. Wilson observatory), terrestrial magnetism, geophysics, animal and plant biology, and historical research (especially in Yucatan). Many of its staff and a large part of its research faculties are engaged in services relating to the national emergency.

Carnegie Hero Fund Commission (1904), established to recognize heroic acts performed in the United States of America, the Dominion of Canada, the Colony of Newfoundland, and the waters thereof, by persons the nature of whose duties in following their regular vocations does not necessarily require them to perform such acts, announced that the list of its beneficiary aid shows a total of 3,231 recipients of medals and 288 persons receiving pensions. During 1941, 32 persons received educational awards and 25 others received pecuniary awards for specific purposes. Its awards for the year 1941 totalled $138,920.25.

Carnegie Foundation for the Advancement of Teaching (1905), established to provide retiring pensions for teachers and to advance higher education, paid $1,929,443.13 in retiring allowances to retired college professors, or their widows, making a total of $40,569,056.18 paid for such purposes since its establishment. It has also continued, chiefly from funds provided by the corporation, its program of educational research, including such activities as teacher-testing program, graduate examination study, etc.

Carnegie Endowment for International Peace (1910), established to serve the purpose indicated by its name, expended its funds in efforts to further friendly understanding among the nations of the world. (R. M. Le.)

Carney, Thomas Joseph

(1886–1942), U.S. business executive, was born April 7 in Chicago and was educated in Chicago public schools. At the age of 16, he joined Sears, Roebuck and Co. as an "extra" in the shipping department during the Christmas rush, and later became head of the department. His executive ability brought him steady promotion. From executive of a Chicago store, he became general superintendent at Dallas, Tex., general manager of Sears' eastern territory, vice-president of the company, 1930–39, and finally president, 1939–42. Carney died in Chicago, June 29.

Caroline Islands: *see* Pacific Islands, Mandated.

Carr, Wilbur John

(1870–1942), U.S. diplomat, was born Oct. 31 near Hillsboro, Ohio. He was graduated from Kentucky university, Lexington, 1889, and received an LL.M. degree at Columbian (now George Washington) university in 1899. Carr entered the U.S. state department in 1892 as a clerk. Later, he was made chief of the consular bureau, chief clerk of the state department and director of the consular service. He was named assistant secretary of state in 1924 and held that post until his appointment as minister to Czechoslovakia in 1937. He retired from the service after closing the legation in Prague in 1939. He died in Baltimore, June 26.

Catafighters: *see* SHIPPING, MERCHANT MARINE.
Catastrophes: *see* DISASTERS.
Catholic Church: *see* ROMAN CATHOLIC CHURCH.

Catholic Library Association.

An organization for the spread of library work in Catholic schools, parishes and institutions, and for making Catholic literature more accessible through the publication of indexes, cataloguing tools, reading lists, and the celebration of an annual National Catholic Book week. The association was formed in 1921 as the library section of the National Catholic Educational association; in 1931 it became an independent body and in 1936 was incorporated. Membership at the end of 1942 was 1,000.

In 1942 the 19th annual conference was held in Milwaukee, Wis., June 24–26. The connection between morale and the type of reading done by civilians and soldiers was the theme. For distribution to U.S.O. houses, camp libraries, training school and public libraries, a *Victory Book List* of recommended titles, chiefly recreational, was compiled by the Defense Activities committee of the C.L.A.

During the year the C.L.A. co-operated in forming the Council of National Library associations, an advisory group for collaboration and exchange of information on projects among U.S. library organizations working in various fields. Two regional units, the Detroit (lower Michigan) and mid-South (Tennessee), were added in 1942 to the 16 already existing local divisions of the C.L.A. A high school section was inaugurated, and also an elementary school committee to make a survey of library needs in Catholic primary schools. A Latin-American Libraries committee was established to direct policies on relations with libraries in Spanish and Portuguese-speaking countries of the hemisphere.

Publications during 1942 were: the quarterly issues and a one and one-half year cumulation of the *Catholic Periodical Index* (a four and one-half year cumulation, Jan. 1939 to June 1943, was scheduled for issue in 1943); eight additions to the bio-bibliographical pamphlet series, *Contemporary Catholic Authors;* the official organ, the *Catholic Library World* (1929–), published monthly from October to May. Officers for 1941–43 were: Rev. Thomas J. Shanahan, St. Paul seminary, St. Paul, Minn., president; Rev. Andrew L. Bouwhuis, S.J., Canisius college, Buffalo, N.Y., vice-president; Dorothy E. Lynn, University of Scranton, Scranton, Pa., secretary-treasurer.

Official headquarters of the C.L.A. are at the office of the secretary-treasurer. (T. J. S.)

Catholic Rural Life Conference, National.

A national organization of bishops, priests and lay persons, founded in 1923, and dedicated to the economic, social and spiritual interests of the U.S. farmer. The aims of the conference were listed as follows: (1) to care for the underprivileged Catholics living on the land; (2) to keep Catholics on the land; (3) to settle more Catholics on the land; (4) to convert the non-Catholics on the land.

The 20th annual convention was held at Peoria, Ill., in Oct. 1942. About 4,000 attended the sessions, including 12 bishops, more than 500 priests, professors, rural-life directors, farm leaders, students, etc. Delegates were present from 42 states. Most notable feature was the joint luncheon conference held with 60 non-Catholic rural-life leaders, clergy and lay, presided over by Bishop Muench of Fargo, N.D.

The war activities of the conference included co-operation with governmental and other agencies in the war effort, particularly in urging greater production, and planning for the postwar period. Four rural-life summer schools were held during 1942, with an enrolment of 214 priests, sisters and laymen. Forty-two dioceses, 15 religious orders and 27 states were represented.

The Most Rev. Aloysius J. Muench, bishop of Fargo, N.D., was re-elected president, and the Rt. Rev. L. G. Ligutti was reappointed executive secretary. The official publication, *Land and Home,* appeared in Feb. 1942. Permanent headquarters were established at 3801 Grand ave., Des Moines, Ia. (J. LaF.)

Catholic Welfare Conference, National.

The conference was founded under the authority of the bishops of the United States in Nov. 1919, to unify, co-ordinate and organize the Catholic people of the United States in works of education, social welfare, immigrant aid and other activities.

The 24th annual convention of the conference was held at Washington, D.C., Nov. 11–13, 1942 and was attended by 102 members of the hierarchy. Officers elected to the administrative board were: chairman of the administrative board and executive department, Most Rev. Edward Mooney, archbishop of Detroit, Mich.; vice-chairman and treasurer, Most Rev. Samuel A. Stritch, archbishop of Chicago, Ill.; secretary, Most Rev. Francis J. Spellman, archbishop of New York, N.Y.

The assembled archbishops and bishops at Washington on Nov. 13 stated the position of the Catholics of the United States regarding World War II. The hierarchy declared that the United States had been forced into the most devastating war of all times, and that the conflict of principles made any compromise impossible.

In Sept. 1942 the N.C.W.C. sponsored an inter-American seminar of social studies, attended by 15 representatives from eight central and South-American republics, four delegates from Canada, and ten representatives of the United States. Twenty-six meetings were held in Washington, Detroit, Chicago, Buffalo and New York city.

The report for 1942 gave some idea of the work of the different departments of the conference. The department of lay organization, composed of the National Council of Catholic Women and the National Council of Catholic Men, collaborated with national war services, the chaplains' fund, the Red Cross and other activities. In the department of education most of the work was directed to war problems of U.S. schools, particularly the high schools and colleges. The youth department faced new problems caused by long working hours and high wages—a condition the reverse of that faced in 1941. The press department developed *Noticias Catolicas,* a Spanish-language news service to Latin-American countries, and in addition served 183 newspapers in 29 countries. The legal department was mostly engaged with problems arising out of the dislocations of war. The department of social action, in addition to social welfare work, gave assistance to various governmental boards and committees, and appeared before congressional committees for or against proposed legislation.

National offices are located at 1312 Massachusetts ave., N.W., Washington, D.C. The N.C.W.C. issues a monthly publication, *Catholic Action.* (J. LaF.)

Catholic Youth Organization.

The Catholic Youth organization (CYO) was established in Chicago in 1930. Its founder was Bishop Bernard J. Sheil, auxiliary bishop and vicar-general to Cardinal Mundelein. At the time of its founding in the beginning of the economic depression of 1929, the CYO's primary objective—an objective that still remained fundamental in 1942 despite the broader social-conscious complexion of the CYO program—was to promote among Catholic youth a recreational and religious program that would adequately meet the physical and spiritual needs of out-of-school Catholic boys and girls.

Stemming from a purely democratic ideal, the CYO was dedicated to the principle that boys and girls recognize no religious or ideological cause that fails to be rooted in Christian democratic heritage. To implement its program of education, the CYO early in 1942 organized a School of Social Studies, with the declared purpose of developing an intelligent, well-informed democratic leadership in the community. The school was opened free to both Catholics and non-Catholics. Among the timely courses offered were "Women in Wartime," "Social Pathology," "The Negro in America," "Political Geography" and "Labour." A library, with timely books on important questions of the day, and a reading room were placed at the disposal of the students and the general public.

Among the institutions maintained by the Chicago CYO as of 1942 for the benefit of its youthful members were the CYO-Lewis School of Aeronautics, the CYO West Side Community centre, the CYO hotels for youthful parolees and transients, the CYO Working Boys' home and Friendship House. Numerous activities were sponsored, including classes in radio technique and radio dramatics, study clubs for social action, gliding, boxing, speed ice skating, baseball, softball, outdoor camps for needy youngsters and vacation schools during the summer months.

Also in 1942, as part of its community work, a member of the CYO professional staff was loaned to the Office of Civilian Defense to plan and organize the American Youth Reserve program, the officially-sponsored OCD program for all youth groups in the Chicago metropolitan area. (B. J. S.)

Cattle.

The number of cattle and calves on U.S. farms Jan. 1, 1943, was the largest on record despite the heavy slaughter of 1942. Preliminary estimates placed the number at 76,200,000, the peak of a steady rise that began in 1938 following the drought years in which many breeding herds were depleted because of scarcity of feed. The number of cattle and calves Jan. 1, 1942, was 74,600,000. The calf crop in 1942 was 32,000,000 compared to 31,000,000 in 1941. Imports of cattle in 1942 were 600,000 head, a drop of 100,000 under 1941.

During 1942, ceiling prices for beef were announced in April, and the strong competition among packers for cattle for immediate slaughter tended to support relatively high prices for feeder cattle in comparison with prices for fat cattle. In other words, if prices for feeders were relatively high, owing to the demand for carcass beef and lower grades for sausage and canning, and if prices for finished fat cattle were relatively low, then there would be little inducement for corn belt feed lots to buy high-priced feeders to convert to relatively low-priced fat cattle. This situation caused some hesitancy among cattle feeders to undertake usual autumn operations. The department of agriculture contended, however, that the spread between feeders and fat cattle was as favourable in 1942 as on the average during the previous 15 years. Restricted deliveries of beef to retailers were put into effect in the autumn of 1942, and the supply of beef for civilian consumption was markedly reduced, as compared to pork. Meat consumption by the United States military forces called for somewhat larger supplies of beef than of pork. The U.S. army in 1942 was purchasing meat at the rate of about 300 lb. a year for each soldier. U.S. civilian consumption of meat was 140 lb. per capita in 1940. For slaughter of cattle in 1942 *see* MEAT. (*See* also LIVESTOCK.) (S. O. R.)

CCC: *see* CIVILIAN CONSERVATION CORPS *or* COMMODITY CREDIT CORPORATION.

Celebes Islands: *see* DUTCH EAST INDIES; NETHERLANDS COLONIAL EMPIRE.

Cellulose Products: *see* PAPER AND PULP INDUSTRY; PLASTICS INDUSTRY; RAYON.

Cement.

The war program, with its extensive military, industrial and housing construction, greatly increased the demand for cement, so that production increased 6% over the preceding year in 1940 and 26% in 1941, when the output included 164,030,559 bbl. of portland cement and 2,875,962 bbl. of special cements, a total of 166,906,521 bbl. Even with this heavy increase in output, demand continued to lead, and shipments for 1941 were 167,439,237 bbl., while consumption, including imports, was of the order of 169,000,000 bbl. Consequently at the end of 1941 stocks had declined to 24,406,606 bbl. (including 19,995,979 bbl. of finished cement, 4,575,000 bbl. of clinker and 209,627 bbl. of special cements) as compared with 28,510,525 bbl. in 1940. There was sufficient surplus capacity in the industry to cover any probable increase in demand, since the 167 plants contributing to the 1941 output were worked only at an average of 65%.

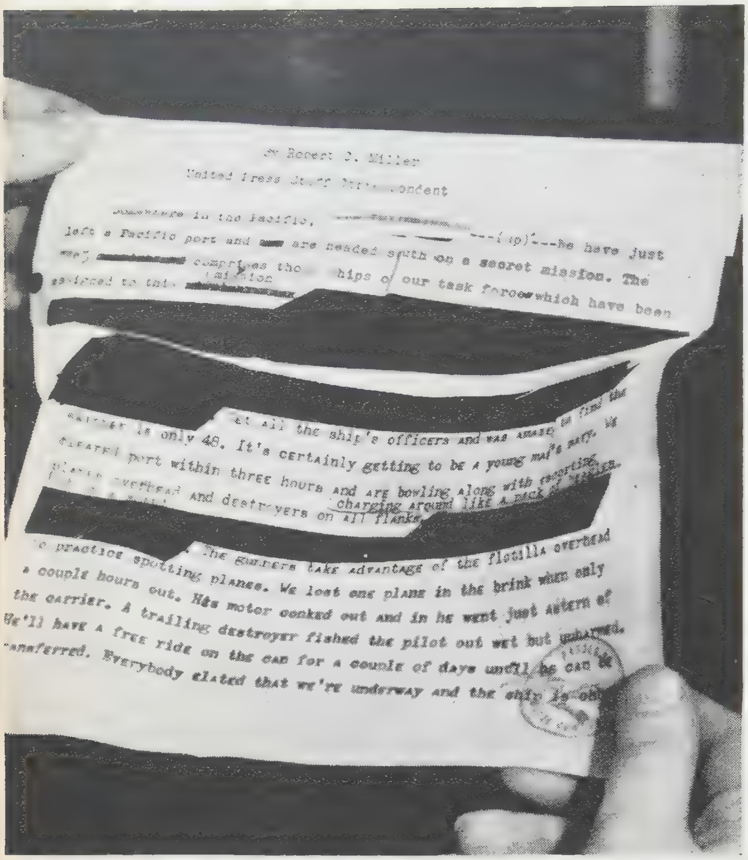
Normally the distribution of cement is highly seasonal, with shipments usually reaching a peak in midsummer, and a low in midwinter, with the peak as much as two to three times as great as the low. Because of the pressure for rapid completion of the work that characterized recent expansions in building construction, winter construction was increased, the low of Feb. 1942 being 8,293,000 bbl., as compared with 3,893,000 bbl. in Jan. 1940. The demand for speed in construction also manifested itself in the proportion of high-early-strength cement turned out, this type having increased by 39% in 1941, with 6,123,224 bbl. (*See* also GYPSUM.) (G. A. Ro.)

Censorship.

Censorship is a vital offensive and defensive weapon of modern warfare. Its function is to attack the communications of the enemy, to prevent important information from reaching him, and at the same time to intercept all possible information about his plans. For that reason the United States government, following the example of all other belligerents, maintained a careful examination of communications crossing its borders ever since the Japanese attack on Pearl Harbor.

This border censorship of letters, cablegrams, radiograms and telephone calls was authorized by congress in the First War Powers act. President Roosevelt's executive order establishing the Office of Censorship on Dec. 19, 1941, conferred upon the director "absolute discretion" in censoring international communications. The president also asked the director to assist American newspapers, periodicals and radio stations in voluntarily preventing the circulation of dangerous military information within the United States itself.

To carry out these assignments, the Office of Censorship quickly organized headquarters in Washington and field stations—for examining the mails and cables—in ports and border cities. These stations were staffed with 13,000 men and women recruited under Civil Service procedure. Their supervisory personnel at first consisted of military and naval intelligence officers who long had been preparing for postal and cable censorship in event of war. These officers were transferred to duty under the civilian



[illegible] Robert [illegible]. Miller
United Press Staff Correspondent

[illegible] in the Pacific, [redacted] —(UP)—We have just
left a Pacific port and [redacted] are headed south on a secret mission. The
[illegible] [redacted] comprises the [illegible] ships of our task force which have been
assigned to this [redacted]
[redacted]
[illegible] at all the ship's officers and was amazed to find the
[illegible] is only 48. It's certainly getting to be a young man's navy. We
[illegible] port within three hours and are bowling along with escorting
planes overhead and destroyers on all flanks charging around like a pack of [illegible]
[redacted]. The gunners take advantage of the flotilla overhead
[illegible] practice spotting planes. We lost one plane in the drink when only
a couple hours out. His motor conked out and in he went just astern of
the carrier. A trailing destroyer fished the pilot out wet but unharmed.
He'll have a free ride on the can for a couple of days until he can be
transferred. Everybody elated that we're underway and the ship is [illegible]

A NEWS DISPATCH OF 1942 from the Solomon Islands, after it had passed through U.S. naval censorship

director, and carried on independently of the war and navy departments. Toward the end of 1942, however, the war department withdrew most of the 150 army officers.

In contrast to the large staff needed for border censorship, supervision of the domestic press and radio self-censorship required only a score of experienced newspapermen and broadcasters. This work cost one-half of one per cent of the $26,500,000 voted by congress for the Office of Censorship.

Because it was established as a war agency, the Office of Censorship took the position that it was concerned only with information relating to the war. The United States had no peacetime censorship. Domestically, no attempt was made by the Office of Censorship to curtail the expression of personal or editorial opinion, as long, of course, as the seditious stage was not reached. But the censors outlined types of information which would be valuable to the enemy, and all such information, unless officially announced, was deleted from communications leaving the United States.

Heading the list of restricted material were movements of naval and merchant vessels and of troop units. Unauthorized disclosure of the location of fortifications and of the strength of the air forces also was prohibited. Details about the ever-increasing output of munitions, tanks, planes and other military equipment usually had to be withheld because the facts would enable the enemy to gauge the speed of U.S. war production. Less obvious were the reasons for banning such items as unofficial weather forecasts; a United States naval officer in the North Atlantic had found that by listening to the forecasts given by a small midwest radio station he could plot the weather over the ocean for the next few days. A German submarine commander could, of course, do the same.

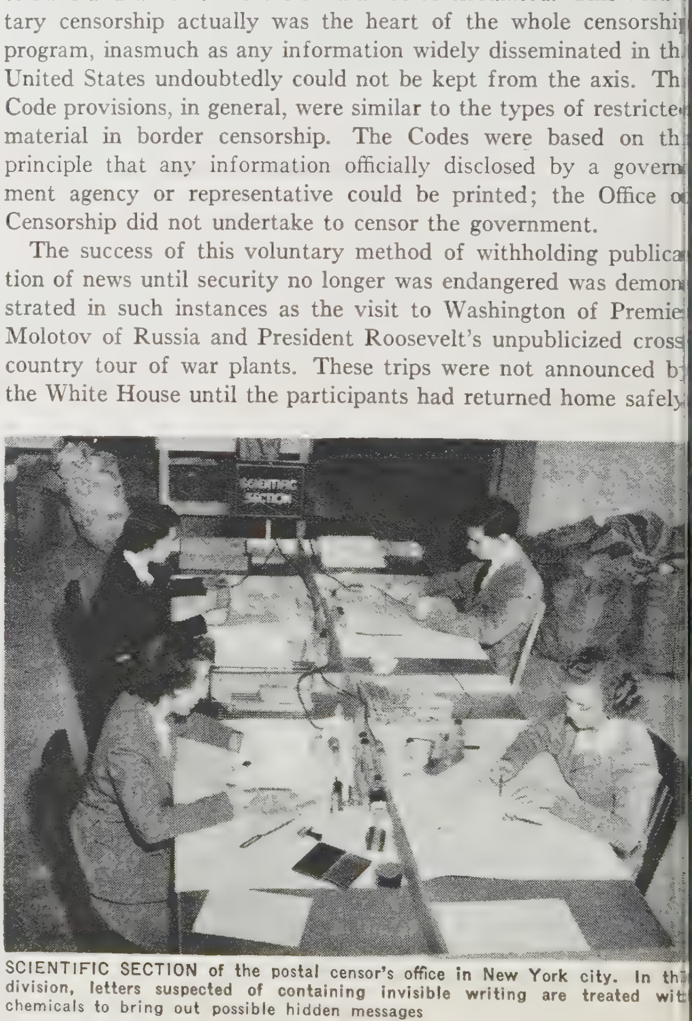
All such material, often written innocently by loyal Americans, either had to be excised or the letters returned to the senders. Communications were not permitted, either directly or indirectly with enemy-held territory, except in two instances: brief message could be sent to prisoners of war, and 25-word personal letter could be sent to relatives through the Red Cross. Normally censorship did not delay a letter more than 24 hours, although transportation schedules were so disrupted that the international mail did not move very rapidly. Cablegrams often were censored within a few minutes after they were filed, because it is as necessary for a country to keep its own communication lines open fo legitimate business as it is to disrupt the enemy's channels.

Most Americans accepted censorship philosophically. The principal public objection was raised by Gov. Ernest Gruening o Alaska before the Senate Judiciary committee during consideration of a bill to outline by statute the scope of censorship between continental United States and its territories and possessions. This form of censorship had been carried on as a military necessity under the president's authority as commander in chief, but Governor Gruening wanted restrictions written into the statute. At a hearing on the legislation, representatives of federal intelligence agencies declared that censorship had uncovered much valuable military information. Following censorship's location of contact used by axis agents in the Caribbean region, a naval officer testified, there was a decrease in the number of ship sinkings in tha area.

Action on the legislation was put over until the 1943 session o congress.

American editors and broadcasters co-operated wholeheartedly with the Office of Censorship in living up to Codes of Wartime Practices listing types of information which the enemy would like to have and which therefore should not be circulated. This voluntary censorship actually was the heart of the whole censorship program, inasmuch as any information widely disseminated in th United States undoubtedly could not be kept from the axis. Th Code provisions, in general, were similar to the types of restricted material in border censorship. The Codes were based on th principle that any information officially disclosed by a government agency or representative could be printed; the Office o Censorship did not undertake to censor the government.

The success of this voluntary method of withholding publication of news until security no longer was endangered was demonstrated in such instances as the visit to Washington of Premier Molotov of Russia and President Roosevelt's unpublicized cross country tour of war plants. These trips were not announced by the White House until the participants had returned home safely



SCIENTIFIC SECTION of the postal censor's office in New York city. In th division, letters suspected of containing invisible writing are treated wit chemicals to bring out possible hidden messages

GERMAN BULLETINS are compared with British communiqués at the ministry of information in London. Millions of words flowed through the British censors' offices daily in 1942

(*See* also LAW; MOTION PICTURES; NEWSPAPERS AND MAGAZINES; RADIO.) (B. PR.)

Census, 1940. The sixteenth decennial census of the United States, taken as of April 1, 1940, covered a decidedly wider field than prior censuses. The schedules contained about 70 questions, of which nearly 30 were on the special schedule for housing. Some of the questions, however, were asked of only 1 person in 20, and many tabulations have been made on the basis of this 5% sample. The use of the sample has made possible not only the inclusion of additional questions in the enumeration, but also the tabulation of many detailed cross-classifications which would have been out of the question on a 100% basis.

POPULATION AND HOUSING

Growth of Total Population.—Under existing conditions, with no adequate basis available for evaluating the unusual migration from one place to another within the United States since 1940, it has not been possible to make very satisfactory postcensal estimates for states or counties. Reliable estimates of the population of the United States as a whole, however, have been made by the bureau of the census on the basis of current records of births and deaths (corrected for under-registration) and net immigration. Since these current figures are available on a monthly basis, it has been possible to make these estimates of the population of the United States for each month down to Jan. 1, 1942. These estimates, which are presented in Table I, make no allowance for postcensal movements of the armed forces away from continental United States. (The estimates are presented to the last digit as computed, instead of being rounded, not because they are assumed to be accurate to the last digit, but for convenience in summation.)

The population of continental United States on Jan. 1, 1942, according to the estimates, was 133,965,237, which represents an increase of 1,327,304 over the population estimated for Jan. 1, 1941. The increase during the calendar year 1941 was thus almost 50% greater than the average annual increase between 1930 and 1940. The rate of increase for 1941 was 1.0%, as compared with an average annual rate of 0.7% for the decade 1930 to 1940.

The recent acceleration of population growth results mainly from a rise in the birth rate. During the calendar year 1941 there were approximately 2,728,000 births, as compared with an annual average of about 2,319,000 between 1930 and 1940. This increase in the birth rate has taken place since 1936, following an almost continuous decline since 1921, and is attributable mainly to the business prosperity induced by defense activities, and to the anticipation of conscription and the entry of the United States into World War II. A record marriage rate led to more first births and the number of children born to couples married earlier also increased. The number of deaths in 1941, on the other hand, was about the same as the annual average during the decade from 1930 to 1940.

On a relative basis, there was a marked change in the contribution to population growth represented by immigration from foreign countries. During 1941 there was a net civilian immigration of 40,825 as compared with an average net emigration of about 5,000 during the preceding census period. Even this figure, however, represents a very small fraction of the increase in population during the year 1941.

The sources of the increase in population from one month to the next are indicated by the figures in the last four columns of Table I.

In view of the probable future course of the factors determining population change, the prospects of continued growth at the 1941 rate seem rather slight. Immigration is expected practically to cease for the duration of the war; and with several million men in the armed forces, many of them stationed abroad, the birth rate is likely to drop abruptly, as it did during World War I. The civilian death rate will probably not increase appreciably in 1943, but military mortality is likely to become an important factor. The rate of population growth, therefore, is likely to decline as World War II proceeds.

Nativity and Parentage.—The white population of the United States formed almost nine-tenths (89.8%) of the total population both in 1940 and 1930. The distribution of the white population by nativity and parentage, however, changed very materially during the intercensal period. The number of foreign-born white decreased from 13,983,405 in 1930 to 11,419,138 in 1940, or 18.3%. The native white population increased during the same period from 96,303,335 to 106,795,732, or 10.9%. This increase, amounting to 10,492,397, exceeded by more than 1,500,000 the increase in the total population.

The native white population is further classified on the basis of nativity of parents, first, into two groups, (1) persons of native parentage and (2) persons of foreign or mixed parentage The second group is then further subdivided into those having

Table I.—*Estimated Population of Continental United States, by Months, May 1, 1940 to Jan. 1, 1942*

(A minus sign [—] denotes net emigration)

Date	Estimated population	Net increase in preceding month		Gain or loss in preceding month			
		Number	Per cent	Births	Deaths	Excess of births over deaths	Net civilian immigration
Jan. 1, 1942	133,965,237	107,069	0.08	225,073	123,328	101,745	5,324
Dec. 1, 1941	133,858,168	98,580	0.07	213,746	116.087	97,659	921
Nov. 1, 1941	133,759,588	116,329	0.09	224,594	112,398	112,196	4,133
Oct. 1, 1941	133,643,259	135,712	0.10	232,655	104,404	128,251	7,461
Sept. 1, 1941	133.507,547	146,760	0.11	248,270	109,087	139,183	7,577
Aug. 1, 1941	133,360,787	143,723	0.11	253,613	115,927	137,686	6,037
July 1, 1941	133,217,064	118,262	0.09	233,571	114,793	118,778	—516
June 1, 1941	133,098,802	104,289	0.08	220,383	119,457	100,926	3.363
May 1, 1941	132,994.513	98,666	0.07	216,577	119,298	97,279	1,387
April 1, 1941	132,895,847	93,512	0.07	229,035	130,732	98,303	—4,791
March 1, 1941	132,802,335	82,948	0.06	207,914	125,422	82,492	456
Feb. 1, 1941	132,719,387	81,454	0.06	222,856	150,875	71,981	9,473
Jan. 1, 1941	132,637,933	87,108	0.07	208,851	129,161	79,690	7,418
Dec. 1, 1940	132,550,825	86,906	0.07	201,859	116,149	85,710	1,196
Nov. 1, 1940	132,463,919	106,588	0.08	216,047	113,815	102,232	4,356
Oct. 1, 1940	132,357,331	127,931	0.10	224,025	106,092	117,933	9,998
Sept. 1, 1940	132,229,400	141,953	0.11	232,249	107,543	124,706	17,247
Aug. 1, 1940	132,087,447	117,223	0.09	228,397	120,211	108,186	9,037
July 1, 1940	131,970,224	111,899	0.08	209,080	111,346	97,734	14,165
June 1, 1940	131,858,325	101,358	0.08	211,003	119,712	91,291	10,067
May 1, 1940	131,756,967	87,692	0.07	202,982	122,154	80,828	6,864
April 1, 1940 (census)	131,669,275	—	—	—	—	—	—

Table II.—*White Population by Nativity and Parentage, 1940 and 1930*

(Parentage classification for 1940 based on a tabulation of a 5% sample, adjusted to the total for native white)
(A minus sign [−] denotes decrease)

Nativity and parentage	Number		Per cent of increase 1930–40	Per cent of total	
	1940	1930		1940	1930
Total	118,214,870	110,286,740	7.2	100.0	100.0
Native white	106,795,732	96,303,335	10.9	90.3	87.3
Native parentage	83,743,202	70,400,952	19.0	70.8	63.8
Foreign or mixed parentage	23,052,530	25,902,383	−11.0	19.5	23.5
Foreign parentage	15,114,858	17.407,527	−13.2	12.8	15.8
Mixed parentage	7,937,672	8,494,856	−6.6	6.7	7.7
Father foreign	5,243,250	5,547,325	−5.5	4.4	5.0
Mother foreign	2,694,422	2,947,531	−8.6	2.3	2.7
Foreign-born white	11,419,138	13.983,405	−18.3	9.7	12.7

both parents foreign born and those having one parent foreign born and the other native. This classification is shown in full detail in Table II.

The number of native white persons of native parentage increased 19.0% between 1930 and 1940, while the whole number of persons of foreign or mixed parentage decreased 11.0%, and those of foreign parentage, taken alone, decreased 13.2%. The changes in the proportion of the total white population represented by these various classes are perhaps even more significant than the changes in the absolute numbers. The percentage of the white population which was foreign born decreased from 12.7 in 1930 to 9.7 in 1940, and the percentage represented by native persons of foreign or mixed parentage decreased from 23.5 to 19.5, with corresponding increases in the percentages representing all native persons and natives of native parentage.

The decline in the proportion of foreign born is, of course, the direct result of the practical cessation of immigration from foreign countries. The decline in the numbers of native persons of foreign or mixed parentage indicates that even the children of earlier immigrants are reaching the ages of heavy mortality and that because the foreign born are for the most part past the reproductive ages, there have been few children to provide replacements at the lower end of the age scale.

Foreign White Stock.—The term "foreign white stock" is used in the census reports to indicate the combined total of two classes, namely, the foreign-born white and the native white of foreign or mixed parentage. The classification therefore includes only those persons who were born abroad (sometimes referred to as the first generation) and those who have at least one parent foreign born (the second generation) but not the third and later generations of persons of foreign ancestry—though in some instances these later generations may retain many of the characteristics of the original immigrant.

In 1940 the foreign white stock numbered about 34,600,000, or a little over one-quarter of the total population of the United States. About 11,400,000, or roughly one-third, of this number were foreign born. Of the remaining 23,000,000, about 15,000,000 were persons with both parents foreign born; 5,000,000 had only the father foreign born, and something less than 3,000,000 had only the mother foreign born.

The foreign white stock is classified by country of origin in Table III. In this table the foreign born are classified by country of birth. Those with both parents or with father alone foreign born are classified by country of birth of father, and those with mother alone foreign born, by country of birth of mother. The 1940 classification is based on the political boundaries of the countries as they were on Jan. 1, 1937, at which time they were practically the same as in 1930.

The figures presented in Table III for the native white of foreign or mixed parentage are those obtained from the 5% sample tabulation. The total thus differs slightly from the corresponding total shown in Table II, since it has not seemed practicable to adjust the results of the detailed tabulation by country of origin. The statistics based on the sample tabulation are expected to differ somewhat from those which would have been obtained from a count of 100% of the population. A measure of the extent of this difference has been obtained by analyzing the data for certain classifications obtained both from the sample and from a 100% tabulation. This analysis indicates that in 95% of the cases the sample statistics differ from the complete census statistics by less than 5% for all numbers of 10,000 or more, with the probability of closer and closer agreement as the numbers become larger and larger. Numbers smaller than 10,000 are conversely subject to the possibility of greater variations.[1]

Table III.—*Foreign White Stock by Country of Origin, 1940 and 1930*

(1940 statistics for native white of foreign or mixed parentage based on a tabulation of a 5% sample, multiplied uniformly by 20)

Country of origin	Total foreign white stock		Foreign-born white		Native white of foreign or mixed parentage	
	1940	1930	1940	1930	1940	1930
All countries	34,576,718	39,885,788	11,419,138	13,983,405	23,157,580	25,902,383
England	1,975,975	2,522,273	621,975	808,684	1,354,000	1,713,589
Scotland	725,861	899,591	279,321	354,323	446,540	545,268
Wales	148,260	236,667	35,360	60,205	112,900	176,462
Northern Ireland	377,236	695,999	106,416	178,832	270,820	517,167
Irish Free State (Eire)	2,410,951	3,086,522	572,031	744,810	1,838,920	2,341,712
Norway	924,688	1,100,098	262,088	347,852	662,600	752,246
Sweden	1,301,390	1,562,703	445,070	595,250	856,320	967,453
Denmark	443,815	529,142	138,175	179,474	305,640	349,668
Netherlands	372,384	413,966	111,064	133,133	261,320	280,833
Belgium	130,358	147,091	53,958	64,194	76,400	82,897
Luxembourg	27,166	34,869	6,886	9,048	20,280	25,821
Switzerland	293,973	374,003	88,293	113,010	205,680	260,993
France	349,050	471,638	102,930	135,265	246,120	336,373
Germany	5,236,612	6,873.103	1,237,772	1,608,814	3,998,840	5,264,289
Poland	2,905,859	3,342,198	993,479	1,268.583	1,912,380	2,073,615
Czechoslovakia	984,591	1,382,079	319,971	491,638	664,620	890,441
Austria	1,261,246	954,648	479,906	370,914	781,340	583,734
Hungary	662,068	590,768	290,228	274,450	371,840	316,318
Yugoslavia	383,393	469,395	161,093	211,416	222,300	257,979
Russia (U.S.S.R.)	2,610,244	2,669,838	1,040,884	1,153,624	1,569,360	1,516,214
Latvia	34,656	38,091	18,636	20,673	16,020	17,418
Lithuania	394,811	439,195	165,771	193,606	229,040	245,589
Finland	284,290	320,536	117,210	142,478	167,080	178,058
Rumania	247,700	293,453	115,940	146,393	131,760	147,060
Bulgaria	15,688	14,929	8,888	9,399	6,800	5,530
Turkey in Europe	8,372	3,676	4,412	2,257	3,960	1,419
Greece	326,672	303,751	163,252	174,526	163,420	129,225
Italy	4,594,780	4,546,877	1,623,580	1,790,424	2,971,200	2,756,453
Spain	109,407	111,338	47,707	59,033	61,700	52,305
Portugal	176,407	167,910	62,347	69,993	114,060	97,917
Other Europe	54,701	82,843	26,101	31,379	28,600	51,464
Palestine and Syria	151,406	148,022	57,906	63,362	93,500	84,660
Turkey in Asia	95,839	77,283	52,479	46,651	43,360	30,632
Other Asia	85,924	84.622	39,524	47,567	46,400	37,055
Canada—French	908,386	1,106,159	273,366	370,852	635,020	735,307
Canada—other	2,001,773	2,231,277	770,753	907,660	1,231,020	1,323,617
Newfoundland	47.001	45,733	21,361	23,971	25,640	21,762
Mexico	1,076,653	1,222,439	377,433	639,017	699.220	583,422
Cuba and other West Indies	65,714	63,822	30.534	31,600	35,180	32,222
Central and South America	67,568	59,360	36,408	38,124	31,160	21,236
Australia	26,898	30,849	10,098	12,720	15,900	18,129
Azores	74,351	91,719	25,751	35,432	48,600	56,287
All other and not reported	202.601	45,313	21,881	22,769	180,720	22,544

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[1] The nativity classification based on the 5% sample, from which figures are presented in Tables III and IV, is subject to an additional bias, growing out of one of the mechanical processes of the tabulation, as a result of which the United States total for foreign-born white in the sample tabulation exceeds the figure from the complete tabulation by decidedly more than the maximum sample variation.

The figures for all of the countries in northwestern Europe ndicate very considerable decreases in the foreign white stock of oth first and second generations from these countries. These elatively high rates of decrease are to be explained mainly by he fact that the bulk of the immigrants from these countries rrived in the United States earlier than those from most other egions of Europe. The foreign born in particular from these ountries are now concentrated in the older age groups, where the ate of mortality is high. Similar rates of decrease are likewise hown for Germany, Poland and other countries in central Europe.

In general, the countries of eastern Europe show smaller delines in foreign white stock and several of the south European ountries, including Greece, Italy and Portugal, show small inreases. These increases were confined to the second generation f the foreign white stock, however, since immigration during the ecade 1930 to 1940 was drastically reduced by the quota laws nd by the economic depression. Immigrants from southern Euope, however, are comparatively late arrivals, and the second eneration is still relatively young.

In spite of a decline in both nativity groups, the German forign white stock continued to be the largest, numbering 5,236,612, r about one-seventh of the total foreign white stock in 1940. Next in order was the Italian stock, with 4,594,780, or about oneighth of the total. Other countries contributing more than 2,000,oo were Canada, Poland, Russia and the Irish Free State, with England just under this limit. (*See* also ALIENS; IMMIGRATION ND EMIGRATION, U.S.)

Mother Tongue.—Mother tongue is defined as the principal anguage spoken in the home of the person in his earliest childood. English was reported as the mother tongue only if no forign language was spoken. While at many points the classification y mother tongue runs parallel with that by country of origin, it hould be noted that the mother tongue is not necessarily the ame as the language of the country in which the person or his ncestors were born. For example, many persons of German nother tongue were born in Russia. The 1940 figures presented n Table IV represent the first tabulation by mother tongue that as covered the entire native white population as well as the forign born. All of the figures in Table IV are based on the 5% ample tabulation, without adjustment, and the totals therefore iffer slightly from those shown for corresponding classes in Table II. The category "English" includes persons who reported rish, Scotch, or Welsh as their mother tongue. A large proporion of these probably spoke a dialect of English, however, rather han the distinctive Gaelic language of their ancestors, and the umber thus included whose mother tongue was other than Engish is very small.

There were about 22,000,000 persons in all in the United States vith a mother tongue other than English, including about 8,500,oo foreign born, 11,000,000 natives of foreign or mixed parentge, and almost 3,000,000 natives of native parentage.

Nearly 5,000,000 persons in the United States reported German s their mother tongue in 1940, including 925,040 persons of the hird and later generations (persons not included in the foreign vhite stock shown in Table III). Italian was the next most important among the non-English mother tongues, with 3,766,820 ersons reporting, of whom 125,040 were of the third and later enerations; and Polish was third, with 2,416,320 in all, and 185,320 beyond the second generation. Of the 1,861,400 persons reorting Spanish mother tongue, most of whom were of Mexican rigin, 718,980, or nearly 40%, were of third and later geneations. Of the 1,412,060 persons of French mother tongue, 518,780, or more than one-third, were of generations beyond the secnd. Most of these were, of course, French Canadians, though a onsiderable number was contributed by the French stock in Louisiana.

Table IV.—*Mother Tongue of the White Population of the United States by Nativity and Parentage, 1940*

(Statistics based on a tabulation of a 5% sample, multiplied uniformly by 20)

Mother tongue	Total	Foreign born	Native of foreign or mixed parentage	Native of native parentage
Total	118,392,040	11,109,620	23,157,580	84,124,840
English	93,039,640	2,506,420	12,181,040	78,352,180
Other than English	21,996,240	8,354,700	10,712,480	2,929,060
Norwegian	658,220	232,820	344,240	81,160
Swedish	830,900	423,200	374,040	33,660
Danish	226,740	122,180	95,460	9,100
Dutch	267,140	102,700	103,240	61,200
Flemish	54,340	31,900	17,840	4,600
French	1,412,060	359,520	533,760	518,780
German	4,949,780	1,589,040	2,435,700	925,040
Polish	2,416,320	801,680	1,428,820	185,820
Czech	520,440	159,640	279,040	81,760
Slovak	484,360	171,580	283,520	29,260
Magyar (Hungarian)	453,000	241,220	198,600	13,180
Serbian	37,640	18,060	18,300	1,280
Croatian	115,440	52,540	58,980	3,920
Slovenian	178,640	75,560	97,300	5,780
Russian	585,080	356,940	214,160	13,980
Ukrainian	83,600	35,540	45,280	2,780
Armenian	68,320	40,000	26,440	1,880
Lithuanian	272,680	122,660	140,620	9,400
Finnish	230,420	97,080	118,460	14,880
Rumanian	65,520	43,120	20,340	2,060
Yiddish	1,751,100	924,440	773,680	52,980
Greek	273,520	165,220	102,140	6,160
Italian	3,766,820	1,561,100	2,080,680	125,040
Spanish	1,861,400	428,360	714,060	718,980
Portuguese	215,860	83,780	120,500	11,580
Arabic	107,420	50,940	52,760	3,720
All other	109,480	63,880	34,520	11,080
Not reported	3,356,160	248,500	264,060	2,843,600

Special interest attaches to the location of the various elements in the population reporting Spanish, German and Italian as mother tongue.

Separate figures are therefore shown for the principal states contributing to the respective totals in Table V.

Table V.—*White Population of Spanish, German and Italian Mother Tongue for Selected States, 1940*

(Statistics based on a tabulation of a 5% sample, multiplied uniformly by 20)

Mother tongue and state	Total	Foreign-born white	Native white, foreign or mixed parentage	Native white, native parentage
Spanish				
United States	1,861,400	428,360	714,060	718,980
New York	129,260	39,500	21,740	68,020
Texas	738,440	148,140	318,220	272,080
Colorado	92,540	6,640	14,100	71,800
New Mexico	221,740	7,820	21,100	192,820
Arizona	101,880	24,140	50,140	27,600
California	416,140	136,700	215,740	63,700
Other States	161,400	65,420	73,020	22,960
German				
United States	4,949,780	1,589,040	2,435,700	925,040
New York	652,120	384,940	248,060	19,120
New Jersey	209,220	107,480	93,320	8,420
Pennsylvania	407,120	109,840	156,780	140,500
Ohio	328,820	90,320	165,180	73,320
Indiana	123,600	20,380	54,940	48,280
Illinois	486,600	173,700	249,340	63,560
Michigan	230,220	77,000	123,140	30,080
Wisconsin	506,000	104,700	273,220	128,080
Minnesota	293,560	49,700	160,780	83,080
Iowa	200,220	36,680	119,180	44,360
Missouri	173,220	37,080	88,900	47,240
North Dakota	123,700	23,660	74,540	25,500
South Dakota	83,160	14,140	48,660	20,360
Nebraska	133,260	28,240	80,420	24,600
Kansas	109,920	17,340	61,140	31,440
Texas	159,100	21,000	67,040	71,060
California	222,700	99,840	106,060	16,800
Other States	507,240	193,000	265,000	49,240
Italian				
United States	3,766,820	1,561,100	2,080,680	125,040
Massachusetts	272,240	110,400	155,220	6,620
Rhode Island	79,480	27,920	49,060	2,500
Connecticut	200,420	75,980	119,860	4,580
New York	1,302,860	562,040	703,820	37,000
New Jersey	406,740	162,000	231,740	13,000
Pennsylvania	500,480	191,020	288,820	20,640
Ohio	148,800	62,280	81,360	5,160
Illinois	219,320	94,520	119,060	5,740
Michigan	87,540	38,480	46,220	2,840
California	215,200	101,440	105,760	8,000
Other States	333,740	135,020	179,760	18,960

The population of Spanish mother tongue is largely concentrated in California, Texas and other states of the southwest, these being the areas into which there has been the most extensive immigration from Mexico. The 221,740 persons of Spanish mother tongue in New Mexico represented more than 40% of the entire population of the state, a much larger percentage than in any other state, though the 101,880 persons of Spanish mother tongue in Arizona represented 20% of that state's total population. In both New Mexico and Colorado it may be noted the Spanish-speaking population classified as native white of native parentage far exceeds the number of those representing the first and second generations of immigration from Mexico.

Table VI.—*Marital Status of the White Population 15 Years Old and Over by Age, 1940*

(Statistics based on a tabulation of a 5% sample, multiplied uniformly by 20)

Sex and age	Total	Single		Married		Widowed		Divorced
		Number	Per cent of total	Number	Per cent of total	Number	Per cent of total	
Male								
Total, 15 and over	44,774,140	14,807,500	33.1	27,489,340	61.4	1,896,900	4.2	580,400
15 to 19 years	5,516,960	5,428,440	98.4	86,800	1.6	920	—	800
20 to 24 years	5,090,100	3,738,120	73.4	1,329,660	26.1	6,180	0.1	16,140
25 to 29 years	4,894,420	1,788,700	36.5	3,046,500	62.2	16,500	0.3	42,720
30 to 34 years	4,582,600	952,360	20.8	3,536,820	77.2	28,180	0.6	65,240
35 to 39 years	4,272,880	644,980	15.1	3,501,980	82.0	48,420	1.1	77,500
40 to 44 years	4,021,660	500,740	12.5	3,363,300	83.6	75,300	1.9	82,320
45 to 49 years	3,840,360	427,460	11 1	3,224,360	84.0	108,760	2.8	79,780
50 to 54 years	3,460,180	380,880	11.0	2,843,640	82.2	166,220	4.8	69,440
55 to 59 years	2,778,000	298,240	10.7	2,234,460	80.4	192,660	6.9	52,640
60 to 64 years	2,238,280	239,000	10.7	1,719,300	76.8	241,300	10.8	38,680
65 to 69 years	1,740,900	182,220	10.5	1,256,020	72.1	274,460	15.8	28,200
70 to 74 years	1,182,260	118,400	10 0	771,020	65.2	277,400	23.5	15,440
75 years and over	1,155,540	107,960	9.3	575,480	49.8	460,600	39.9	11,500
Female								
Total, 15 and over	44,518,920	11,667,700	26.2	27,194,540	61.1	4,892,600	11.0	764,080
15 to 19 years	5,479,380	4.882,700	89.1	584,140	10.7	4,200	0.1	8,340
20 to 24 years	5,256.860	2,559,800	48 7	2,626,460	50.0	20,020	0.4	50,580
25 to 29 years	5,004,820	1,165,700	23.3	3,704,960	74.0	45,380	0.9	88,780
30 to 34 years	4,618,500	694,920	15.0	3,720,400	80.6	87,860	1.9	115,320
35 to 39 years	4,256,300	483.760	11.4	3,499,820	82.2	152,780	3.6	119,940
40 to 44 years	3,940,740	389,660	9.9	3,202,820	81.3	240,560	6.1	107,700
45 to 49 years	3,664,760	330,380	9.0	2,896,740	79.0	346,580	9.5	91,060
50 to 54 years	3,220,860	294,460	9.1	2,387.300	74.1	468,500	14.5	70,600
55 to 59 years	2,629,160	237,480	9 0	1,791,720	68.1	552,600	21.0	47,360
60 to 64 years	2,178,340	209,660	9.6	1,278,980	58.7	659,160	30.3	30,540
65 to 69 years	1,755,940	174,840	10.0	838,160	47.7	723.220	41.2	19,720
70 to 74 years	1,211,840	119,180	9.8	423,520	34.9	659,820	54.4	9,320
75 years and over	1,301,420	125,160	9.6	239,520	18.4	931,920	71.6	4,820

The population of German mother tongue is very widely distributed, there being 16 states, ranging from New York to California, in which the numbers exceeded 100,000. The two states in which the persistence of German mother tongue beyond the second generation is indicated by rather large figures for persons of native parentage are Pennsylvania and Wisconsin. The figures for Pennsylvania doubtless represent mainly the so-called "Pennsylvania Dutch" (actually of German or Swiss descent), who have been in the United States for six or seven generations.

The Italian-speaking population, on the other hand, is rather closely concentrated, nearly six-tenths of the total being in three adjacent states, New York, New Jersey and Pennsylvania. Partly perhaps because the Italians represent a relatively "new" immigration, most of the persons reporting Italian mother tongue are either foreign born or the children of foreign born.

Marital Status.—Of the white male population 15 years old and over, as returned in the 1940 census, 61.4% were married and 5.5% widowed or divorced; of the female population 61.1% were married and 12.7% widowed or divorced. The percentage married for males shows a continuous increase since 1890, the date of the first census for which these data are available, and the percentage married for females presents a similar continuous increase except for a nominal decrease (from 61.4 to 61.1) between 1930 and 1940, due entirely to changes in the figures for the foreign born, since the native white females alone show an appreciable increase.

While the figures representing the marital status of the entire male or female population 15 years old and over are convenient for many uses, the classification becomes much more significant if it is made in combination with age. The proportion married increases very rapidly during the 15 or 20 years immediately following the attainment of age 15; and during the last 25 or 30 years of the normal age range the percentage widowed increases so rapidly that in the case of females it becomes the dominant class. Figures for the 1940 white population classified by marital status in combination with age are presented in Table VI.

Of the male population 15 to 19 years old only 1.6% were married, according to the 1940 returns, as compared with 26.1% in the age group 20 to 24, and 62.2% in the age group 25 to 29. Of the females 15 to 19 years old, 10.7% were married, as compared with 50.0% in the next age group, and 74.0% of those 25 to 29 years old. These relatively higher percentages for females result from the appreciably lower age at marriage for women as compared with men.

Incidentally, it may be noted that contrary to the usual assumption of an increasing age at marriage, the figures representing the proportion married by age from the several censuses, beginning with 1890, show an appreciable, though not rapid, decline in the average age at marriage for both males and females.

Up to age 40 or 45 the proportion of the population widowed remains too small to be of great significance. In fact, for males the proportion widowed does not reach 10% until after age 60. For females, however, 9.5% of the group 45 to 49 years were widowed, and in the age group 70 to 74, 54.4% were widowed as compared with 34.9% married and 9.8% single. (*See* also MARRIAGE AND DIVORCE.)

Wage or Salary Income.—In the 1940 population census were included two questions on income, which applied to all persons 14 years old and over except inmates of specified institutions. The main question called for the amount of money wage or salary income received in 1939. This was supplemented by a second question which asked whether or not income amounting to $50 or more was received in 1939 from sources other than money wages or salaries. The purpose of the second question was to identify for separate tabulation those for whom wages or salaries constituted practically the entire income.

The income question was limited to wages and salaries in order to simplify the work of the enumerator, it being assumed that this information could be obtained much more readily than information on farm income, business profits, or receipts from other sources. In short, it was felt that a question on total income would be far too difficult to be handled as a part of a census enumeration.

Wage or salary income was defined as including all money received in compensation for work or services performed as an employee, including commissions, tips, piece-rate payments, bonuses, etc., as well as those receipts commonly referred to as wages or salaries. The value of income received in kind, such as living quarters, meals, clothing, etc., was not included.

The most significant of the returns from the income question are those relating to persons classified as wage or salary workers, omitting those on public emergency work. Income data for this class, which formed nearly three-fourths of the entire labour

Table VII.—*Wage or Salary Income and Receipt of Other Income in 1939 for Persons Who Were Wage or Salary Workers in March, 1940 (Excluding Those on Public Emergency Work), by Sex, for the United States*

(Statistics based on a tabulation of a 5% sample, multiplied uniformly by 20)

Wage or salary income in 1939, and sex	Total		Without other income		With other income*	
	Number	Per cent	Number	Per cent	Number	Per cent
Total reporting income	37,435,740	100.0	31,409,520	100.0	6,026,220	100.0
None	2,673,440	7.1	1,591,720	5.1	1,081,720	18.0
$1 to $99	1,277,280	3.4	1,065,100	3.4	212,180	3.5
$100 to $199	2,203,520	5.9	1,837,160	5.8	366,360	6.1
$200 to $399	4,430,840	11.8	3,662,420	11.7	768,420	12.8
$400 to $599	3,889,380	10.4	3,316,960	10.6	572,420	9.5
$600 to $799	4,241,880	11.3	3,722,680	11.9	519,200	8.6
$800 to $999	3,472,840	9.3	3,077,740	9.8	395,100	6.6
$1,000 to $1,199	3,110,120	8.3	2,779,400	8.8	330,720	5.5
$1,200 to $1,399	2,979,820	8.0	2,639,980	8.4	339,840	5.6
$1,400 to $1,599	2,338,240	6.2	2,067,300	6.6	270,940	4.5
$1,600 to $1,799	1,273,860	3.4	1,117,700	3.6	156,160	2.6
$1,800 to $1.999	1,463,340	3.9	1,266,380	4.0	196,960	3.3
$2,000 to $2,499	2,039,920	5.4	1,738,040	5.5	301,880	5.0
$2,500 to $2,999	771,520	2.1	635,560	2.0	135,960	2.3
$3,000 to $3,999	713,040	1.9	550,500	1.8	162,540	2.7
$4,000 to $4,999	200,700	0.5	142,400	0.5	58,300	1.0
$5,000 and over	356,000	1.0	198,480	0.6	157,520	2.6
Males reporting income	26,846,220	100.0	22,342,980	100.0	4,503,240	100.0
None	1,662.340	6.2	932,940	4.2	729,400	16.2
$1 to $99	606,340	2.3	492,960	2.2	113,380	2.5
$100 to $199	1,235,580	4.6	1,013,060	4.5	222,520	4.9
$200 to $399	2,783,960	10.4	2,258,680	10.1	525,280	11.7
$400 to $599	2,460,600	9.2	2,060,560	9.2	400,040	8.9
$600 to $799	2,690.840	10.0	2,320,320	10.4	370,520	8.2
$800 to $999	2,368,500	8.8	2,071,580	9.3	296,920	6.6
$1,000 to $1,199	2,368,320	8.8	2,099,260	9.4	269,060	6.0
$1,200 to $1,399	2,436,660	9.1	2,151,020	9.6	285,640	6.3
$1,400 to $1,599	2,011,720	7.5	1,778,980	8.0	232,740	5.2
$1,600 to $1,799	1,115,720	4.2	981,560	4.4	134,160	3.0
$1,800 to $1,999	1,316,020	4.9	1,142,640	5.1	173,380	3.9
$2,000 to $2,499	1,874,160	7.0	1,604,020	7.2	270,140	6.0
$2,500 to $2,999	717,400	2.7	594,240	2.7	123,160	2.7
$3,000 to $3,999	664,680	2.5	515,340	2.3	149,340	3.3
$4,000 to $4,999	190,460	0.7	135,660	0.6	54,800	1.2
$5,000 and over	342,920	1.3	190,160	0.9	152,760	3.4
Females reporting income	10,589,520	100.0	9,066,540	100.0	1,522,980	100.0
None	1,011,100	9.5	658,780	7.3	352,320	23.1
$1 to $99	670,940	6.3	572,140	6.3	98,800	6.5
$100 to $199	967,940	9.1	824,100	9.1	143,840	9.4
$200 to $399	1,646,880	15.6	1,403,740	15.5	243,140	16.0
$400 to $599	1,428,780	13.5	1,256,400	13.9	172,380	11.3
$600 to $799	1,551,040	14.6	1,402,360	15.5	148,680	9.8
$800 to $999	1,104,340	10.4	1,006,160	11.1	98,180	6.4
$1,000 to $1,199	741,800	7.0	680,140	7.5	61,660	4.0
$1,200 to $1,399	543,160	5.1	488,960	5.4	54,200	3.6
$1,400 to $1,599	326,520	3.1	288,320	3.2	38,200	2.5
$1,600 to $1,799	158,140	1.5	136.140	1.5	22,000	1.4
$1,800 to $1,999	147,320	1.4	123,740	1.4	23,580	1.5
$2,000 to $2,499	165,760	1.6	134,020	1.5	31,740	2.1
$2,500 to $2,999	54.120	0.5	41,320	0.5	12,800	0.8
$3,000 to $3,999	48,360	0.5	35,160	0.4	13,200	0.9
$4,000 to $4,999	10,240	0.1	6,740	0.1	3,500	0.2
$5,000 and over	13,080	0.1	8,320	0.1	4,760	0.3
Median wage or salary income for all workers reporting:						
Total	$800	—	$833	—	$605	—
Male	967	—	1,002	—	741	—
Female	540	—	571	—	337	—
Median wage or salary income for workers with $1 or more:						
Total	$877	—	$885	—	$817	—
Male	1,038	—	1,046	—	972	—
Female	610	—	621	—	516	—

Includes workers not reporting whether or not they received other income of $50 or more —about 800,000 in all.

orce, are presented in Table VII. Wage or salary workers are lefined as persons who in their current or last job worked as mployees for wages or salaries. The category includes both private wage or salary workers and nonemergency government vorkers.

The fact that a number of wage or salary workers were reported as receiving no money wage or salary income in 1939 is he result of several different factors. About two-fifths of this group reported the receipt of other income and thus might have eceived all their income in kind or might have been working on heir own account in 1939. The remainder of the number shown s with no wage or salary income represents mainly those who vere unemployed or outside the labour force in 1939, perhaps ncluding also some whose income or class-of-worker designation vas incorrectly reported. Those who failed to make any report n income were relatively few, constituting only 2.3% of all vage or salary workers.

The considerable range of income is indicated by the fact that about one-fourth of the workers reported incomes of $1,400 or more and a little more than one-fourth reported incomes below $400. Those who received $5,000 and over constituted only 1.0% of the total and those with from $1 to $99 only 3.4%.

A very convenient statistical device for summarizing the income distributions is the median, which may be defined as that amount which divides the total group of workers into two equal parts, one having incomes above the median and the other incomes below. In the group of workers without other income of $50 or more, the median wage or salary income was $1,002 for men and $571 for women, each figure being about $30 greater than the corresponding figure for all workers, including those with other income. These figures apply to all wage or salary workers without regard to occupation or amount of time worked, so they cannot by any means be used as an indication of differences in pay scales for men and women doing the same work.

Medians have also been computed for those workers receiving $1 or more. The omission of the marginal group reporting zero income raises the median for men to $1,046 and for women to $621.

The median wage or salary income of all workers who received nonwage income of $50 or more was $605, as compared with $833 for workers who had no other income. The proportions of those receiving nonwage income who were in either the low or the high income brackets were considerably greater than the corresponding proportions for those without such income. Wage or salary incomes of less than $400 were reported by 40.4% of the workers receiving nonwage income of $50 or more, as compared with 26.0% of the workers without other income, and incomes of $2,500 or more were reported by 8.6% of the former as compared with 4.9% of the latter. For persons at the lower end of the wage or salary income scale, nonwage income consisted primarily of direct relief payments and of income in kind, such as food, clothing and lodging, whereas for persons at the upper end of the scale it consisted mainly of rents, interest, dividends and profits. (*See* also WEALTH AND INCOME, U.S. DISTRIBUTION OF; WAGES AND HOURS.)

Metropolitan Districts.—Prior to 1940 census statistics were presented almost exclusively for geographic areas with legally established political boundaries, that is, for states, counties, townships and cities. To an increasing extent, however, the population tributary to a fairly large city is expanding into the area outside the incorporated limits of the city. There has grown up, therefore, an increasing demand for statistics relating to this entire area, including both the city and the thickly settled adjacent suburban area. Some steps were taken toward meeting this demand as early as 1910 when metropolitan districts were established for 25 of the largest cities and tables were presented giving the population of these areas, with separate figures for the central city and that part of the district outside. Similar tables, giving the total population of each district and its constituent parts (cities, townships, etc.), were published in 1920. In 1930 the number of metropolitan districts was increased to 96; and a brief classification was published showing the population by sex, colour and age for all the incorporated places and townships or other political subdivisions making up each district. For the census of 1940, districts were established for all cities which had a population of 50,000 or more in 1930, and almost all of the important classifications presented in the census reports on population and housing are shown for the metropolitan districts—or at least for the more important ones—as well as for the central cities. This represents an expansion in the geographic classification of the census figures perhaps even more important than the very great extension in the use of urban-rural areas which was incorporated in the reports of the 1930 census.

The general plan followed in setting up the metropolitan districts has been to include in the district, in addition to the central city or cities, all adjacent and contiguous townships or other minor civil divisions and incorporated places having a population of 150 or more per square mile. A metropolitan district is thus not a political unit but rather an area including all the thickly settled territory in and around a city or group of cities. It tends to be a more or less integrated area, with common economic, social and often administrative interests.

The 50 metropolitan districts having a population of 250,000 or more are listed in Table VIII, which gives separately the population of the central city and the outside area in each district.

As indicated by the figures in the last column of Table VIII, there is a wide diversity among the cities in the relation between the population of the central city and the population outside, the difference representing mainly actual differences in the composition of the territory immediately surrounding the city. In the Boston metropolitan district, on the one hand, 67.2% of the population is outside the central city, the outside area in this case including a number of other cities of considerable size. At the other extreme, among the districts of 250,000 or more, is the Omaha-Council Bluffs district, in which only 7.8% of the population is in the outside area, which consists mainly of a rather small number of townships with no incorporated areas except two small villages. The Pittsburgh metropolitan district is another in which a very large part (66.3%) of the total population lies outside the central city, while New Orleans, with 8.4% outside, and Memphis, with 11.9% outside, are examples of metropolitan districts established in areas where the near-by population outside the city was relatively unimportant.

Table VIII.—*Population of Metropolitan Districts Having 250,000 Inhabitants or More, 1940*

District	Total	In central city (or cities)	Outside central city	Per cent outside
Akron, O.	349,705	244,791	104,914	30.0
Albany-Schenectady-Troy, N. Y.	431,575	130,577 87,549 70,304	143,145	33.2
Allentown-Bethlehem-Easton, Pa.	325,142	96,904 58,490 33,589	136,159	41.9
Atlanta, Ga.	442,294	302,288	140,006	31.7
Baltimore, Md.	1,046,692	859,100	187,592	17.9
Birmingham, Ala.	407,851	267,583	140,268	34.4
Boston, Mass.	2,350,514	770,816	1,579,698	67.2
Buffalo-Niagara, N.Y.	857,719	575,901 78,029	203,789	23.8
Chicago, Ill.	4,499,126	3,396,808	1,102,318	24.5
Cincinnati, O.	789,309	455,610	333,699	42.3
Cleveland, O.	1,214,943	878,336	336,607	27.7
Columbus, O.	365,796	306,087	59,709	16.3
Dallas, Tex.	376,548	294,734	81,814	21.7
Dayton, O.	271,513	210,718	60,795	22.4
Denver, Colo.	384,372	322,412	61,960	16.1
Detroit, Mich.	2,295,867	1,623,452	672,415	29.3
Fall River-New Bedford, Mass.	272,648	115,428 110,341	46,879	17.2
Hartford-New Britain, Conn.	502,193	166,267 68,685	267,241	53.2
Houston, Tex.	510,397	384,514	125,883	24.7
Indianapolis, Ind.	455,357	386,972	68,385	15.0
Kansas City, Mo.-Kansas City, Kan.	634,093	399,178 121,458	113,457	17.9
Los Angeles, Calif.	2,904,596	1,504,277	1,400,319	48.2
Louisville, Ky.	434,408	319,077	115,331	26.5
Lowell-Lawrence-Haverhill, Mass.	334,969	101,389 84,323 46,752	102,505	30.6
Memphis, Tenn.	332,477	292,942	39,535	11.9
Miami, Fla.	250,537	172,172	78,365	31.3
Milwaukee, Wis.	790,336	587,472	202,864	25.7
Minneapolis-St. Paul, Minn.	911,077	492,370 287,736	130,971	14.4
New Haven, Conn.	308,228	160,605	147,623	47.9
New Orleans, La.	540,030	494,537	45,493	8.4
New York-Northeastern N.J.	11,690,520	7,454,995 980,501	3,255,024	27.8
Norfolk-Portsmouth-Newport News, Va.	330,396	144,332 50,745 37,067	98,252	29.7
Omaha, Nebr.-Council Bluffs, Ia.	287,698	223,844 41,439	22,415	7.8
Philadelphia, Pa.	2,898,644	1,931,334	967,310	33.4
Pittsburgh, Pa.	1,994,060	671,659	1,322,401	66.3
Portland, Ore.	406,406	305,394	101,012	24.9
Providence, R.I.	711,500	253,504	457,996	64.4
Rochester, N.Y.	411,970	324,975	86,995	21.1
St. Louis, Mo.	1,367,977	816,048	551,929	40.3
San Antonio, Tex.	319,010	253,854	65,156	20.4
San Diego, Calif.	256,368	203,341	53,027	20.7
San Francisco-Oakland, Calif.	1,428,525	634,536 302,163	491,826	34.4
Scranton-Wilkes-Barre, Pa.	629,581	140,404 86,236	402,941	64.0
Seattle, Wash.	452,639	368,302	84,337	18.6
Springfield-Holyoke, Mass.	394,623	149,554 53,750	191,319	48.5
Syracuse, N.Y.	258,352	205,967	52,385	20.3
Toledo, O.	341,663	282,349	59,314	17.4
Washington, D.C.	907,816	663,091	244,725	27.0
Worcester, Mass.	306,194	193,694	112,500	36.7
Youngstown, O.	372,428	167,720	204,708	55.0
Total, 50 metropolitan districts having 250,000 inhabitants or more	51,356,682	34,301,371	17,055,311	33.2
All metropolitan districts (140), including 90 smaller districts	62,965,773	42,796,170	20,169,603	32.0

Table IX.—*Dwelling Units by Occupancy and Tenure, for the United States, Urban and Rural, 1940*

Occupancy and tenure	Total	Urban	Rural-nonfarm	Rural-farm
All dwelling units	37,325,470	21,616,352	8,066,837	7,642,281
Occupied dwelling units	34,854,532	20,596,500	7,151,473	7,106,559
Owner-occupied	15,195,763	7,714,960	3,698,076	3,782,727
Tenant-occupied	19,658,769	12,881,540	3,453,397	3,323,832
Vacant dwelling units	2,470,938	1,019,852	915,364	535,722
Per cent of all units vacant	6.6	4.7	11.3	7.0
Per cent of occupied units owner-occupied	43.6	37.5	51.7	53.2

The Housing Census.—The census of housing was an integral part of the census of population, taken at the same time and by the same enumerators. The housing data were recorded on a separate schedule, to which had been transferred a number of items previously carried on the population schedule, such as tenure and value or rent of home, and size of family or household. These were supplemented by questions with respect to the physical characteristics and equipment of the homes. The basis of most of the housing census tabulations is the dwelling unit, defined as the living quarters occupied by one family or household (or intended for such occupancy). The dwelling unit is thus practically the same as the "home," for which figures are shown in earlier census reports. (*See* also HOUSING.)

Occupancy and Tenure.—Dwelling units are classified, first as occupied and vacant; then the occupied units are further classified as owner-occupied and tenant-occupied. A dwelling unit was classified as owner-occupied if it was owned either wholly or in part by the head of the household or by some related member of his family living in the dwelling unit. All other occupied units were classified as tenant-occupied, even though no cash rent was paid for the living quarters. Table IX shows the whole number of dwelling units in the United States classified by occupancy and tenure, with separate figures for urban and rural areas.

Of the 37,325,470 dwelling units in continental United States in 1940, 2,470,938, or 6.6%, were returned as vacant. The number of vacant units includes, however, 606,555 which were not on the market either for sale or for rent, being for the most part reserved for absent families, etc. Nearly two-thirds of these, however, were seasonal dwellings, many of them suited only for summer occupancy. The 1,864,383 dwelling units vacant and for sale or rent likewise included considerable numbers of seasonal units (341,831 in all), especially in rural areas. If these are deducted, the remaining number of year-round dwelling units on the market is reduced to a figure representing only 4.1% of the grand total.

Of the occupied dwelling units 43.6% were occupied by owners and 56.4% by tenants. The percentage occupied by owners in urban areas was 37.5, in rural-nonfarm, 51.7, and in rural-farm 53.2. These figures are in all cases materially lower than the corresponding figures returned for homes in 1930, this bein especially the case with the urban figure.

Value and Monthly Rent.—The census enumerator was instructed to obtain for each owner-occupied dwelling unit the estimated current market value of the home, and for each tenant-occupied unit, the monthly rent, or, if no rent was actually paid, the estimated monthly rental value. For an owner-occupied unit which formed only a part of the structure in which it was located, the value returned was to represent only a proportional part of the total value of the structure. The data for owner-occupied units classified by value are presented in Table X, and for tenant-occupied units classified by monthly rent in Table XI. These tables also present average and median values and rentals, the median being the value of the unit which would stand in the middle of the series if all the units were arranged in order according to value. The medians are in all cases materially lower than the averages, since the latter are pushed upward by the weight of small numbers of homes with very high values, while in the computation of the median a home valued at $20,000 or more has no more weight than one valued at $200.

In the United States as a whole the owner-occupied dwelling units are rather widely distributed on the basis of value, all of the groups shown in the table with values up to $7,500 being represented by approximately 5% or more of the total, the maximum group, that comprising homes valued from $3,000 to $3,999, containing only 13.3%. This even distribution disappears, however, when the total is subdivided into geographic areas. In fact, the subdivision of the United States into urban and rural areas covering the country as a whole results in an urban series with relatively few dwelling units valued at less than $1,000 and appreciable numbers over $10,000, while in the rural-farm area almost half of the owner-occupied units were returned with a value of less than $1,000 and two-thirds with a value of less than $1,500. These urban-rural differentials are brought out more clearly, perhaps, by the median values, which were for the urban, $3,501, for the rural-nonfarm, $1,715, and for the rural-farm, $1,028.

Table X.—*Owner-Occupied Dwelling Units by Value, for the United States, Urban and Rural, 1940*

Value	Total		Per cent, average and median, urban and rural		
	Number	Per cent	Urban	Rural-nonfarm	Rural-farm
Total	15,195,763	—	—	—	—
Reporting value	14,295,919	100.0	100.0	100.0	100.0
Less than $300	964,671	6.7	1.5	9.7	15.3
$300 to $499	700,943	4.9	1.4	6.7	10.8
$500 to $699	870,209	6.1	2.2	8.4	12.2
$700 to $999	840,069	5.9	2.8	7.8	10.8
$1,000 to $1,499	1,533,550	10.7	6.9	13.1	16.8
$1,500 to $1,999	1,273,188	8.9	8.0	9.9	9.8
$2,000 to $2,499	1,281,936	9.0	9.5	8.8	8.1
$2,500 to $2,999	1,043,481	7.3	8.8	6.9	4.3
$3,000 to $3,999	1,896,760	13.3	17.8	10.9	5.7
$4,000 to $4,999	1,224,898	8.6	12.5	6.0	2.5
$5,000 to $5,999	913,992	6.4	9.5	4.4	1.7
$6,000 to $7,499	774,958	5.4	8.4	3.3	1.0
$7,500 to $9,999	464,935	3.3	5.2	1.9	0.5
$10,000 to $14,999	313,090	2.2	3.4	1.4	0.3
$15,000 to $19,999	101,835	0.7	1.1	0.5	0.1
$20,000 or more	97,404	0.7	1.0	0.5	0.1
Not reporting value	899,844	—	—	—	—
Average value (dollars)	3,003	—	4,131	2,408	1,113
Median value (dollars)	2,377	—	3,501	1,715	1,028

Table XI.—*Tenant-Occupied Dwelling Units by Monthly Rent, for the United States, Urban and Rural, 1940*

Monthly rent	Total, all units		Per cent, average and median, urban and rural		
	Number	Per cent	Urban	Rural-nonfarm	Rural-farm
Total	19,658,769	—	—	—	—
Reporting rent	19,223,611	100.0	100.0	100.0	100.0
Less than $3	985,207	5.1	0.4	7.3	22.5
$3 to $4	1,351,813	7.0	1.5	11.5	25.1
$5 to $6	1,617,189	8.4	3.3	16.5	21.1
$7 to $9	1,215,598	6.3	4.3	12.3	8.3
$10 to $14	2,680,423	13.9	12.3	20.8	13.2
$15 to $19	2,364,965	12.3	14.1	12.3	4.8
$20 to $24	2,084,888	10.8	13.9	7.0	2.4
$25 to $29	1,878,431	9.8	13.0	5.2	1.3
$30 to $39	2,549,719	13.3	18.6	4.2	0.8
$40 to $49	1,307,595	6.8	9.8	1.4	0.2
$50 to $59	575,154	3.0	4.3	0.7	0.2
$60 to $74	328,621	1.7	2.5	0.4	0.1
$75 to $99	165,482	0.9	1.2	0.2	—
$100 or more	118,526	0.6	0.9	0.2	—
Not reporting rent	435,158	—	—	—	—
Average rent (dollars)	21.17	—	27.01	12.36	6.45
Median rent (dollars)	18.22	—	24.60	10.08	4.72

Table XII.—*Dwelling Units by Number of Rooms, for the United States, Urban and Rural, 1940*

Number of rooms, area and tenure	Total		Per cent and median, urban and rural		
	Number	Per cent	Urban	Rural-nonfarm	Rural-farm
Total	37,325,470	—	—	—	—
Reporting number of rooms	36,832,186	100.0	100.0	100.0	100.0
1 room	1,307,344	3.5	3.6	4.3	2.7
2 rooms	3,215,423	8.7	8.0	10.0	9.4
3 rooms	5,331,572	14.5	14.5	13.9	14.0
4 rooms	6,891,990	18.7	17.9	19.7	20.0
5 rooms	7,302,053	19.8	21.8	18.9	15.2
6 rooms	6,321,630	17.2	18.8	15.7	14.2
7 rooms	2,868,719	7.8	7.3	8.0	9.0
8 rooms	1,886,121	5.1	4.3	5.1	7.5
9 rooms	737,986	2.0	1.6	1.9	3.1
10 rooms	481,339	1.3	1.3	1.2	2.1
11 rooms or more	488,009	1.3	1.1	1.2	1.9
Not reporting number of rooms	493,284	—	—	—	—
Median Number of Rooms					
United States, total	4.73	—	4.78	4.61	4.70
Owner-occupied	5.58	—	5.72	5.24	5.51
Tenant-occupied	4.11	—	4.13	4.05	4.07
The north, total	5.17	—	4.99	5.26	6.15
Owner-occupied	5.95	—	5.91	5.73	6.45
Tenant-occupied	4.56	—	4.40	4.85	5.86
The south, total	4.05	—	4.19	4.00	3.98
Owner-occupied	5.03	—	5.41	4.78	4.79
Tenant-occupied	3.51	—	3.46	3.51	3.57
The west, total	4.20	—	4.39	3.83	4.20
Owner-occupied	4.94	—	5.18	4.37	4.68
Tenant-occupied	3.57	—	3.55	3.48	3.84

The range covered by the tenant-occupied dwelling units classified by rent is somewhat narrower, 60% of these units falling between $10 and $39 in monthly rental. Concentration in this range is especially characteristic of the urban units. The rural-nonfarm units show a similar concentration in the rental groups from $3 to $20, and the rural-farm units at an even lower level. The variations in monthly rental as between urban and rural areas are decidedly greater than the corresponding variations in value, the median monthly rental for urban dwelling units being $24.60, for rural-nonfarm units, $10.08, and for rural-farm, $4.72.

Number of Rooms.—In determining the number of rooms in a dwelling unit, all rooms that are used or available for use as living quarters for the household are counted. Bathrooms, closets, pantries, halls, screened porches and unfinished rooms in the basement or attic are omitted. Table XII shows dwelling units classified by number of rooms for the United States as a whole, with percentages and medians for urban and rural areas.

More than seven-tenths of the dwelling units comprised 3, 4, 5, or 6 rooms, the number with 5 rooms being a little larger than the number with 4, and considerably larger than the number with 6. About one-eighth of all the dwelling units, however, contained only 1 or 2 rooms, and at the other end of the scale there were 9.7% which contained 8 rooms or more.

The distribution of dwelling units by number of rooms did not differ radically as between urban and rural-farm areas. For the United States as a whole the median number of rooms in urban dwelling units was 4.78, as compared with 4.70 in rural-farm. In the northern states taken alone, the rural-farm dwelling units were decidedly larger than the urban, while in the southern and western states they were a little smaller.

Owner-occupied dwelling units were in general larger by somewhat more than 1 room than tenant-occupied units, though this does not necessarily mean that they provided more adequate living accommodations. It should be noted, for example, that practically all apartment house units, which tend to contain rather small numbers of rooms, are found in urban areas.

Table XIII—*Dwelling Units by Water Supply, for the United States, Urban and Rural, 1940*

Water supply	Total		Per cent, urban and rural		
	Number	Per cent	Urban	Rural-nonfarm	Rural-farm
All dwelling units	37,325,470	—	—	—	—
Number reporting water supply	36,900,814	100.0	100.0	100.0	100.0
Running water in dwelling unit	25,796,314	69.9	93.5	55.9	17.8
Hand pump in dwelling unit	1,596,089	4.3	0.6	7.7	11.2
Running water within 50 feet	1,533,798	4.2	3.5	5.6	4.4
Other water supply within 50 feet	6,074,676	16.5	1.7	22.7	51.7
No water supply within 50 feet	1,899,937	5.1	0.6	8.1	14.8
Not reporting water supply	424,656	—	—	—	—

Water Supply.—The statistics for water supply obtained in the housing census relate to the principal source of water supply available for household purposes, not necessarily drinking water. "Running water" may be piped from either a pressure or a gravity system. "Other" may include any source of water supply except running water. The data for dwelling units classified according to water supply are summarized in Table XIII.

In the country as a whole nearly seven-tenths of the dwelling units were supplied with running water. This convenience was found in 93.5% of the urban units and in 55.9% of the rural-nonfarm units, these consisting largely of houses in the smaller towns and villages. Of the farm units only 17.8% had running water, with an additional 11.2% reporting a hand pump in the house. This left nearly three-quarters of the rural-farm units without water available in the house, though 56.1% of the whole number reported water available within 50 ft. of the house, presumably, for the most part, from a well in the yard.

Plumbing Equipment.—In the classification of dwelling units in accordance with plumbing equipment two series of data are presented, those representing toilet facilities and those indicating whether or not the home was provided with a bathtub or shower. Figures are presented in Table XIV, with designations which are for the most part self-explanatory.

Flush toilets, like running water, were found to be more often a characteristic of urban dwelling units than of rural, though nearly one-half of the rural-nonfarm (village) units reported flush toilets, as compared with nine-tenths of the urban. Of the rural-farm units, only 11.4% reported flush toilets, this number bearing about the same relation to the number with running water as in the case of urban and rural-nonfarm units.

The percentages of dwelling units in the various areas which were supplied with bathtub or shower likewise follow rather closely the percentages with running water.

Heating Equipment.—The number of dwelling units equipped with various types of heating equipment is shown in Table XV, the most important classification being perhaps that distinguishing those with central heating from those without. One or two items only require explanation. A "pipeless warm-air furnace" is a furnace located in the basement or utility room with no warm-air outlet other than one grille directly above or adjacent to the furnace. The category "heating stove" includes regular heating stoves, circulator heaters with flues and nonportable electric or gas heaters. Dwelling units which have no heating equipment other than portable heaters, fireplaces, or kitchen stoves are included in the category "other or none."

Table XIV.—*Dwelling Units by Plumbing Equipment for the United States, Urban and Rural, 1940*

Plumbing equipment	Total		Per cent, urban and rural		
	Number	Per cent	Urban	Rural-nonfarm	Rural-farm
All dwelling units	37,325,470	—	—	—	—
Toilet Facilities					
Number reporting toilet facilities	36,769,610	100.0	100.0	100.0	100.0
Flush toilet in structure, exclusive use	21,966,878	59.7	83.0	43.2	11.2
Flush toilet in structure, shared	1,826,962	5.0	7.8	1.8	0.2
Nonflush toilet in structure	130,977	0.4	0.1	0.9	0.4
Outside toilet or privy	11,826,429	32.2	8.6	51.2	78.9
No toilet or privy	1,018,364	2.8	0.4	2.9	9.3
Not reporting toilet facilities	555,860	—	—	—	—
Bathtub or Shower					
Number reporting	36,640,481	100.0	100.0	100.0	100.0
Exclusive use	20,606,386	56.2	77.5	40.8	11.8
Shared	1,722,576	4.7	7.3	1.9	0.2
None	14,320,519	39.1	15.2	57.3	88.0
Not reporting	675,989	—	—	—	—

Of all dwelling units in the United States 42.0% were equipped with central heating, including only a small fraction with the relatively simple pipeless warm-air furnace, and 58.0% were without central heating, four-fifths of these being heated by stoves. Central heating was, of course, much more common in urban areas than in rural-farm, only about one-tenth of the rural-farm units having any form of central heating equipment.

Other Household Equipment.—Other items of household equipment covered by the housing census include radio, lighting equipment and refrigeration. Table XVI presents a brief summary of the data with respect to these items, giving the numbers and percentages of homes having a radio, electric lights and mechanical refrigeration.

Table XV.—*Occupied Dwelling Units by Heating Equipment, for the United States, Urban and Rural, 1940*

Heating equipment and type of fuel	Total		Per cent, urban and rural		
	Number	Per cent	Urban	Rural-nonfarm	Rural-farm
All occupied units	34,854,532	—	—	—	—
Reporting heating equipment	34,149,065	100.0	100.0	100.0	100.0
With central heating	14,346,835	42.0	58.2	27.0	10.1
Steam or hot-water system	7,427,754	21.8	32.8	9.6	2.0
Piped warm-air system	5,725,394	16.8	22.2	12.5	5.4
Pipeless warm-air furnace	1,193,687	3.5	3.3	4.9	2.7
Without central heating	19,802,230	58.0	41.8	73.0	89.9
Heating stove	15,928,323	46.6	35.1	61.2	65.6
Other or none	3,873,907	11.3	6.7	11.8	24.3
Not reporting heating equipment	705,467	—	—	—	—

Table XVI.—*Dwelling Units Having Radio, Electric Light or Mechanical Refrigerator, for the United States, Urban and Rural, 1940*

Item	Total	Urban	Rural-nonfarm	Rural-farm
Radio (occupied units only)				
Reporting	33,890,506	20,010,014	6,969,455	6,911,037
With radio	28,048,219	18,386,121	5,502,730	4,159,368
Per cent of those reporting	82.8	91.9	79.0	60.2
Not reporting	964,026	586,486	182,018	195,522
Electric light (all dwelling units)				
Reporting	36,746,761	21,283,388	7,950,577	7,512,796
With electric light	28,915,486	20,379,352	6,185,089	2,351,045
Per cent of those reporting	78.7	95.8	77.8	31.3
Not reporting	578,709	332,964	116,260	129,485
Mechanical refrigerator (occupied units only)				
Reporting	34,205,414	20,253,009	7,016,193	6,936,212
With mechanical refrigerator	15,093,346	11,339,901	2,718,532	1,034,913
Per cent of those reporting	44.1	56.0	38.7	14.9
Not reporting	649,118	343,491	135,280	170,347

The urban-rural differentials with respect to these forms of equipment are somewhat less, especially with respect to the radio, than in the case of running water and the various types of plumbing equipment. More than 28,000,000, or 82.8%, of the 33,890,506 dwelling units answering the radio question reported the possession of a radio. For the urban units alone the percentage with radio was 91.9, for the rural-nonfarm, 79.0 and for the rural-farm, 60.2.

Of all dwelling units reporting, 78.7% were provided with electric lights. The total was made up of 95.8% of the urban units, 77.8% of the rural-nonfarm and 31.3% of the rural-farm.

The possession of a mechanical refrigerator was reported by 56.0% of the urban units, 38.7% of the rural-nonfarm and 14.9%

Table XVII.—*Percentage of Dwelling Units Having Radio or Electric Light, by States, 1940*

Geographic divisions	Per cent of occupied dwelling units having radio				Per cent of all dwelling units having electric light			
	Total	Urban	Rural-nonfarm	Rural-farm	Total	Urban	Rural-nonfarm	Rural-farm
United States	82.8	91.9	79.0	60.2	78.7	95.8	77.8	31.3
New England:								
Maine	86.5	93.2	84.0	77.2	80.4	96.6	78.5	51.3
New Hampshire	90.0	93.3	86.9	82.9	87.0	96.4	81.8	63.2
Vermont	88.6	95.5	87.6	80.9	80.2	98.7	83.7	52.9
Massachusetts	96.2	96.6	93.5	89.3	97.6	98.7	91.3	81.4
Rhode Island	95.7	96.1	92.6	88.2	97.7	98.7	91.8	77.7
Connecticut	95.7	96.4	95.3	88.5	96.5	99.0	94.1	80.4
Middle Atlantic:								
New York	95.5	96.7	92.4	83.8	96.4	99.3	89.6	67.9
New Jersey	95.5	96.2	93.2	87.6	96.6	98.1	92.5	80.3
Pennsylvania	92.4	95.5	88.7	77.3	92.3	98.6	87.0	57.0
East North Central:								
Ohio	91.7	95.1	87.8	80.2	90.6	98.2	86.8	59.3
Indiana	88.2	93.5	85.6	77.5	84.0	97.6	84.8	40.2
Illinois	92.3	95.3	86.3	80.4	89.9	98.5	86.2	38.5
Michigan	93.4	96.4	90.9	83.7	92.1	99.1	88.9	68.6
Wisconsin	91.7	96.5	88.9	83.0	83.9	99.0	84.8	49.3
West North Central:								
Minnesota	91.2	95.8	87.4	85.3	75.8	98.8	81.7	29.9
Iowa	90.2	93.7	87.6	87.3	70.7	97.3	89.6	39.5
Missouri	79.9	90.8	76.8	60.5	70.6	96.5	75.8	15.9
North Dakota	88.4	94.6	85.7	87.2	53.8	98.3	82.8	15.5
South Dakota	84.6	92.5	81.8	81.7	56.6	97.3	80.6	17.9
Nebraska	84.7	92.7	82.9	76.7	70.5	97.9	87.7	28.5
Kansas	83.0	90.4	82.4	73.2	71.5	96.0	85.4	27.3
South Atlantic:								
Delaware	87.0	92.3	86.5	71.1	81.8	94.8	82.2	41.0
Maryland	88.1	93.4	84.4	68.7	85.9	96.8	81.2	42.6
Dist. Columbia	93.7	93.7	—	—	95.9	95.9	—	—
Virginia	67.1	84.0	67.6	46.9	60.6	90.3	64.6	23.7
West Virginia	75.1	89.7	75.4	56.4	69.1	95.2	76.1	24.7
North Carolina	61.8	77.7	67.6	46.4	54.4	85.4	68.0	23.4
South Carolina	49.6	67.1	60.0	30.9	46.2	74.9	63.1	16.7
Georgia	52.5	68.2	57.6	34.0	46.6	73.4	56.5	16.1
Florida	64.8	76.1	55.1	39.4	66.5	83.2	54.0	22.5
East South Central:								
Kentucky	65.3	84.0	65.7	49.3	52.4	90.6	60.3	15.0
Tennessee	62.5	77.7	65.1	46.6	50.9	84.4	58.5	15.3
Alabama	49.4	69.7	54.5	30.8	43.4	76.8	53.8	12.8
Mississippi	39.9	61.5	50.9	28.4	28.3	68.1	45.3	8.5
West South Central:								
Arkansas	50.9	72.4	53.7	39.5	32.8	76.8	43.6	8.0
Louisiana	53.3	72.6	52.5	27.3	48.9	78.5	48.6	9.8
Oklahoma	68.8	83.5	64.6	54.4	55.1	88.9	57.5	14.4
Texas	60.9	78.6	65.7	49.4	59.0	84.7	63.0	18.4
Mountain:								
Montana	86.2	91.3	84.4	81.1	70.7	98.1	79.0	27.8
Idaho	86.4	91.3	84.1	83.3	79.1	97.3	81.3	59.4
Wyoming	84.4	91.5	83.2	75.7	70.9	97.0	76.0	31.0
Colorado	84.5	91.5	78.1	73.5	77.6	97.0	74.2	34.6
New Mexico	53.2	72.5	47.6	36.7	49.2	81.8	46.0	17.5
Arizona	69.0	82.4	69.3	43.3	70.5	93.3	71.9	30.2
Utah	92.4	95.0	90.2	86.3	93.9	99.3	93.1	74.5
Nevada	81.4	89.2	77.4	72.0	80.8	97.1	76.5	49.8
Pacific:								
Washington	90.6	92.7	89.2	85.8	90.9	98.6	88.4	70.9
Oregon	88.7	93.1	86.1	81.9	85.8	98.7	83.3	59.7
California	92.9	95.1	88.5	84.1	96.0	99.3	90.1	81.2

of the rural-farm, the percentage for all units combined being 44.1.

The variation from state to state in the extent to which the different forms of household equipment are found in the homes is far greater than the variation between urban and rural-farm areas in the United States as a whole, to which attention has been called in the preceding paragraphs. As an illustration of this diversity there are presented in Table XVII figures indicating for the urban and rural areas in each state the percentage of dwelling units having a radio and the percentage having electric lights.

Sixteenth Census Reports.—The major part of the material from the sixteenth decennial census is published in eight series of state bulletins, each with United States summary; these series are being assembled into bound volumes bearing numbers corresponding to the numbers of the bulletin series. There are four series of population bulletins: First Series, number of inhabitants, for counties, minor civil divisions, incorporated places and metropolitan districts; Second Series, characteristics of the population (including some data on the labour force), for counties, urban places of 1,000 inhabitants or more, minor civil divisions and metropolitan districts; Third Series, statistics on the labour force, including data on occupation, industry, employment and income, for the state and for cities of 100,000 inhabitants or more; Fourth Series, population characteristics by age in correlation with marital status, relationship, education and citizenship, for the state and for cities of 50,000 inhabitants or more.

There are also four series of housing bulletins: First Series, data for small areas, including minor civil divisions, as well as for counties, cities and metropolitan districts; Second Series, general characteristics of housing, for counties, incorporated places of 2,500 inhabitants or more and metropolitan districts; Third Series, characteristics of housing by monthly rent or value of home, for the state and for urban, rural-farm and rural-nonfarm areas; Fourth Series, mortgages on owner-occupied nonfarm homes for urban places and rural-nonfarm areas by counties, for cities of 100,000 inhabitants or more by wards and for metropolitan districts.

Maps of the metropolitan districts are presented in the Second Series population bulletins and also in Volume I of the bound reports on population (but not in the First Series bulletins).

Supplements to the First Series housing bulletins giving data by blocks have been issued for all cities having a population of 50,000 or more in 1930. A series of 58 reports covering 60 cities has also been issued presenting population and housing data by census tracts, which are permanent areas having a population of around 5,000 or 6,000 which have been established for statistical purposes in the larger cities.

Special studies or monographs are in preparation (Jan. 1943) on institutions, internal migration, families, fertility, parentage, mother tongue, veterans and household characteristics.

OCCUPATIONS OF WORKERS IN THE UNITED STATES

The occupations of the 45,166,083 men and women 14 years old and over in the United States who were employed in private or non-emergency government work during the week of March 24–30, 1940, are shown in Table XVIII which follows. These statistics for employed workers cover 85.6% of the entire labour force. Omitted are the 2,529,606 persons who were engaged in public emergency work (such as that provided by WPA, NYA and CCC) and the 5,093,810 persons who were without employment of any kind and were seeking work, for whom the available occupational data would have less significance than for those in regular employment—or at least a different significance.

The statistics are in terms of the 451 occupation titles of the complete 1940 census classification, which was adopted for use in the 1940 census as part of a co-operative effort on the part of governmental and other agencies to standardize occupational classification methods and thereby to increase comparability among occupation statistics from various sources. Because this 1940 classification differs extensively from that used in 1930 and earlier censuses, and because the occupation figures shown here do not cover all persons in the labour force, these 1940 statistics cannot be compared directly with occupation data in the census publications for 1930 and earlier years.

The total employment in each occupation is broken down into male and female—a division which became especially important after the United States entered World War II, because large numbers of men were drawn into the armed services. These figures indicate the occupations in which males normally predominated and which were thus most likely to be affected by the mass transfer of men from civilian to military pursuits. They focus attention upon these male occupations essential to the war production program and in which the need for replacement with women would be greatest. They also indicate the occupations in which sizable numbers of women were ordinarily employed and which thus lend themselves most readily to the substitution of women for men.

Table XVIII.—*Occupation of Employed Persons (Except on Public Emergency Work), by Sex, for the United States, 1940*

("N.e.c." means not elsewhere classified)

Occupation	Total	Male	Female
All occupations	45,166,083	34,027,905	11,138,178
Professional and semiprofessional workers	3,345,048	1,875,387	1,469,661
Professional workers	2,881,592	1,511,118	1,370,474
Actors and actresses	11,692	6,931	4,761
Architects	20,376	19,899	477
Artists and art teachers	51,985	34,478	17,507
Authors, editors, and reporters	70,059	51,523	18,536
Authors	11,806	8,020	3,786
Editors and reporters	58,253	43,503	14,750
Chemists, assayers, and metallurgists	57,025	55,371	1,654
Clergymen	136,597	133,449	3,148
College presidents, professors, and instructors	75,007	55,123	19,884
Dentists	70,121	69,074	1,047
Civil engineers	80,362	80,171	191
Electrical engineers	53,267	53,103	164
Mechanical engineers	82,443	82,255	188
Other technical engineers	29,216	29,029	187
Chemical engineers	11,120	11,081	39
Industrial engineers	9,283	9,209	74
Mining and metallurgical engineers	8,813	8,739	74
Lawyers and judges	177,643	173,456	4,187
Musicians and music teachers	129,256	69,800	59,456
Osteopaths	6,007	4,905	1,102
Pharmacists	79,347	76,131	3,216
Physicians and surgeons	164,649	157,041	7,608
Social and welfare workers	69,677	24,868	44,809
Teachers (n.e.c.), (including county agents)	1,030,001	253,561	776,440
Teachers (n.e.c.)	1,019,760	247,716	772,044
County agents and farm demonstrators	10,241	5,845	4,396
Trained nurses and student nurses	355,786	7,509	348,277
Veterinarians	10,717	10,638	79
Other professional workers	120,359	62,803	57,556
Librarians	36,347	3,801	32,546
Professional workers (n.e.c.)	84,012	59,002	25,010
Semiprofessional workers	463,456	364,269	99,187
Dancers, showmen, and athletes	45,074	31,147	13,927
Athletes	7,182	6,990	192
Dancers, dancing teachers, and chorus girls	11,213	2,180	9,033
Showmen	5,333	4,493	840
Sports instructors and officials	21,346	17,484	3,862
Designers and draftsmen	100,925	91,820	9,105
Designers	21,334	13,643	7,691
Draftsmen	79,591	78,177	1,414
Surveyors	13,344	13,243	101
Other semiprofessional workers	304,113	228,059	76,054
Aviators	5,879	5,828	51
Chiropractors	10,629	8,758	1,871
Funeral directors and embalmers	37,970	35,856	2,114
Healers and medical service workers (n.e.c.)	19,555	10,045	9,510
Optometrists	10,237	9,762	475
Photographers	33,701	29,078	4,623
Radio and wireless operators	10,393	10,296	97
Religious workers	34,672	8,798	25,874
Technicians and assistants, laboratory	62,998	41,487	21,511
Technicians, except laboratory	7,348	6,567	781
Semiprofessional workers (n.e.c.)	70,731	61,584	9,147
Farmers and farm managers	5,143,614	4,991,715	151,899
Farmers (owners and tenants)	5,106,711	4,955,624	151,087
Farm managers	36,903	36,091	812
Proprietors, managers, and officials, exc. farm	3,749,287	3,325,767	423,520
Conductors, railroad	46,185	46,185	..
Postmasters, and misc government officials	232,273	198,377	33,896
Inspectors, United States	17,006	16,641	365
Inspectors, State	13,309	12,856	453
Inspectors, city	11,804	11,558	246
Inspectors, county and local	1,214	1,180	34
Officials, United States	58,014	54,840	3,174
Officials, State	20,247	18,531	1,716
Officials, city	28,134	24,576	3,558
Officials, county and local	43,925	35,956	7,969
Postmasters	38,620	22,239	16,381
Other specified managers and officials	335,387	272,448	62,939
Advertising agents	33,712	30,110	3,602
Buyers and department heads, store	69,516	51,935	17,581
Country buyers and shippers of livestock and other farm products	38,516	38,007	509
Credit men	29,950	26,307	3,643
Floormen and floor managers, store	6,873	4,672	2,201
Managers and superintendents, building	68,882	40,394	28,488
Officers, pilots, pursers, and engineers, ship	31,075	30,978	97
Officials, lodge, society, union, etc.	25,304	21,079	4,225
Purchasing agents and buyers (n.e.c.)	31,559	28,966	2,593
Props., mgrs., and officials (n.e.c.), by industry:			
Mining	30,841	30,447	394
Construction	114,996	113,898	1,098
Manufacturing	420,368	402,506	17,862
Transportation, communication, and utilities	140,134	134,232	5,902
Railroads (incl. railroad repair shops)	31,842	31,561	281
Street railways and bus lines	5,707	5,543	164
Taxicab service	2,832	2,699	133
Trucking service	26,683	25,864	819
Warehousing and storage	7,419	7,234	185
Miscellaneous transportation	12,943	12,451	492
Communication	23,261	20,030	3,231
Utilities	29,447	28,850	597
Wholesale trade	234,326	227,334	6,992
Eating and drinking places	265,583	200,519	65,064
Retail trade, exc. eating and drinking places	1,404,322	1,242,323	161,999
Food stores, except dairy products	472,377	406,517	65,860
Dairy products stores and milk retailing	21,682	19,810	1,872
General merchandise stores	94,120	80,585	13,535
Limited price variety stores	17,954	15,049	2,905
Apparel and accessories stores, except shoes	83,150	54,884	28,266
Shoe stores	20,544	19,623	921
Furniture and house furnishings stores	36,654	34,151	2,503
Props., mgrs., and officials, exc. farm—Con.			
Props., mgrs., and officials (n.e.c.), by ind.—Con.			
Household appliance and radio stores	21,573	20,693	880
Motor vehicles and accessories retailing	79,876	78,632	1,244
Filling stations	180,315	175,497	4,818
Drug stores	20,150	17,691	2,459
Hardware and farm implement stores	46,607	45,045	1,562
Lumber and building material retailing	50,053	48,569	1,484
Liquor stores	17,375	16,150	1,225
Retail florists	14,774	10,662	4,112
Jewelry stores	18,987	17,687	1,300
Fuel and ice retailing	44,566	43,266	1,300
Miscellaneous retail stores	104,532	88,093	16,439
Not specified retail trade	59,033	49,719	9,314
Finance, insurance, and real estate	186,968	174,668	12,300
Banking, and other finance	122,009	115,687	6,322
Insurance	39,475	36,643	2,832
Real estate	25,484	22,338	3,146
Business and repair services	86,591	82,288	4,303
Business services	20,437	17,281	3,156
Automobile storage, rental, and repair services	60,492	59,602	890
Miscellaneous repair services and hand trades	5,662	5,405	257
Personal services	123,227	91,572	31,655
Hotels and lodging places	64,555	43,196	21,359
Laundering, cleaning, and dyeing services	52,934	43,914	9,020
Miscellaneous personal services	5,738	4,462	1,276
Miscellaneous industries and services	128,086	108,970	19,116
Theaters and motion pictures	25,141	23,750	1,391
Miscellaneous amusement and recreation	42,003	39,612	2,391
Other industries and services	40,559	27,928	12,631
Industry not reported	20,383	17,680	2,703
Clerical, sales, and kindred workers	7,517,630	4,360,648	3,156,982
Clerical and kindred workers	4,612,356	2,236,853	2,375,503
Baggagemen, express messengers, and ry. mail clerks	27,876	27,759	117
Baggagemen, transportation	5,959	5,959	..
Express messengers and railway mail clerks	21,917	21,800	117
Bookkeepers, accountants, cashiers, and ticket agents	895,965	447,606	448,359
Bookkeepers, accountants, and cashiers	856,448	410,243	446,205
Ticket, station, and express agents	39,517	37,363	2,154
Mail carriers	120,770	119,246	1,524
Messengers, except express	68,276	65,544	2,732
Messengers, errand, and office boys and girls	54,360	51,836	2,524
Telegraph messengers	13,916	13,708	208
Office machine operators	59,738	8,284	51,454
Shipping and receiving clerks	209,337	200,669	8,668
Stenographers, typists, and secretaries	1,056,886	68,805	988,081
Telegraph operators	39,782	31,554	8,228
Telephone operators	199,699	10,697	189,002
Other clerical and kindred workers	1,934,027	1,256,689	677,338
Agents (n.e.c.)	88,641	80,040	8,601
Attendants and assistants, library	8,983	1,955	7,028
Attendants, physicians' and dentists' offices	29,309	1,387	27,922
Collectors, bill and account	41,690	38,374	3,316
Clerical and kindred workers (n.e.c.)	1,765,404	1,134,933	630,471
Salesmen and saleswomen	2,905,274	2,123,795	781,479
Canvassers and solicitors	90,094	72,995	17,099
Hucksters and peddlers	50,695	48,357	2,338
Newsboys	54,370	53,313	1,057
Insurance agents and brokers	239,142	226,061	13,081
Real estate agents and brokers	111,110	100,856	10,254
Other sales agents and brokers	614,311	600,884	13,427
Auctioneers	3,277	3,134	143
Salesmen, finance, brokerage, and commission firms	18,707	18,327	380
Traveling salesmen and sales agents	592,327	579,423	12,904
Other salesmen and saleswomen	1,745,552	1,021,329	724,223
"Clerks" in stores	473,171	271,890	201,281
Demonstrators	8,961	1,558	7,403
Salesmen and saleswomen (n.e.c.)	1,263,420	747,881	515,539
Craftsmen, foremen, and kindred workers	5,055,722	4,949,132	106,590
Bakers	129,056	119,039	10,017
Blacksmiths, forgemen, and hammermen	72,246	72,034	212
Boilermakers	27,662	27,589	73
Cabinetmakers and patternmakers	81,870	81,263	607
Cabinetmakers	50,597	50,236	361
Pattern and model makers, except paper	31,273	31,027	246
Carpenters	558,313	556,918	1,395
Compositors and typesetters	158,072	150,647	7,425
Electricians	197,222	196,526	696
Foremen (n.e.c.), by industry	522,404	486,614	35,790
Construction	45,523	45,394	129
Manufacturing	289,977	262,851	27,126
Food and kindred products	29,175	25,919	3,256
Textiles, textile products, and apparel	43,753	31,298	12,455
Lumber, furniture, and lumber products	22,493	22,015	478
Paper, paper products, and printing	18,809	16,741	2,068
Chemicals, and petroleum and coal products	22,185	20,895	1,290
Metal industries	110,499	107,924	2,575
Manufacturing industries (n.e.c.)	43,063	38,059	5,004
Transportation, communication, and utilities	93,079	92,366	713
Railroads (incl. railroad repair shops)	48,013	47,912	101
Street railways and bus lines	4,163	4,143	20
Miscellaneous transportation	11,118	11,038	80
Communication	8,374	8,153	221
Utilities	21,411	21,120	291
Miscellaneous industries and services	93,825	86,003	7,822
Mining	26,484	26,443	41
Wholesale and retail trade	30,931	28,422	2,509
Business and repair services	6,104	5,892	212
Personal services	7,000	4,314	2,686
Government	9,809	9,411	398

Table XVIII.—Occupation of Employed Persons (Except on Public Emergency Work), by Sex, for the United States, 1940—Continued

Occupation	Total	Male	Female
Craftsmen, foremen, and kindred workers—Con.			
Foremen (n.e.c.), by industry—Con.			
Other industries and services	9,653	8,040	1,613
Industry not reported	3,844	3,481	363
Inspectors (n.e.c.), by industry	70,594	66,125	4,469
Mining	6,973	6,954	19
Construction	4,450	4,336	114
Railroads (incl. railroad repair shops)	28,336	28,261	75
Transportation, except railroads	5,086	5,005	81
Communication and utilities	8,049	7,234	815
Wholesale and retail trade	4,820	3,162	1,658
Miscellaneous industries and services[1]	12,880	11,173	1,707
Locomotive engineers	69,496	69,496	..
Locomotive firemen	43,851	43,851	..
Machinists, millwrights, and toolmakers	609,773	604,706	5,067
Machinists	477,373	472,769	4,604
Millwrights	39,655	39,566	89
Toolmakers, and diemakers and setters	92,745	92,371	374
Masons, tile setters, and stonecutters	102,436	102,089	347
Brickmasons, stonemasons, and tile setters	93,330	93,024	306
Stonecutters and stone carvers	9,106	9,065	41
Mechanics and repairmen, and loom fixers	863,731	859,491	4,240
Mechanics and repairmen, airplane	26,724	26,607	117
Mechanics and repairmen, automobile	376,985	375,796	1,189
Mechanics and repairmen, railroad and car shop	40,218	40,218	..
Mechanics and repairmen (n.e.c.)	397,391	394,552	2,839
Loom fixers	22,413	22,318	95
Molders, metal	75,904	75,559	345
Painters (construct.), paperhangers, and glaziers	354,221	350,372	3,849
Painters, construction and maintenance	322,159	319,948	2,211
Paperhangers	25,414	23,877	1,537
Glaziers	6,648	6,547	101
Plasterers and cement finishers	52,140	51,926	214
Plasterers	38,958	38,792	166
Cement and concrete finishers	13,182	13,134	48
Plumbers, and gas and steamfitters	173,915	173,385	530
Printing craftsmen, exc. compositors and typesetters	61,849	60,830	1,019
Electrotypers and stereotypers	7,971	7,893	78
Photoengravers and lithographers	20,981	20,548	433
Pressmen and plate printers, printing	32,897	32,389	508
Rollers and roll hands, metal	26,547	26,439	108
Roofers and sheet metalworkers	104,135	103,715	420
Roofers and slaters	24,520	24,432	88
Tinsmiths, coppersmiths, and sheet metal workers	79,615	79,283	332
Shoemakers and repairers (not in factory)	60,195	59,609	586
Stationary engineers, cranemen, and hoistmen	286,126	285,352	774
Stationary engineers	184,256	183,739	517
Cranemen, hoistmen, and construction machinery operators	101,870	101,613	257
Structural and ornamental metalworkers	27,951	27,769	182
Tailors and furriers	121,492	105,022	16,470
Tailors and tailoresses	107,577	92,880	14,697
Furriers	13,915	12,142	1,773
Other craftsmen and kindred workers	204,521	192,766	11,755
Decorators and window dressers	27,258	21,106	6,152
Engravers, except photoengravers	7,871	7,242	629
Heat treaters, annealers, and temperers	10,197	10,122	75
Inspectors, scalers, and graders, log and lumber	14,478	14,116	362
Jewelers, watchmakers, goldsmiths, and silversmiths	33,252	31,957	1,295
Millers, grain, flour, feed, etc.	14,748	14,667	81
Opticians and lens grinders and polishers	11,698	10,707	991
Piano and organ tuners	4,839	4,794	45
Sawyers	42,135	41,864	271
Upholsterers	38,045	36,191	1,854
Operatives and kindred workers[2]	8,252,277	6,205,898	2,046,379
Apprentices	84,080	81.807	2,273
Carpenters' apprentices	5,528	5,485	43
Electricians' apprentices	3,070	3,046	24
Machinists' apprentices	13,578	13,505	73
Plumbers' apprentices	4,631	4,518	113
Building and hand trade apprentices (n.e.c.)	12,841	12,764	77
Apprentices, printing trades	9,360	9,140	220
Apprentices, specified trades (n.e.c.)	24,174	22,745	1,429
Apprentices, trades not specified	10,898	10,604	294
Attendants, filling station, parking lot, garage, and airport	213,315	209,449	3,866
Brakemen and switchmen, railroad	107,432	107,432	..
Brakemen, railroad	62,652	62,652	..
Switchmen, railroad	44,780	44,780	..
Chauffeurs, truck drivers, and deliverymen	1,508,421	1,499,972	8,449
Chauffeurs and drivers, bus, taxi, truck, and tractor[3]	1,121,108	1,115,157	5,951
Deliverymen[3]	387,313	384,815	2,498
Conductors, bus and street railway	16,905	16,751	154
Dressmakers and seamstresses (not in factory)	135,951	2,324	133,627
Firemen, except locomotive and fire department	112,995	112,612	383
Laundry operatives and laundresses, exc. private family	216,263	48,296	167,967
Linemen and servicemen, telegraph, telephone and power	104,496	103,501	995
Mine operatives and labourers[4]	651,013	649,226	1,787
Motormen, railway, mine, factory, etc.	53,508	53,281	227
Motormen, street, subway, and elevated railway	36,760	36,572	188
Motormen (vehicle), mine, factory, logging camp, etc.	16,748	16,709	39
Painters, except construction and maintenance	89,026	82,768	6,258
Power station operators	21,905	21,285	620
Sailors and deck hands, except U. S. Navy	35,358	35,221	137

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[1] Most inspectors in manufacturing industries are classified as operatives.

[2] Mine labourers are included in "Mine operatives and labourers," in this group.

[3] Drivers for bakeries, laundries, dry cleaners, stores, etc., are included in "Deliverymen."

[4] Mine labourers are included in "Mine operatives and labourers," in this group.

Occupation	Total	Male	Female
Operatives and kindred workers—Con.			
Welders and flame-cutters	124,741	122,688	2,053
Other specified operatives and kindred workers	424,551	390,056	34,495
Asbestos and insulation workers	5,539	5,464	75
Blasters and powdermen	4,498	4,485	13
Boatmen, canalmen, and lock keepers	6,735	6,664	71
Buffers and polishers, metal	39,635	37,609	2,026
Filers, metal	9,472	9,027	445
Grinders, metal	42,462	41,846	616
Chainmen, rodmen, and axmen, surveying	7,572	7,553	19
Dyers	21,978	21,334	644
Fruit and vegetable graders and packers, exc. cannery	22,125	9,333	12,792
Furnacemen, smeltermen, and pourers	30,472	30,225	247
Heaters, metal	9,221	9,085	136
Meat cutters, exc. slaughter and packing house	141,072	140,088	984
Milliners (not in factory)	11,155	650	10,505
Motion picture projectionists	22,355	22,099	256
Oilers, machinery	35,838	35,643	195
Photographic process workers	14,422	8,951	5,471
Operatives and kindred workers (n.e.c.), by industry:			
Manufacturing	3,899,633	2,303,054	1,596,579
Food and kindred products	313,068	200,298	112,770
Bakery products	39,887	19,473	20,414
Beverage industries	40,585	34,580	6,005
Canning and preserving fruits, vegetables, and sea food	35,712	12,953	22,759
Confectionery	41,594	13,904	27,690
Dairy products	33,952	28,613	5,339
Grain-mill products	15,195	12,903	2,292
Meat products	81,496	62,972	18,524
Miscellaneous food industries	24,647	14,900	9,747
Tobacco manufactures	71,883	20,225	51,658
Cotton manufactures	355,850	188,695	167,155
Silk and rayon manufactures	75,983	33,925	42,058
Woolen and worsted manufactures	103,764	52,226	51,538
Knit goods	171,993	56,887	115,106
Other textile-mill products	114,799	68,011	46,788
Dyeing and finishing textiles	23,691	18,206	5,485
Carpets, rugs, and other floor coverings	26,775	15,175	11,600
Hats, except cloth and millinery	14,870	10,446	4,424
Miscellaneous textile goods	18,794	9,461	9,333
Not specified textile mills	30,669	14,723	15,946
Apparel and other fabricated textile products	578,663	130,832	447,831
Apparel and accessories	549,206	123,672	425,534
Miscellaneous fabricated textile products	29,457	7,160	22,297
Lumber, furniture, and lumber products	174,498	150,344	24,154
Sawmills and planing mills	56,229	54,922	1,307
Furniture and store fixtures	68,982	59,051	9,931
Miscellaneous wooden goods	49,287	36,371	12,916
Paper, paper products, and printing	212,998	136,637	76,361
Pulp, paper, and paperboard mills	86,280	70,117	16,163
Paperboard containers and boxes	36,240	17,655	18,585
Miscellaneous paper and pulp products	23,095	9,983	13,112
Printing, publishing, and allied industries	67,383	38,882	28,501
Chemicals, and petroleum and coal products	149,449	117,068	32,381
Paints, varnishes, and colors	11,438	9,840	1,598
Rayon and allied products	29,203	19,356	9,847
Miscellaneous chemical industries	76,642	56,288	20,354
Petroleum refining	28,037	27,571	466
Miscellaneous petroleum and coal products	4,129	4,013	116
Rubber products	78,229	55,758	22,471
Footwear industries, except rubber	197,975	106,724	91,251
Leather and leather products, except footwear	70,712	45,947	24,765
Leather: tanned, curried, and finished	27,976	24,360	3,616
Leather products, except footwear	42,736	21,587	21,149
Stone, clay, and glass products	113,518	88,165	25,353
Cement, and concrete, gypsum, and plaster products	12,767	12,522	245
Cut-stone and stone products	4,294	4,227	67
Glass and glass products	51,013	38,854	12,159
Pottery and related products	23,977	14,899	9,078
Structural clay products	11,049	9,560	1,489
Miscellaneous nonmetallic mineral products	10,418	8,103	2,315
Iron and steel, and not spec. metal industries	306,404	263,837	42,567
Blast furnaces, steel works, and rolling mills	104,719	99,934	4,785
Tin cans and other tinware	12,273	6,321	5,952
Miscellaneous iron and steel industries	179,638	149,524	30,114
Not specified metal industries	9,774	8,058	1,716
Nonferrous metals and their products	73,550	52,849	20,701
Nonferrous metal primary products	17,951	15,698	2,253
Clocks, watches, jewelry, and silverware[5]	29,666	17,403	12,263
Miscellaneous nonferrous metal products	25,933	19,748	6,185
Machinery	282,701	198,523	84,178
Agricultural machinery and tractors	19,091	18,310	781
Electrical machinery and equipment	137,832	74,232	63,600
Office and store machines, equipment and supplies	21,201	14,940	6,261
Miscellaneous machinery	104,577	91,041	13,536
Automobiles and automobile equipment	199,169	173,283	25,886
Transportation equipment, except automobile	60,596	58,682	1,914
Aircraft and parts	25,570	24,478	1,092
Ship and boat building and repairing	25,387	25,111	276
Railroad and miscellaneous transportation equipment	9,639	9,093	546
Other manufacturing industries	193.831	104,138	89,693
Scientific and photographic equipment and supplies	27,367	16,615	10,752
Miscellaneous manufacturing industries	110,001	57,013	52,988
Not specified manufacturing industries	56,463	30,510	25,953
Nonmanufacturing	452,684	366,175	86,509
Agriculture, forestry, and fishery	14,585	12,381	2,204
Construction	39,294	39,012	282

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[5] Includes metal engraving (except for printing purposes), plating, and polishing.

Table XVIII.—*Occupation of Employed Persons (Except on Public Emergency Work), by Sex, for the United States, 1940—Continued*

Occupation	Total	Male	Female
Operatives and kindred workers—Con.			
Operatives and kindred workers (n.e.c.), by industries—Con.			
Nonmanufacturing—Con.			
Railroads (incl. railroad repair shops)	61,629	61,216	413
Street railways and bus lines	8,935	8,838	97
Trucking service	1,706	1,663	43
Warehousing and storage	5,082	4,004	1,078
Miscellaneous transportation	7,568	7,332	236
Communication	2,000	1,796	204
Utilities	22,457	22,016	441
Wholesale and retail trade	135,074	91,304	43,770
Automobile storage, rental, and repair services	16,319	16,164	155
Business and miscellaneous repair services	17,039	14,783	2,256
Laundering, cleaning, and dyeing services	68,307	44,185	24,122
Hotels and miscellaneous personal services	6,763	5,137	1,626
Finance, insurance, and real estate	4,186	3,920	266
Amusement, recreation, and related services	6,081	5,594	487
Professional and related services	7,677	5,730	1,947
Government	12,165	9,685	2,480
Industry not reported	15,817	11,415	4,402
Domestic service workers	2,111,314	142,231	1,969,083
Housekeepers, private family	365,320	2,889	362,431
Laundresses, private family	189,592	3,409	186,183
Servants, private family	1,556,402	135,933	1,420,469
Protective service workers	681,534	677,213	4,321
Firemen, fire department	77,782	77,782	..
Guards and watchmen	212,259	210,004	2,255
Guards, watchmen, and doorkeepers	195,957	193,833	2,124
Watchmen (crossing) and bridge tenders	16,302	16,171	131
Policemen, sheriffs, and marshals	171,568	169,502	2,066
Policemen and detectives, government	127,858	126,977	881
Policemen and detectives, except government	19,279	18,587	692
Marshals and constables	8,727	8,617	110
Sheriffs and bailiffs	15,704	15,321	383
Soldiers, sailors, marines, and coast guards[6]	219,925	219,925	..
Service workers, exc. domestic and protective	2,776,800	1,519,482	1,257,318
Barbers, beauticians, and manicurists	416,031	209,439	206,592
Boarding house and lodginghouse keepers	110,849	10,494	100,355
Charwomen, janitors, and porters	575,624	499,519	76,105
Charwomen and cleaners	67,710	30,857	36,853
Janitors and sextons	352,424	315,103	37,321
Porters	155,490	153,559	1,931
Cooks, except private family	276,646	160,336	116,310
Elevator operators	76,806	64,120	12,686
Housekeepers, stewards, hostesses, exc. private family	79,175	16,824	62,351
Practical nurses and midwives	91,107	3,909	87,198
Servants, except private family	316,153	141,429	174,724
Waiters and bartenders	640,490	281,354	359,136
Bartenders	113,702	110,602	3,100
Waiters and waitresses, exc. private family	526,788	170,752	356,036
Other service workers, exc. domestic and protective	193,919	132,058	61,861
Attendants, hospital and other institution	95,549	54,307	41,242
Attendants, professional and personal service (n.e.c.)	24,465	10,627	13,838
Attendants, recreation and amusement	41,516	39,052	2,464
Bootblacks	14,237	13,945	292
Ushers, amusement place or assembly	18,152	14,127	4,025
Farm laborers and foremen	3,090,010	2,770,005	320,005
Farm laborers (wage workers) and farm foremen	1,921,890	1,828,164	96,726
Farm foremen	24,475	24,240	235
Farm laborers (wage workers)	1,900,415	1,803,924	96,491
Farm laborers (unpaid family workers)	1,165,120	941,841	223,279
Laborers, except farm and mine	3,064,128	2,965,693	98,435
Fishermen and oystermen	55,274	54,876	398
Longshoremen and stevedores	63,543	63,241	302
Lumbermen, raftsmen, and woodchoppers	127,884	127,497	387
Other specified laborers	224,134	222,194	1,940
Garage laborers and car washers and greasers	51,864	51,456	408
Gardeners, except farm, and groundskeepers	147,167	145,755	1,412
Teamsters	25,103	24,983	120
Laborers (n.e.c.), by industry:			
Construction	437,834	435,808	2,026
Manufacturing	1,309,900	1,237,239	72,661
Food and kindred products	147,592	133,945	13,647
Bakery products	6,642	5,767	875
Beverage industries	19,006	18,164	842
Canning and preserving fruits, vegetables and sea food	21,938	17,743	4,195
Confectionery	5,868	4,117	1,751
Dairy products	14,247	13,505	742
Grain-mill products	18,306	17,912	394
Meat products	39,503	35,599	3,904
Miscellaneous food industries	22,082	21,138	944
Textiles, textile products, and apparel	86,994	72,943	14,051
Cotton manufactures	35,087	30,824	4,263
Silk and rayon manufactures	5,916	4,959	957
Woolen and worsted manufactures	10,927	9,883	1,044
Knit goods	4,927	3,337	1,590
Dyeing and finishing textiles	5,144	4,931	213
Carpets, rugs, and other floor coverings	6,121	5,474	647
Hats, except cloth and millinery	501	450	51
Miscellaneous textile goods	4,653	4,116	537
Not specified textile mills	2,951	2,610	341
Apparel and accessories	8,207	4,413	3,794
Miscellaneous fabricated textile products	2,560	1,946	614
Lumber, furniture, and lumber products	257,399	252,922	4,477
Sawmills and planing mills	198,493	197,103	1,390
Furniture and store fixtures	26,901	26,063	838
Miscellaneous wooden goods	32,005	29,756	2,249
Paper, paper products, and printing	59,923	55,037	4,886
Laborers, except farm and mine—Con.			
Laborers (n.e.c.), by industry—Con.			
Manufacturing—Con.			
Paper, paper products, and printing—Con.			
Pulp, paper, and paperboard mills	39,813	38,163	1,650
Paperboard containers and boxes	8,418	6,903	1,515
Miscellaneous paper and pulp products	3,647	2,865	782
Printing, publishing, and allied industries	8,045	7,106	939
Chemicals, and petroleum and coal products	108,128	105,122	3,006
Paints, varnishes, and colors	5,186	5,018	168
Rayon and allied products	5,089	4,702	387
Miscellaneous chemical industries	66,420	64,123	2,297
Petroleum refining	25,082	24,963	119
Miscellaneous petroleum and coal products	6,351	6,316	35
Leather and leather products	24,142	20,200	3,942
Leather: tanned, curried, and finished	11,333	10,981	352
Footwear industries, except rubber	9,919	7,010	2,909
Leather products, except footwear	2,890	2,209	681
Stone, clay, and glass products	91,077	88,131	2,946
Cement, and concrete, gypsum, and plaster products	22,781	22,661	120
Cut-stone and stone products	2,965	2,944	21
Glass and glass products	16,445	15,191	1,254
Pottery and related products	6,547	5,823	724
Structural clay products	34,298	33,811	487
Miscellaneous nonmetallic mineral products	8,041	7,701	340
Iron and steel and not spec. metal industries	265,343	260,725	4,618
Blast furnaces, steel works, and rolling mills	151,080	150,219	861
Tin cans and other tinware	4,577	3,970	607
Miscellaneous iron and steel industries	104,729	101,725	3,004
Not specified metal industries	4,957	4,811	146
Nonferrous metals and their products	40,738	39,012	1,726
Nonferrous metal primary products	23,512	23,248	264
Clocks, watches, jewelry, and silverware[7]	2,716	1,988	728
Miscellaneous nonferrous metal products	14,510	13,776	734
Machinery	72,272	66,752	5,520
Agricultural machinery and tractors	9,508	9,402	106
Electrical machinery and equipment	26,447	22,382	4,065
Office and store machines, equipment and supplies	1,727	1,450	277
Miscellaneous machinery	34,590	33,518	1,072
Automobiles and automobile equipment	56,741	54,302	2,439
Transportation equipment, except automobile	28,845	28,572	273
Aircraft and parts	3,641	3,563	78
Ship and boat building and repairing	18,395	18,292	103
Railroad and miscellaneous transportation equipment	6,809	6,717	92
Other manufacturing industries	70,706	59,576	11,130
Tobacco manufactures	10,942	8,395	2,547
Rubber products	17,339	14,999	2,340
Scientific and photographic equipment and supplies	3,012	2,464	548
Miscellaneous manufacturing industries	13,970	11,304	2,666
Not specified manufacturing industries	25,443	22,414	3,029
Nonmanufacturing	845,559	824,838	20,721
Railroads (including railroad repair shops)	213,097	211,660	1,437
Transportation, except railroads	84,277	83,483	794
Street railways and bus lines	9,405	9,274	131
Trucking service	32,604	32,408	196
Warehousing and storage	20,196	19,892	304
Miscellaneous transportation	22,072	21,909	163
Communication and utilities	85,623	85,154	469
Communication	2,779	2,729	50
Utilities	82,844	82,425	419
Wholesale and retail trade	210,509	202,816	7,693
Personal services	19,926	14,758	5,168
Laundering, cleaning, and dyeing services	11,487	6,750	4,737
Hotels and miscellaneous personal services	8,439	8,008	431
Other nonmanufacturing industries and services	232,127	226,967	5,160
Agriculture, forestry, and fishery	41,779	40,697	1,082
Automobile storage, rental, and repair service	2,362	2,343	19
Business and miscellaneous repair services	5,731	5,552	179
Finance, insurance, and real estate	6,146	5,997	149
Amusement, recreation, and related services	13,741	13,552	189
Professional and related services	15,782	14,892	890
Government	45,015	44,564	451
Industry not reported	101,571	99,370	2,201
Occupation not reported	378,719	244,734	133,985

[6] Excludes commissioned officers, professional and clerical workers, and craftsmen.

[7] Includes metal engraving (except for printing purposes), plating, and polishing.

(L. E. T.)

Centennials: *see* CALENDAR, 1943, page xx.

Central America. The portion of the Americas lying between Mexico and Colombia, includin the republics of Guatemala, El Salvador, Costa Rica, Honduras Nicaragua and Panama, and also the colony of British Hondura and the Panama Canal Zone. The total area amounts to approximately 222,675 sq.mi.; the population approximates 8,500,00 with by far the greater number of the inhabitants living in th western cordillera at elevations 2,000 to 6,000 feet.

History.—All of the Central American states co-operated willingly in hemisphere defense during 1942. In each the usua methods of counteracting subversive activities were put int

TRANSISTHMIAN HIGHWAY across Panama was completed in 1942 under ne supervision of the U.S. Public Roads administration

ffect, with dangerous persons arrested and some deported; alien nemy property was sequestered, armed forces increased, and roduction of strategic materials encouraged. In all states it was ecessary to establish government control over motor vehicles, ires and fuels; also it was found necessary to set price ceilings n at least some commodities.

Transportation by sea suffered interference because of subma- ine activity and because many fruit company boats were diverted o other uses. A shortage of tankers also was serious; Central merican local industry and transportation is dependent on im- orted fuels. The sharp decrease in the nonessential banana in- ustry resulted in a serious loss of revenue to Honduras, Costa Rica and Panama. The United Fruit company, in conjunction ith the U.S. Board of Economic Warfare, speeded plans for ne cultivation of some 40,000 ac. of abaca in Costa Rica, Guate- nala and Panama, and for rubber plantings in Honduras and osta Rica.

Education.—The effectiveness and extent of the educational ystems in the several states vary widely; Costa Rica has the best teracy rate.

Trade.—Since the American nations had generally suspended ublication of statistical material which might be of aid to the nemy, it was impossible to give figures for 1942. The volume f imports was greater for 1942 than for exports; an entirely nusual condition for Central America. The total amounts of oods shipped decreased, but because of a rise in prices, total alues declined to a lesser extent. The banana industry suffered ne most, with exports down possibly as much as 85%.

Communication.—External communication is by sea and Pan merican Airways, the latter of which reported great increase in ervice in 1942 while the former was curtailed. Great efforts were nade during 1942 to rush completion of the Inter-American ighway, with the U.S. having pledged a total of $20,000,000 for ne purpose. (*See* articles on separate countries and HISPANIC MERICA AND WORLD WAR II.)

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Cereals: *see* BARLEY; CORN; OATS; RICE; RYE; WHEAT.

Ceylon. A British crown colony, lying off the southern extremity of India and approaching within 6° of the equator. Area 25,332 sq.mi.; pop. (est. Dec. 31, 1940) 5,981,000. Chief towns (pop. census 1931): Colombo (cap., 284,155); Jaffna (45,708); Galle (34,424); Kandy (37,147). Governor in 1942: Sir Andrew Caldecott, K.C.M.G.; languages, English, Sinhalese, Tamil; religions: Buddhism and Hinduism the chief.

History.—The first Japanese air attack was experienced on Easter Sunday, 1942. At the end of March a war council had been formed consisting of the governor, the commander in chief, the board of ministers and representatives of the navy, army and air force. A permanent Ceylon representative in India was appointed, and Sir Baron Jayatilaka was chosen for the post.

Industrial development was furthered by the launching of ten factories, sponsored by the ministry of labour, industry and commerce. While some of the factories were created for war needs, others were the result of earlier industrial plans, but most of them were devoted to war manufacture; Ceylon's first steel rolling mill was in operation. There was an improvement in the island's finances, the railway having done well and customs revenue having improved.

On July 1, 1942 the University of Ceylon came into being, in succession to the University College of Colombo, inaugurated in 1921.

Education.—In 1940: Sinhalese and Tamil schools 3,175; scholars, 389,153 boys, 172,448 girls: English and bilingual schools 408; scholars, 71,536 boys, 30,702 girls. Total number of schools 5,816; scholars 819,297.

Banking and Finance.—Revenue (1940–41) £8,616,000; (est. 1941–42) £9,384,400; expenditure (1940–41) £8,516,296; (est. 1941–42) £9,474,876; public debt (Sept. 30, 1940) £9,408,775 and Rs. 45,270,000; currency Rs. 1 = 100 cents = 1*s*.6*d*. in 1942.

Trade and Communication.—Overseas trade, merchandise, 1941: imports Rs. 259,510,454; exports (domestic) Rs. 264,717,885; re-exports Rs. 12,307,004. Communications and transport 1940: roads, motorable 5,633 mi.; railways (117 mi. narrow gauge) total 960 mi.; shipping, entered 6,489,322 net tons; motor vehicles licensed (Dec. 31, 1941), 20,092 motor cars and taxis; 4,394 trucks and vans; 2,486 omnibuses; 2,644 cycles; 66 tractors; 231 trailers; wireless receiving set licences (Dec. 31, 1940), 9,736; telephone instruments in use (1938), 10,424.

Agriculture.—Production, in metric tons: rice (1938–39) 300,-

000; copra (including coco-nut oil) (1939) 155,000; tea (1940) exports 112,000; rubber (1940) shipments 90,000.

Chain Stores: *see* Business Review.

Chambers of Commerce. Chambers of commerce generally adopted the attitude that "war is our business," and it was upon this thesis that practically all of their activities in the United States for 1942 were based. The Chamber of Commerce of the United States, which is a federation of approximately 1,800 chambers of commerce and trade associations, with a membership of approximately 700,000, increased its services and directed them toward the goal of winning the war. While the Chamber of Commerce of the United States gave full support to all necessary war measures, the work of interpreting the economic and social aspects of governmental action continued in order that business institutions of all kinds could adjust themselves quickly to the numerous and complicated requirements of the war program. (E. A. Jn.)

Champion, Pierre (1880–1942), French historian, born in Paris, studied at the Collège Henri IV and at the École des Chartres. An expert archivist and palaeographer, he uncovered original data for his many historical and biographical works. He was named to Marshal Pétain's advisory national council and had served as mayor of Nogent-sur-Marne. Champion collaborated with Anatole France on a biography of Joan of Arc. He was the author of *Les plus anciens monuments de la typographie parisienne 1470–72* (1904), *Vie de Charles d'Orléans* (1911), *François Villon, sa vie et son temps* (1914), *Procès de condamnation de Jeanne d'Arc* (1920–21), *Histoire poétique du XVe siècle* (1924), *La galerie des rois* (1934), *L'envers de tapisserie, Jeanne d'Arc* (1935) and *Paganisme et réforme* (1936). He died in Paris, June 29.

Chang Ching-hui (1871–1942?), Chinese politician, was born in Taian, Fengtien, China. A graduate of the Fengtien military academy, he became a major general in 1916 and was prominent in Manchurian politics prior to the Japanese invasion of 1931. He was governor of the special Harbin district when Japanese armies marched into Manchuria and joined up with the Nipponese invaders, ostensibly for the "preservation of peace" in Harbin. But Japanese protection helped further his political ambitions, and by 1935 he became prime-minister of the puppet Manchoukuo state, ranking second only to Pu Yi, the Japanese-sponsored emperor. A Chungking communiqué of Dec. 22 said that Chang committed suicide after he had poisoned his family and had shot his Japanese adviser and five other officials. The Chungking dispatch said Chang had had a change of heart.

Channel Islands: *see* British Empire.

Cheese. Production of cheese declined sharply in the latter part of 1942 and in December was 23% below the production of Dec. 1941. The year's output in 1942, however, exceeded that of 1941. Total cheese production for the first 11 months of 1942 was 1,060,958,000 lb., an increase of 21% over the same period in 1941. The midwinter decline in cheese production was attributed to several factors. Many factories shifted to butter manufacture—a departure from the strong emphasis placed on increasing cheese production when lend-lease shipments were first started and only inconsequential attention was given to butter. Cheese makers also found themselves at a disadvantage in obtaining milk supplies in competition with manufacturers of dried skim milk. To offset these conditions, the governmen late in 1942 established a subsidy of $3\frac{3}{4}$ cents per lb. for American cheese. The OPA permanent price ceiling on American chees was announced as 27 cents per lb. It was believed that th subsidy would cause manufacturers of other varieties to chang over, particularly the makers of brick cheese, but up to th middle of Jan. 1943 no such shift was apparent. Purchases of cheese by the Food Distributing administration from March 15 1941 (the start of the lend-lease program), to Jan. 2, 1943, wer 408,640,513 lb. of American cheese and 26,616,500 lb. of processe cheese. (*See* also Butter; Dairying; Milk.) (S. O. R.)

Chemical Therapy: *see* Chemotherapy.

Chemistry. It is understandable that many of the developments in chemistry for 1942 were influenced by the war. Coinage and rubber are two such items which may be discussed.

The New Nickel.—Until recently, the 5-cent U.S. coin was an alloy made up of 75% copper and 25% nickel. The critica shortage of nickel caused the search for substitute metals. Stainless steel was considered, but rejected after the Pearl Harbor episode, because of the greatly reduced imports of chrome for the stainless steel. An alloy of silver and copper seemed to be suitable until tested in vending machines. Many of these machines are constructed to reject counterfeit coins on the basis of the high electrical resistance of the coin nickel, and these machines rejected the new alloy because silver and copper both are excellent conductors of electricity. Sufficient electrical resistance was discovered in an alloy, adopted till Dec. 31, 1946 by congressional action, containing 56% copper, 35% silver, and 9% manganese. This alloy has to be heated to 650° C. to facilitate rolling, whereas ingots of the old copper-nickel alloy had the advantage that they could be pressed into flat strips by "cold rolling."

Synthetic Rubber.—Curtailment of the supply of natural rubber brought the synthetic rubber problem to a vitally importan position in 1942. No fundamental changes were introduced, so suffice it to say that the gas known as butadiene is the essentia starting material in most of the plans.

Several sources of butadiene were being developed, the two chief ones being petroleum and alcohol. Once made, the butadiene from one source is indistinguishable, of course, from butadiene from any other source. Pyrolysis of naphtha and light oils gives rise to butadiene along with other hydrocarbons. By selection of the hydrocarbon stock as butane or butene and by use of appropriate dehydrogenation catalysts the yield of butadiene may be increased materially. In both operations a necessary step is the separation of the butadiene from the other gases with which it is mixed. Liquefaction and distillation will remove all but the butane and butene. Various solvents were found in which butadiene is appreciably more soluble than butane or butene, one of which is furfural. The solution of butadiene is then heated to expel the butadiene. The government program called for 107,800 tons of butadiene a year by the pyrolytic method, and 340,000 tons by the catalytic dehydrogenation method as soon as necessary plants can be built.

Another 220,000 tons was visualized from alcohol as the raw material. Alcohol vapour is passed over a suitable catalytic surface and butadiene is formed, together with both hydrogen and water. A mixture of alumina and zinc oxide was proposed as a suitable catalyst for this reaction. The alcohol itself may be obtained either from petroleum or from grain.

Another method which might enter the rubber program at a later date starts with a fermentation of grain in the presence of *Aerobacter aerogenes.* 2,3-Butanediol, otherwise known as β utylene glycol, is produced in satisfactory quantities. Conver- on of this to its diacetate and pyrolysis of the latter at 500° C. roduces high yields of butadiene.

The steps employed in converting butadiene into synthetic rub- er briefly are these: (1) Mix butadiene with styrene and emul- fy the mixture in water in the presence of soap-like substances. 2) Add a polymerizing agent such as benzoyl peroxide to the mulsion, and heat while stirring for 10–15 hours at 60° C. (3) oagulate this synthetic rubber latex by addition of acetic acid r salt solutions. (4) Collect the coagulum and work up the roduct on a rubber mill.

"Butyl rubber" is also important. Instead of using butadiene calls for isoprene, but only a small quantity is required. Iso- utylene is the major ingredient, and this is produced in large uantities in petroleum refineries. The isoprene may be obtained y pyrolysis of turpentine. In the Baruch report, about 132,000 ong tons of butyl rubber per year were envisioned, compared to 05,000 tons of Buna-S and 40,000 tons of neoprene.

Many materials unlike rubber chemically, but with rubber-like roperties also were being developed at a rapid pace. One of hese was thiokol, which is merely a reaction product of sodium olysulphide and ethylene chloride. This is the most oil resistant of the rubbers, and also is suitable for emergency use as retreads on tires. Koroseal is another rubber-like substance with widespread uses. It is made by polymerizing vinyl chloride and incorporating a suitable plasticizer such as tricresyl phosphate.

Plastics.—For many years the public had been conscious of the growing use of plastics, but the public generally was unaware either of the immensity of this development, or of the steady discovery of new plastic materials. A preliminary total of the U.S. Tariff commission for 1941 showed the annual production of 437,800,000 lb. of synthetic resins for plastics, and an estimated 55,000,000 lb. of plastics from cellulose. This industry is intimately linked also with that of synthetic fibres for textiles and synthetic rubber. Nylon, for example, is a plastic, although its major use till 1942 was in textiles. Furthermore, 451,204,000 lb. of rayon yarn were produced in 1941, of which 163,745,000 lb. were of the cellulose acetate variety, almost identical in composition with the cellulose acetate used for plastics.

Alkyd resins start with phthalic anhydride and glycols. Phenolic resins, urea plastics, melamine resins, and plastics from zein or casein require aldehydes, principally formaldehyde, in their compounding. Polyvinyl butyral, the plastic making use of butyraldehyde and polyvinyl alcohol in its synthesis, was in 1942 going into waterproof raincoats, although its original use was as the laminated sheet in safety glass. The transparency of polymerized

OAL PILE at a U.S. chemical plant, used not for fuel but for the manufacture f hundreds of different chemical products, most of which were directed to war ses in 1942

methyl methacrylate (lucite or plexiglas) is the basis for many uses. A hardened transparent resin of the latter type is formed by adding a few parts of acrylic or methylacrylic anhydride to the methyl methacrylate during its polymerization. This "hardened" lucite is more suitable for aeroplane windows, than ordinary lucite. A new and beautifully transparent plastic announced by the Columbia chemical division of the Pittsburgh Plate Glass company, known as C.R. 39, resists abrasion still better. Polystyrene is another plastic which, while lacking this type of hardness, is exceptionally clear. Styrene changes to polystyrene on standing, but the process is accelerated by peroxides. Styrene itself is made from ethylbenzene by pyrolysis, and the ethylbenzene is made by addition of benzene to ethylene in the presence of aluminum chloride. Finally, mention may be made of saran, a plastic made by polymerization of vinylidene chloride, $CH_2=CCl_2$. The plastic is tough, and pipes of it may be welded readily by heating the ends to 175° C.

General Organic Reactions.—Ketene, $CH_2=C=O$, is made by pyrolysis of acetone at 700° C. and may be dissolved in acetone without reaction. Gwynn and Degering discovered that the presence of a trace of sulphuric acid is all that is necessary to initiate addition of ketene to acetone to form methylvinyl acetate in 45% yield.

F. Fichter and Rudin electrolyzed a mixture of diethylacetic acid and its potassium salt. The expected compound was 3,4-diethylhexane, but only 5% of it was formed. The chief products were 3-pentanol, 2-pentanol, and esters of these two alcohols with the starting acid.

R. L. Burwell, Jr. made an interesting study on the racemization of secondary butyl alcohol, $CH_3-CH(OH)-C_2H_5$. Possessing as it does four different groups (H, OH, CH_3, C_2H_5) around a common carbon atom, the alcohol is actually a mixture of two substances depending on the clockwise or counter-clockwise arrangement of any three of these four groups. As usually prepared, equal amounts of both varieties are present, and the mixture has no effect on polarized light. If separated into the two parts (by conversion to *sec*-butyl brucine phthalate, crystallization, and subsequent hydrolysis) one of these two parts rotates the plane of polarized light to the right, and the other to the left. The former is known as the *dextro* isomer, and the latter as the *levo* isomer.

Burwell found that these pure dextro and levo isomers were "racemized" (*i.e.,* converted back to the mixture) by the action of either sulphuric acid or hydrogen fluoride, but not by phosphoric acid. The kinetics of this racemization showed it to be a first order reaction. Sulphuric acid also changes *sec*-butyl alcohol to butylene gas and butylene polymers, but more drastic conditions are required for these changes than for racemization.

Semerano and Riccoboni obtained evidence for the production of the free ethyl radical at low temperature. Their procedure was to allow an alcoholic solution of silver nitrate to act at −80° C. with tetraethyllead, the familiar anti-knock ingredient in "ethyl" gasoline. Ethylsilver, C_2H_5Ag, is formed first, but it is very unstable and breaks down at −35° into silver and ethyl. Two-fifths of the ethyl radical polymerized spontaneously to *n*-butane, whereas three-fifths of it underwent disproportionation to ethane and ethylene. Less ethylene was formed than demanded by theory, but this was explained by its interaction with alcohol, the solvent, forming some ethyl ether.

An interesting approach to the mechanism of oxidation of sodium propionate by potassium permanganate was performed by Nahinsky, Rice, Ruben and Kamen of the University of California. It had been known for a long time that this 3-carbon compound changed to sodium oxalate (two carbons) but it was impossible to tell which two carbons were preserved. They prepared the propionic salt by reaction of ethylmagnesium bromide and carbon dioxide containing radioactive carbon. The latter, of atomic weight 11, was made by bombardment of boric acid with deuterons. This propionate possessed a radioactive carbon on the carboxyl group. Since the sodium oxalate which was created also was radioactive, this proved that the break in the propionic skeleton was between atoms 2,3 and not 1,2.

Wallingford's development at the Mallinckrodt Chemical Works of ethyl carbonate as a reagent in the Claisen condensation of esters produced some striking results. In this condensation, an acetic ester changes to a malonic ester and ethyl alcohol: $RCH_2COOC_2H_5+(C_2H_5O)_2CO \rightarrow RCH(COOC_2H_5)_2+C_2H_5OH$. Malonates are useful in the synthesis of barbiturates (drugs) or higher monobasic acids, but attempts to carry out this process which, incidentally, dates back to the work of Wislicenus in 1887, had always given very poor yields. Wallingford and collaborators found that the cause of the poor yields, namely, the reversibility of this process, could be overcome in large measure by applying the principles of mass action. They used an excess of the ethyl carbonate and removed the ethyl alcohol as fast as it was formed. Sodium ethoxide was the catalyst.

The same principles were applied to the reaction of ethyl carbonate and ketones, giving rise to improved yields of beta keto esters. Alkylation of malonic esters was accomplished also by use of alkyl carbonates instead of alkyl halides, and particularly useful was the discovery that alkyl carbonates may serve as solvents in which to carry out such reactions.

Selwood's work at Northwestern university on free radicals showed that the previously accepted method of molecular weight determination was a misleading guide to the extent of radical formation. He approached the problem differently, by magnetic measurements on the compounds suspected to be free radicals. With this method, the so-called triphenyllead, triphenylgermanium, trimethyltin and tritolyltin were all shown to be diamagnetic when measured in the delicate Gouy balance. This means that the compounds all exist in the dimeric state instead of as free radicals. No denial of the existence of triarylmethyl or diarylnitrogen is shown by these measurements, but even here, the molecular weight approach has given erroneous conclusions.

A triarylmethyl would possess an uneven number of electrons, whereas its dimer hexaarylethane would possess an even number. The former, with its odd number of electrons, is paramagnetic and easily detected by this method. Cis and trans decalin were shown by Selwood and Byerly to have practically identical magnetic susceptibilities, but the authors believed that the slightly greater paramagnetism shown by the cis isomer was of real significance, because in this form the atomic orbits may be slightly more distorted than in the trans form.

Stilboestrol.—Search for synthetic compounds with oestrogenic activity comparable to that of the female sex hormones had been going on for a few years. One of the most promising compounds thus discovered is *trans* 3,4-bis-*p*-hydroxyphenyl-3-hexene, $HOC_6H_4-C(C_2H_5)=C(C_2H_5)-C_6H_4OH$. This substance is related to the hydrocarbon stilbene, and was named stilboestrol. The British investigators, E. C. Dodds and Robert Robinson, discovered that for the production of oestrus it is nearly as potent as oestradiol and more potent than oestrone.

During 1942 E. E. Reid and Edith Wilson prepared a number of ethers (methyl, ethyl, butyl, etc.) of this phenol and found that a lessening of activity results with increasing size of the alkyl group introduced, and that the diethers are less reactive than the monoethers.

Lignin.—Bailey of the University of Washington prepared a so-called "butanol lignin" by extracting chips of western hemlock with equal parts of water and butanol under pressure at 160° C.

keeping this solution at 160° in the presence of some hydro- oric acid, he was able to convert about one-quarter of the lignin volatile compounds. Formic acid, and propyl alcohol predom- ed, but allyl alcohol, methanol, acetone, *n*-butyraldehyde, and ethylcrotonaldehyde were present also in fair amounts. Sim- treatment of aspen and jack pine gave different results, point- to the inhomogeneity of the lignin of different species.

Carbohydrates.—Many interesting developments were noted his field of chemistry, but only a few can be mentioned. One hese was based on Reich's work in 1939 that *p*-phenylazoben- tes of glucose and fructose may be separated by a preferen- type of adsorption on alumina or silica. Since the layers of orbed material are coloured and therefore visible, the process nown as chromatographic adsorption. G. H. Coleman of the versity of Iowa extended this suggestion to a working process the separation of glucose from sucrose, fructose from ga- ose, lactose from sucrose, glucose from melezitose, maltose m glucose, and others. As might be expected, some other car- ydrate pairs did not give satisfactory separation.

At the Massachusetts Institute of Technology, Purves made an enious study of the distribution of the acetyl groups in a tech- al cellulose acetate, which averaged 2.44 out of a possible 3 tyl groups per glucose unit. Esterification of the remaining 6 hydroxyl group by toluenesulphonyl chloride and analysis of groups introduced showed ratios of 23.4:2.16:0.106 for posi- ns 6,2, and 3, respectively. That on position 6 could be deter- ied by direct reaction with sodium iodide and positions 2,3 e estimated by mathematical analysis of the rates of esterifi- ion.

The positions of the ethyl groups in the incompletely-ethylated nical ethylcellulose were shown to be about the same, namely, atio of 15 : 2.3 : 0.7 for positions 6, 2, 3. This means obviously t position 3 is most acetylated or ethylated in the technical rations, and position 6 is the most difficult to attack. Posi- ns 2 and 3 are secondary and position 6 is primary.

Yackel, Unruh and Kenyon of Eastman Kodak company an- nced that cellulose is preferentially attacked at position 6 by rogen dioxide. The oxidation converted the primary alcohol up to a carboxyl group in yields approaching the theoretical.

Haskins, Hann and Hudson of the National Institute of Health cted syntheses of cellobiose and lactose. The lactose synthesis rted with the acetone derivative of mannosan and tetraacetyl- actosyl bromide. This connected a galactose unit to the 4- ition of the mannose unit. Epimerization of the mannose unit he required glucose unit was accomplished by complete acetyla- n (after removal of the acetone and opening of the mannosan g by a mixture of acetic acid, acetic anhydride, sulphuric acid), version to lactal hexaacetate by routine procedures, and oxida- n of the double bond in the latter by perbenzoic acid.

Structure of Biotin.—A few years ago a yeast-growth sub- nce was isolated by Kögl and named biotin. This substance, ch had also been named vitamin H by György, is the factor in st, liver and various foods which is capable of preventing the al symptoms resulting when animals are fed large quantities of egg white. The chemical identity of biotin was established ing 1942, largely through the work of du Vigneaud and col- orators at Cornell University Medical college. Although the of biotin in nutrition was not fully understood in 1942, its ct in preventing death in rats fed on an egg-white diet was azing, for as little as forty billionths of a gram per day (0.04γ, erein $1\gamma = 0.001$ mg.) is sufficient to prevent this kind of ality.

Biotin was extracted from liver extracts and milk concentrates chromatographic adsorption. It was a crystalline compound, lting at 230° C., of the composition $C_{10}H_{16}O_3N_2S$. The structure of biotin was shown to have nine carbon atoms in a continuous chain, the first of these nine being an acid carbon (carboxyl). A sulphur atom joined atoms 6 and 9, whereas a urea residue joined atoms 7 and 8. The urea residue was recognized by alkaline hydrolysis, thereby giving rise to an analogous compound with two amine groups on atoms 7 and 8. Reaction of this diamine with phosgene regenerated biotin. Five of the nine carbons were shown to be $-(CH_2)_4COOH$ because adipic acid, $HOOC(CH_2)_4COOH$, was formed by destructive oxidation of biotin with nitric acid. The urea residue could not have involved atoms 1 to 5, because of this oxidation evidence. This evidence, however, did not eliminate the possibility of attachment at 6,8 or 6,9 (rather than 7,8) but reaction of the diamine with phenanthraquinone did so. Such a reaction requires the two amine groups to be on adjacent carbon atoms, thereby substantiating the 7,8-position. Additional evidence in support of the structure of the diamine was afforded by its degradation to a thiophene derivative, namely, δ-(α-thienyl)-valeric acid, by indirect loss of two equivalents of ammonia. (*See* also VITAMINS.)

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Chemistry and Engineering, Agricultural, U. S. Bureau of.

After the outbreak of war, the bureau's activities were directed toward the country's all important objective through work on food preservation, the derivation of rubber, fibres, plastics and other industrial products from farm commodities, development and conservation of machinery for producing, harvesting and processing crops, and the design and upkeep of structures for crop storages and other farm needs.

One promising result was an improved process of fermenting corn, wheat, or other carbohydrate materials to 2, 3-butylene glycol which, like alcohol, can be converted into butadiene, the most important intermediate for synthetic rubber. This not only offered an alternative method of producing rubber indirectly from plentiful farm crops, but yielded a product that had other emergency uses and a number of peacetime applications. Several industrial concerns were making butylene glycol on a pilot-plant scale on the basis of information furnished by the bureau.

A rubber-like vulcanizable material, named Norepol, was produced by polymerizing certain constituents of semi-drying vegetable oils, such as oils pressed from corn germs and soybeans. It was in commercial production for use in jar rings and some other products usually made from rubber. The bureau found that a turpentine derivative, myrcene, might be used with other polymerizable materials in making a rubber substitute.

Chemists and engineers of the bureau were collaborating with other units of the department on problems of extracting latex from various rubber-bearing plants, and the development of harvesting equipment for such plants.

The bureau's successful development of large-capacity machines for cutting lint cotton into short lengths like linters made it possible to use lint cotton in existing nitrating equipment. A special cotton twine having the properties required for use in grain binders was developed to replace sisal and henequen binder twines.

In efforts to obtain substitutes for palm oil and coco-nut oil and supplements for domestic drying oils considerable progress was made in the chemical modification of domestic vegetable oils.

Results obtained indicated that the rancidity of lard and other edible fats and oils could be retarded by adding, in small quantity, a mixture containing compounds of fatty acids with certain alcohols closely related to vitamin C (ascorbic acid).

Artificial fibres were made experimentally from soybean protein. These were somewhat weaker than those made from casein, but it was believed the difference could be made up by modifying the soybean protein. Equal parts of soybean protein and casein yielded fibres having a tensile strength nearly equal to that of fibres made from casein alone.

Other proteins, especially those from soybeans, cotton-seed, peanuts, corn and feathers, were being investigated as possible supplements or substitutes for casein in its important industrial uses.

In connection with research on dehydration of vegetables, a survey was made of the entire food dehydration industry. This provided basic information for expansion to meet war demands. On the basis of experimental work, detailed information was disseminated on the requirements for dehydrating some of the more important vegetables, together with construction plans for dehydrators of different sizes and types. The flavour, keeping quality and nutritive value of dehydrated vegetables have been much improved.

Bureau chemists and bacteriologists co-operated with the egg processing industry in determining the effects of various conditions and extent of drying on the quality of dried mixed eggs, and the types of containers and conditions during transportation and storage required to maintain quality in dried eggs and frozen eggs.

New food products resulting from work of the bureau included additional dehydrated vegetable products, frozen purees of fruits and vegetables, a bland apple syrup for sweetening purposes, self-preserving fruit marmalades, green beans preserved by pickling process, fruit concentrates in liquid and powdered form, a modified pectin which reduces the sugar required for jellies and preserves, and a coffee-and-sugar concentrate.

With the outbreak of the war much of the work on farm buildings was directed toward adapting existing structures to emergency needs. Designs for farm storage facilities for grain and potatoes were improved; building plans which required smaller quantities of critical materials were developed; special machines and planter attachments which conserve fertilizers by improved distribution were designed, built and demonstrated in collaborative tests at state agricultural experiment stations; improvements were made in the equipment and practices for conditioning, ginning and baling of cotton, and in the machines and methods for harvesting and processing fibre flax. Work was started on the development of machinery for use in producing and processing hemp fibre. (*See* also CHEMISTRY; CHEMURGY.) (W. W. SR.)

Chemotherapy. Some of the findings during 1942 were effected from work begun in previous years; others followed investigations occasioned immediately by war needs and drug shortages. Some drugs were curtailed. A body prominent in advising on the usefulness of drugs and other health supplies was the Committee on Drugs and Medical Supplies of the Division of Medical Sciences of the National Research Council. Other aids were the 12th revision of the *United States Pharmacopeia,* the seventh revision of the *National Formulary* which became official in 1942 and *New and Nonofficial Remedies,* an annual publication of the Council on Pharmacy and Chemistry.

Research for agents to replace those curtailed by war resulted in the official recognition of the preparations totaquina, quinacrine hydrochloride (mepacrine hydrochloride, atabrine) and pamaquine naphthoate (aminoquine naphthoate, plasmaquin) as substitutes for quinine in the treatment of malaria.

Dicoumarin is a popular name for an agent capable of prolonging the coagulation time of the blood. It is very active and unless administered carefully can cause marked toxicity. At present it is in the stage of experimental investigation.

Mecholyl bromide is a synthetic parasympathomimetic dru
suitable for oral administration to combat certain chronic ulce
scleraderma, Raynaud's disease and other vasospastic conditio
of the legs.

Nikethamide, chemically related to nicotinic acid, a compou
with vitamin activity, is a central nervous system stimulant. C
injection it may cause an increase in blood pressure, some cardi
stimulation and relief of certain types of respiratory distress.

The treatment of high blood pressure (hypertension) was
1942 undergoing active investigation. Of the many agents in u
the more interesting, because of their novel character, were e
tracts of the kidneys. While the results of such therapy in a
mals evoked considerable speculation, final evaluation for h
mans must rest on much more work.

Antibacterial agents received special attention, undoubtedly b
cause of their importance to industry and the armed forces. T
sulphonamides, which had been synthesized, numbered in t
thousands, but only a comparative few showed promise. The be
ter known of these included sulphanilamide, sulphapyridine, su
phathiazole, sulphadiazine, sulphaguanidine, sulphacetamide a
sulphasuxidine. All might be administered orally; three (sulph
nilamide, sulphathiazole and sulphadiazine) were widely used f
external application as the powder, in solution or in ointment
three were available also as the soluble sodium salts for intr
venous injection. Orally, the drugs were used according to the
effectiveness to combat streptococcal infections, staphylococc
infections, pneumonia, gonorrhoea, meningitis, dysentery and oth
infections. Externally, some were used to prevent and treat infe
tions following operations, accidents and war injuries. While u
of the powder or crystalline forms seemed well defined, inc
poration in ointments required much investigation. Sulphadiazi
in solution for local use as a spray received considerable attenti
as a preventive against infection in the treatment of burns.

One of the newer classes of antibacterial agents was known
quaternary ammonium compounds. An example was Zephir
Chloride, which may also be called a cationic detergent, posses
ing low surface tension and keratolytic and emulsifying actio
These properties favour penetration into tissue surfaces. Unfo
tunately, soaps which are anionic detergents may reduce t
germicidal activity of this preparation. Also of interest was
report warning against the promiscuous use of wetting age
(agents which lower surface tensions); such agents may low
tissue permeability, which is a protective mechanism, so that t
skin may be rendered completely permeable to many agents.

The local application of zinc peroxide was receiving some a
tention in the treatment of infections due to anaerobic organism

Syphilis and gonorrhoea were coming under ever-increasi
control through the development of proper preventive measur
the judicious use of the sulphonamides and antisyphilitic co
pounds. Whereas the treatment of gonorrhoea was formerly
cumbersome and tedious task, the sulphonamides lessened t
treatment period to. days. Syphilis treatment was also faci
possible drastic change if the new intensive treatment prov
safe and practical. This treatment which consisted of hospital
ing the infected person and administering intravenously an an
syphilitic agent more or less continuously for several days w
expected to reduce the treatment period to a matter of da
instead of months and even years.

Certain extracts of bacteria and allied forms of life may of
potent new anti-infective agents. Proactinomycin acts agai
gram-positive organisms and the Neisseriae but is more toxic th
penicillin, the extract of mould developed by Fleming of Engla
and found to inhibit the growth of staphylococci, streptococ
pneumococci and some other organisms. Gramicidin, an extra
of a soil bacteria, received some clinical application and sho

omise. Tyrocidine and tyrothricin (a mixture of tyrocidine d gramicidin) were also effective in some respects. However, st of these preparations were difficult to make and were avail- e only in small quantities for experimental use. Some were ite toxic, but all needed much more laboratory and clinical rk before final evaluation was possible.

Nasal inhalant preparations containing petrolatum were omitted m *New and Nonofficial Remedies* because of the potential nger of lipoid pneumonia.

In the field of pain-relieving agents, Demoral was made avail- e for the medical profession. Sold on the European and South nerican continents as Dolantin, this agent was added to the dical armamentarium of the U.S. as a possible substitute for rphine with less addicting potentialities. (*See* also DENTISTRY; EDICINE; PNEUMONIA; SURGERY; UROLOGY; VITAMINS.)

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(A. E. SH.)

hemurgy. The largest production in history of domestic vegetable oils, the greatest progress towards ob- ning rubber from domestic agricultural sources, and the first lization of milkweed fibre, were among the striking advances 1942 in the various fields of chemurgy. War-made shortages rred intensive efforts to develop sources within the United ates of a wide variety of important materials.

Soybean production was nearly doubled. Although the 1941 op of 106,700,000 bu. was regarded as phenomenal, year-end ports indicated that the 1942 crop was nearly double that. Un- vourable harvesting weather had left many of the beans still the fields in midwinter, but if not too wet, they could still be covered. This crop aided substantially in averting more serious ortages in oils, both for foods and for industrial uses. Soy oil ints, soybean adhesives and other industrial products were even in demand far above supply.

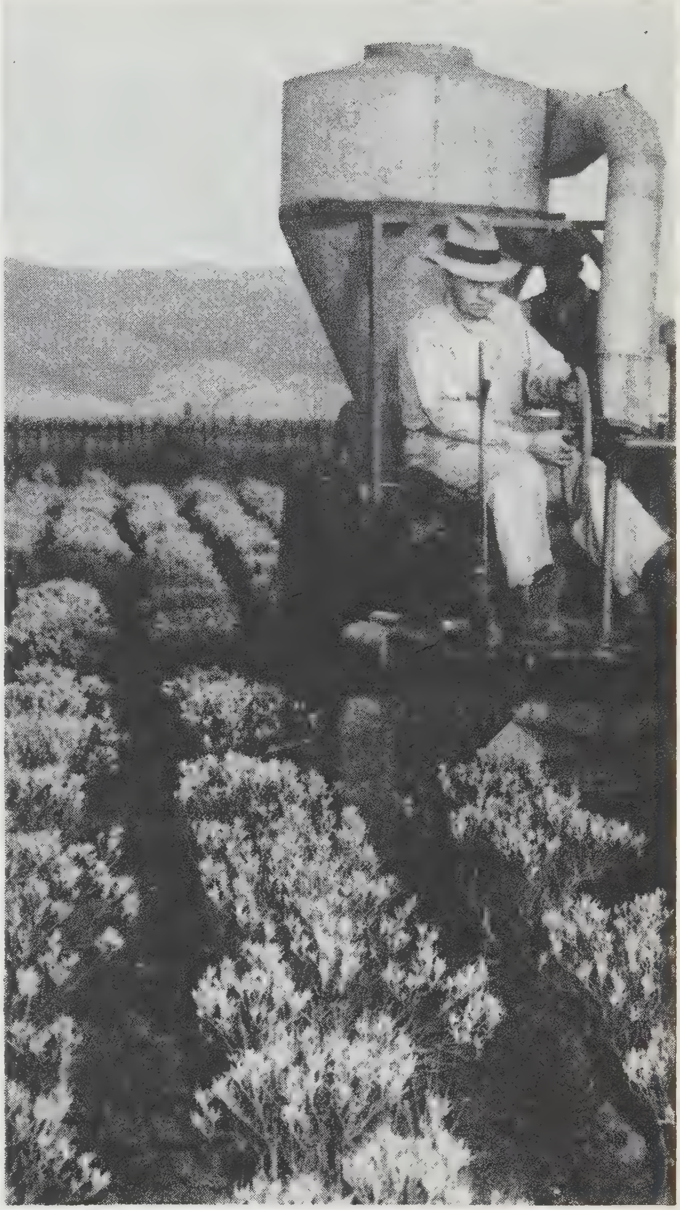
Also nearly doubled was production of peanuts, mainly for od oils. The 1942 crop was nearly 3,000,000,000 lb., in contrast a figure of slightly less than half of that the previous year.

Western flax areas stepped up production for linseed oil, while Minnesota-Iowa area maintained its former level.

With no tung oil being received from the orient, castor bean mand was far beyond supply. By dehydration castor oil is de into a near-equivalent for most of tung oil's uses. A new ocess for degumming castor oil, thus making it better for lubri- ting purposes, was announced. The oil has value in lubrication cause it withstands high temperatures. The government en- uraged castor bean production for the purpose of laying up a re of seed for 1943 plantings.

Domestic production of natural rubber came a little closer th advances in guayule and in kok-sagyz. Rubber by way of tadiene made from grain alcohol was advanced to a point where year-end saw a government-sponsored plant about to begin oduction. The year saw a violent controversy as to whether bber should be synthesized from petroleum or from grain- ohol, since the key chemical, butadiene, could be obtained m either source. The petroleum processes were preferred as ng further advanced, but it was decided to develop the alcohol ocess also. This was expected to afford an outlet for possible in surpluses after the war.

Guayule plantings were authorized on a scale which by 1945 ould occupy more than 500,000 ac. and yield more than 200,000 s of rubber. A number of extraction mills also were authorized.



GUAYULE SHRUBS under cultivation on an experimental farm in Salinas, Calif., in 1942. This plant, native to Mexico, was regarded as an important potential source of rubber for the U.S. after the Japanese conquest of Malaya and the Netherlands East Indies

This plant grows best in southern California, in Texas, New Mexico and Arizona. The crop was expected to yield 800 lb. or more of rubber per acre at the end of the second year of growth.

Upon the insistence of the National Farm Chemurgic council, government agencies in the spring obtained air shipment of 139 lb. of seed of kok-sagyz, the Russian dandelion, and later shipments by sea. This was planted, principally by the agricultural experiment stations, in 60 different places throughout the United States, including Alaska. At the year-end reports had not been compiled, but indications were that several of the plantings grew well. The roots, according to Russian information, yield from 30 to 200 lb. of rubber to the acre. Not until after another year, at least, of experiments would there be adequate basis for predicting whether this would be an important factor in the national rubber supply.

Experimentation with goldenrod as a rubber source, conducted during his latter years by Thomas A. Edison, was revived by the department of agriculture. Tests were made on 150 ac. near Savannah, Ga. The plant is said to grow best on poor soils, and to yield around 100 lb. of rubber to the acre.

Soybean oil appeared unexpectedly in the rubber picture when the Northern Regional Research laboratory announced a rubber-like product made by polymerization of the oil's fatty acids. Considered acceptable for gaskets, hose and similar purposes, a Detroit firm had initiated commercial production in late autumn, using the trade name "Agripol."

Deprived of kapok, the favoured material for life preservers and life rafts, the navy department turned to milkweed for an alternative product. A leading chemurgic investigator, Dr. Boris Berkman, had revealed in 1941 his discovery that the fibres of milkweed floss were not only hollow, and therefore highly buoyant, but also were coated with a wax which made them virtually impervious to water. At the request of the navy department a large quantity of milkweed floss was collected from wild plants in the vicinity of Petoskey, Mich. The floss was separated from the seeds by machinery devised for the purpose. Seeds were saved for establishing cultivated plantings, and some were used for further study of their oil content.

Fashion shows of 1942 displayed hats and ladies' garments made from "Aralac," the synthetic fibre derived from milk by way of casein. A 10,000,000-lb. output of this fibre was reported. Synthetic fibre from the proteins of soybeans was made at the rate of about 1,000 lb. daily in a pilot plant of the Ford Motor company.

Advances were indicated in production of several essential oil and drug crops, although labour shortages discouraged attempts requiring much hand work. Plastic production was in such demand that shortages of necessary chemicals became a factor. Surveys reported that cork trees, products of experiments started decades ago, were growing well and yielding good cork bark in several parts of the country, and hundreds of thousands of new seedlings were set out.

The scope of chemurgy embraces development of new uses for agricultural crops, establishment of practical new crops, and profitable uses for agricultural wastes. The clearing house for information on chemurgy is the National Farm Chemurgic council, 50 West Broad Tower, Columbus, O.

BIBLIOGRAPHY.—*The Chemurgic Digest,* published by the National Farm Chemurgic council; the *Agricultural Situation,* issued by the department of agriculture. Valuable general information on chemurgy is contained in *Pioneers of Plenty,* by Christy Borth, and in *Science Remakes Our World,* by James Stokley. (W. McM.)

Chennault, Claire L.

(1890–), U.S. army air officer, was born Sept. 6 in Commerce, Tex. A school teacher during World War I, young Chennault was called up for service in 1917 and served in the aviation section of the signal reserve corps in the United States. After the war, he became an officer in the army air corps and commanded a pursuit squadron in Hawaii, 1923–26. He retired from the army in 1937 and in the same year accepted General Chiang Kai-shek's offer to become aviation adviser to China; he then helped the Chinese to create an air force to fight the invading Japanese. In 1941, he founded the American Volunteer group of the Chinese army—a flying squadron of U.S. volunteer aviators who later became known as the "Flying Tigers." Though seriously hindered by inferior planes, the "Flying Tigers" reflected their superior training under Chennault by repeatedly repulsing Japanese air attacks on the Burma road—then China's lifeline. Chennault was called back to active duty with the U.S. army air force on April 16, 1942. He was promoted to brigadier general and in June 1942 was named commander in chief of the U.S. air task force in China. On July 4, his Flying Tigers were disbanded and its members were inducted into the regular U.S. army air corps. In Dec. 1942, Chennault was awarded the D.S.M. by Lt. Gen. Joseph Stilwell for meritorious service as commander of the Chi air task force.

Chess.

Samuel Reshevsky extended his reign of United Sta championship chess to six years by winning the 19 biennial tournament in a play-off with Isaac I. Kashdan. T two finalists ended the regular tournament with scores of 12 $2\frac{1}{2}$ each, Reshevsky with 10 wins and 5 draws and Kashdan wi 11 wins, 3 draws and 1 loss. In the play-off, which extended in the first week of 1943, the 31-year-old Reshevsky won in t 11th game by a $7\frac{1}{2}$–$3\frac{1}{2}$ score.

Dr. Alexander Alekhine, the Franco-Russian master, continu his rule as world champion. Dr. Alekhine competed in only o major tournament in 1942, a masters' test at Salzburg, Austr which he won. Of great interest to the masters' tournament f lowers was the individual victory of Karl Junge, 18-year-c Austrian, over Dr. Alekhine.

Aside from the nationals, the United States produced seve other tournaments sponsored by the U.S. Chess federation. open championship at Dallas, Tex., resulted in a tie betwe Herman Steiner of Los Angeles and Abe Yanofsky of Winnip the Canadian champion. The tie was not played off.

Two other contests were added to the annual program of t national federation. The national rapid transit championship, e bracing a time limit of 10 seconds per move, was won by Reub Fine of Washington, with Reshevsky the runner-up. The ot event, the national amateur, went to Edward S. Jackson, Jr., Philadelphia.

Miss N. May Karff of Boston regained and retained her wo en's national chess championship in 1942. She defeated M Donald Belcher of New York, 5–1, to regain her title and la successfully defended it without suffering a defeat in the Unit States Chess federation tournament.

Intercollegiate Chess.—Harvard replaced Yale as champi of the H.Y.P.D. College Chess league. Yale was runner-up, w Princeton third and Dartmouth last. City College of New Y won the Eastern Intercollegiate tournament, dethroning Brookl (M. P. W.)

Chiang Kai-shek

(1886–), Chinese general and stat man, chief of the ruling party, was ma after Pearl Harbor, commander in chief of the China theatre war, including Thailand and Indo-China. As the youngest of leaders of the four major allies of the United Nations, Chia early perceived World War II in its global perspective and his people the longest in constant and hard battles. After J 1937 Chiang repeatedly declared that China's fight against agg sion was related to the cause of the democracies and the libe tion of oppressed nations. Urging effective world co-operati during and after the war, Chiang emphatically stated on Nov. 1942, that China did not wish "the mantle of an unworthy Ja to fall on her shoulders" and thus had "no desire to replace we ern imperialism in Asia with an oriental imperialism or isolati ism of its own or of anyone else."

As a student of the preparatory military academy and the m tary staff college in Japan from 1907–10 Chiang acquired a p etrating knowledge of Japan, but his early contact with the w was his trip to Russia in 1923 as Sun Yat-sen's representati Through his marriage to Mei-ling in 1927 Chiang not only all himself with the influential Soong family but also became quainted with western ways and thought. After 1927 he was c tinuously in power, and after the Sian incident of 1936 beca the centre of all political groups and leader of the whole nati Being Tsung Tsai of the Kuomintang, premier, commander chief of all the military forces, chairman of the Supreme onal Defense council, which is the highest political organ for osecuting the war, president of the combined national central nks, chairman of the Central Planning board, and originator d executor of the general mobilization program and intensified ntrol of commodity prices after Pearl Harbor, Chiang was im- owered to expedite the dual program of resistance and recon- ruction as well as to share in the struggle of the United Nations.

Bibliography.—R. Berkov, *Strong Man of China;* Hollington Tong, *iang Kai-shek;* Frank Price (trans.), *China Fights On* (War Message Chiang); Chiang Kai-shek, *All We Are and All We Have* (War Message ter Pearl Harbor). (H. T. Ch.)

hiang Kai-shek, Madame (Soong Mei-Ling) (1898–), wife of General hiang Kai-shek, Chinese leader, was born in Shanghai, daughter Charles Jones Soong of the wealthy Soong family. One of ree famous sisters, she was educated in the United States and as graduated from Wellesley college in 1917. Returning to hina, she served on the China Labour commission, the first oman ever appointed to this agency. She married Chiang in 927. When her husband was kidnapped by Chinese rebels in 936, she flew to their Sian stronghold, persuaded them to release hiang and was instrumental in convincing him to forge a united ont with the Chinese communists who wanted to halt Japanese ncroachments in China. A strong and vivid personality, Mme. hiang helped stir Chinese resistance against the Japanese inva- on. She placed thousands of war orphans into homes, resettled efugees from war zones and established clean hospitals for ounded soldiers. She was a devoted worker in the cause of emancipating Chinese women from their virtual slave status. Mme. Chiang went to Washington in Nov. 1942 to undergo medical treatment for injuries suffered in a motor car accident five years earlier.

Chicago. Second largest U.S. city, a port of entry and the county seat of Cook county, Ill., at the southwest corner of Lake Michigan, Chicago is the largest centre of U.S. rail traffic and of long-distance air routes. The port of Chicago is mainly important because of a great tonnage of iron ore, fuel and fluxes for steel manufacturing, conveyed by lake ships, and for oil products conveyed by tanker barges and ships. It has access to the Gulf of Mexico via the Illinois waterway and the Mississippi river, and to the Atlantic via the St. Lawrence river and the Welland canal, but both routes can accommodate only small ships.

The population of the city proper by the federal census of 1940 was 3,396,808, which included 1,686,648 males and 1,710,160 females. The white population numbered 3,115,379; nonwhite, 281,429. The population of the 1,119 sq.mi. comprising the metropolitan district was 4,499,126. In 1942 the departure of more than 175,000 men to armed services was offset by influx of workers to war industries and by military and naval personnel concentrated in Great Lakes Naval Training station and other establishments. The 1942 census bureau estimates placed the population of city proper at 3,545,808. The birth rate rose rapidly from the beginning of 1942, and births officially recorded in the first eight months of the year were 4,607 more than in 1941. Marriage licences issued totalled 45,771, a number second only to the 48,317 in 1941. Mayor (Jan. 1, 1943): Edward J. Kelly (Dem.).

ENDELL L. WILLKIE greeting Mme. Chiang Kai-shek and her husband in hungking, where he arrived Oct. 2, 1942, during his world-encircling inspec- on tour

Manufacture of war supplies absorbed more and more of Chicago's labour and plant facilities in 1942. Government expenditure for war supplies from June 30, 1940, to the end of 1942 was about $3,657,539,000, including new plant construction. Military secrecy veiled about $1,800,000,000 of that sum, but the remainder was under 8,118 contracts with 1,756 concerns. Increase of workers employed in all industries was 196,407 to a total of 680,000. New plants included the largest aeroplane engine factory in the world and two others among the largest. A bomber plant, a cargo plane factory, a factory for the fabrication of aluminum, new foundries for casting tank parts and an armour plate mill were wartime additions to Chicago's industry. Each of these units was one of the largest of its type ever designed.

Until the suspension of voluntary enlistments in Dec. 1942, recruiting for all branches of the armed services was at high pitch in Chicago. The city led all the 14 navy recruiting stations for naval aviation, with 6,014 fliers enlisted. The civilian defense organization of Chicago embraced 420,000 citizens. During the year collections of scrap materials for war industry totalled 1,175,000 tons.

Increased employment reduced the number of city relief cases to 36,805, and federal relief agencies were virtually liquidated. Military priorities on construction materials and shortage of fuel and rubber halted transportation improvements, and the transit systems were carrying 16% more passengers at the end of the year than at the close of 1941.

Chicago's tentative budget for 1943 was $160,800,520, in addition to which the school system budget called for $70,977,989, the park system $23,023,763 and the Chicago sanitary district $40,115,915.

In the elections of 1942, Chicago remained in the Democratic column by greatly reduced pluralities. The vote cast was the lowest since 1930, only 76.76% of the voters participating. In Chicago, U.S. Senator C. Wayland Brooks, Rep., who received a plurality of 202,876 in the state as a whole, got only 581,811 votes to the 759,570 cast for Raymond S. McKeough, Dem. All local candidates of the Democratic organization were elected.

Three of the city's largest hotels were taken over by the army in 1942 and many other structures, including Navy Pier, passed to military uses. Removal of U.S. civil bureaus to Chicago from Washington continued, and the number of civil service employes so transferred reached 14,000.

Reduction of automobile traffic in 1942 because of oil and tire conservation reduced traffic fatalities by 25% from the previous year's toll. Despite reductions in liquor licenses and other excise revenues, tax collections in Cook county were the highest in 15 years. Real estate, personal property and railroad taxes collected mounted to $188,888,005 a sum equivalent to 85.05% of the total levy and an annual gain of $10,420,922.

(L. H. L.)

Chicago, University of. An institution of higher education and research in Chicago, Ill. Founded in 1891, the university is privately endowed, co-educational and nonsectarian.

Degrees were conferred upon 1,676 candidates in the academic year, of which 707 became bachelors of arts, science or philosophy, 518 became masters of arts, science or business administration, 404 were awarded doctorates in philosophy, medicine or law, and 37 received professional degrees in law or divinity.

The total income of the several divisions of the budget, excluding income from auxiliary enterprises and restricted expendable funds, was $8,286,992, $284,898 less than the income of the previous fiscal year. The year's total of gifts paid in was $2,271,425. For additional statistics of enrolment, faculty members, endowment, library volumes, etc., *see* UNIVERSITIES AND COLLEGE

Another step in the educational reorganization of the universit was taken in Jan. 1942, when the faculty voted to award th bachelor's degree upon completion of liberal education. The co lege administering liberal education is a four-year institution, b ginning at the level of the traditional junior year in high scho and ending at the sophomore year of the conventional colleg Students are admitted to it at the start of the program; hig school graduates enter it in the middle, for the last two years.

Navy signal and radio schools, training of meteorologists, specialists in high frequency, of army laboratory clinical admi istrators and other technical fields involved large numbers of th services and used extensive sections of the university's building In addition, 2,750 students completed war courses sponsored b the U.S. Office of Education. The university's institute of milita studies gave approximately 4,500 men training in its basic an specialized military course.

Chicory: *see* COFFEE.
Child Labour: *see* CHILD WELFARE.

Children's Books. The year 1942 in the United States wa characterized by an increase of materi relating, directly or indirectly, to World War II, including hi torical fiction with liberty and democracy as the theme, bot fiction and factual material about the United Nations, book about the war itself, and books stressing American ideals. Th interest in Latin America continued; and the flow of biographie and vocational stories seemed undiminished. Good humorous an imaginative stories balanced the more serious tendencies, an there was an unusual increase in the number of toy and tric books. A larger number of books than usual went out of prin The "comics," though not literature, are definitely a part o children's reading, and the year showed no decline in their nun bers or popularity.

Among picture books were Virginia Lee Burton's *The Litt House,* Mary and Conrad Buff's *Dash and Dart, The Fast Soone Hound* by Arna Bontemps, Clare Newberry's *Marshmallow* William Robinson's *At the Seashore,* Holling Holling's *Tree in th Trail* and Marie Gilchrist's *The Story of the Great Lakes.*

Good historical stories included Elizabeth Gray's *Adam of th Road,* Rosamond Marshall's *None But the Brave,* Florence Upde graff's *Traveler's Candle,* Erick Berry's *Hudson Frontier;* als Lena Barksdale's *The First Thanksgiving,* Herbert Best's *Gun smith's Boy,* Isabel McMeekin's *Journey Cake,* Evelyn Sickels *The School Bell Rings* and Hildegard Woodward's *Jared's Bles ing.*

Stories which pictured American life were John Tunis's *Al American,* Elizabeth Coatsworth's *House-boat Summer,* Phyll Crawford's *Last Semester,* Eleanor Estes' *The Middle Moffa* Eleanor Lattimore's *Storm on the Island.* Anne Locklin's *Tide water Tales,* Eliza Orne White's *Training Sylvia,* Laura Wilder *These Happy Golden Years;* others were Valenti Angelo's *Hill o Little Miracles,* Florence Means' *Shadow Over Wide Ruins,* Hop Newell's *Steppin and Family.*

Books about the allied nations included *Happy Times in Nor way* by Sigrid Undset, *Smoky Bay* (Iceland) by Steingrimu Arason, *The Gift of the Forest* (India) by R. Lal Singh, an *Andries* (Holland) by Hilda Van Stockum.

Stories with a war background were Hortense Flexner's *Th Wishing Window* (France), Eleanor Lattimore's *The Question of Lifu* (China) and Marie McSwigan's *Snow Treasure* (Norway)

Books with a patriotic purpose included Ingri and Edga d'Aulaire's *The Star Spangled Banner,* Carl Carmer's *Americ Sings, Songs of Freedom,* compiled by Archibald Davison an thers, *The Birth of a Nation's Song* by Katherine Bakeless, Iunro Leaf's *A War-time Handbook for Young Americans.*

Books about Latin America were Alice Dalgliesh's *They Live in outh America,* Marion Lansing's *Against All Odds,* and *The atin American Song Book* by Emilio de Torre; about Mexico: ernal Diaz' *Cortez and the Conquest of Mexico,* Anita Bren-er's *The Boy Who Could Do Anything,* and Berta and Elmer Iader's *The Story of Pancho and the Bull with the Crooked Tail.*

Biography included Mabel Hunt's *Have You Seen Tom humb?,* Howard Fast's *Goethals and the Panama Canal* and hannon Garst's *Kit Carson.*

Other non-fiction: Louise Lamprey's *Building a Republic,* Iinoo Masani's *Our India,* Helen Follett's *Ocean Outposts,* orothy and Nils Hogner's *The Animal Book,* Henry Kane's *The ale of the Promethea Moth,* Carroll and Mildred Fenton's *Iountains* and Herbert Zim's *Mice, Men and Elephants.*

Folk tales included James Bowman's *John Henry,* Harold Cour-ander's *Uncle Bouqui of Haiti,* Berta Metzger's *Picture Tales rom India,* Eileen O'Faoláin's *King of the Cats* and Leich Peck's *on Coyote.* Fantasy was found in Walter de la Mare's *Mr. umps and his Monkey,* Patricia Gordon's *Not-Mrs.-Murphy,* nys Tregarthen's *The Doll Who Came Alive* and Janette Low-ey's *Tap-a-Tan.*

There were new editions of Hans Christian Andersen's *The now Queen,* illustrated by George and Doris Hauman, of Peter rshoff's *The Little Magic Horse,* illustrated by Vera Bock, and f Andrew Lang's *Prince Prigio,* illustrated by Robert Lawson; elections from the Bible in *Favorite Psalms for Children* illus-rated by Marie Stern, and *Jesus' Story* illustrated by Maud and Iiska Petersham; selections from Bulfinch's *Age of Fable* illus-rated by Helen Sewell.

A new series of books for small children, The Little Golden ibrary, edited by Mary Reed, was a noteworthy contribution in he field of inexpensive books. (*See* also LITERARY PRIZES; PUB-ISHING [BOOK].) (S. AN.)

hildren's Bureau, United States: *see* CHILD WELFARE; UVENILE DELINQUENCY.

hild Welfare.

National recognition in the United States was given to the wartime problems of chil-lren by the children's bureau Commission on Children in War-ime which, meeting for the first time in March 1942, adopted Children's Charter in Wartime. This charter called upon all itizens to "guard children from injury in danger zones; protect hildren from neglect, exploitation, and undue strain in defense reas; strengthen the home life of children whose parents are nobilized for war or war production; and conserve, equip, and ree children of every race and creed to take their part in lemocracy."

The charter urged that health, school and recreation facilities n the overcrowded military and war-production zones be strength-ened; that the home life of children of servicemen and war vorkers be stabilized through economic provisions, insurance rograms, adequate housing and day-care services; and that hildren throughout the U.S. should be safeguarded against suf-ering as a result of wartime food shortages, that they be helped o meet the emotional strain and excitements of war without rejudice to their development, and that ways be found for hem to participate in the war effort through activities suited to heir age and ability.

The U.S. government recognized, without waiting for the nainland to be subjected to enemy attack, the necessity for areful preparation and constant vigilance. Measures for civilian rotection, civilian assistance, and evacuation of children and others from target areas in case of military necessity were developed. Of more immediate importance to children in the United States, since they, up to the close of 1942, were spared actual bombing and destruction, were the suggestions given to parents and others responsible for the care of children for their psychological and emotional guidance in helping them face the difficulties of wartime.

Health of Mothers and Children.—(*See* also BIRTH STATISTICS; INFANT MORTALITY.)

The maternal and child-health services and the services for crippled children administered by the children's bureau under title V, parts 1 and 2 of the Social Security act, were in operation during 1942 in all 48 states and in the District of Columbia, Alaska, Hawaii and Puerto Rico. Federal appropriations for grants to the states for these two programs were $5,820,000 and $3,870,000, respectively.

Expansion of war industries and establishment of military camps and bases resulted in increases in the number of women and children, as well as men, living in more than 400 areas in the United States involving 800 counties. Many of these areas were not previously provided with maternal and child-health services and there was increasing evidence during 1942 that with growing population maternal and child-health needs were not being met. In Jan. 1942 it was reported that the state health departments had been able to give some—though insufficient—additional maternal and child-health service in 165 counties in which there were defense activities. In a later canvass the state health offices of 32 states reported 366 defense areas in which maternal and child-health needs were unmet. Often, it was reported, funds were not available to purchase equipment for prenatal and child-health conferences or to pay personnel to conduct these conferences and to maintain the other medical, dental, nursing and nutrition services that were urgently needed. The withdrawal of doctors and nurses for the armed services heightened the need. It became increasingly important that the time of those who were still available for civilian service be conserved by the clinic and conference method so as to serve groups of mothers and children, and to provide the preventive service that would maintain health and forestall illness.

Bills introduced in congress, on recommendation of the president, to amend title V of the Social Security act by authorizing additional appropriations to meet the special needs of mothers and children arising from war conditions, were not acted upon. So far as possible, however, services were adapted to meet wartime needs. (*See* also SOCIAL SECURITY.)

In the maternal and child-health program, increased attention was given to medical and hospital care for maternity cases and for sick children. In 26 states and Hawaii plans were approved in 1942 for providing maternity care to wives of men in the armed forces, and medical care for their infants. Preventive health services were stressed as a guard against wartime epidemics. A special campaign was carried on in connection with May day —Child Health day for the immunization of children nine months of age and over against smallpox and diphtheria. As a result state health departments reported nearly three times as many vaccinations against smallpox and more than twice as many immunizations against diphtheria as in the previous spring.

The number of crippled children on state registers reached 340,692 on June 30, 1942—an increase of 11% over 1941. Programs were maintained in operation in every state and territory, although the assignment to military services of orthopaedic surgeons from state staffs made it necessary in some states to postpone corrective work of certain types or to send children to other states for orthopaedic surgery.

Nutritional levels were not affected by the rationing, on a comparatively liberal basis, of sugar and coffee. Many families were able to purchase more and better food as a result of improved employment conditions, although, in some areas local shortages of milk and other essential foods made it difficult to obtain all the foods needed for healthy growth. Nutrition committees affiliated with state defense councils continued to develop the national nutrition program sponsored by the Office of Defense Health and Welfare Services. School-lunch programs and projects supplying milk and other foods for school children were, for the most part, continued although the order of the president in December providing for the termination of the activities of the Work Projects administration left the future of these projects in doubt.

Care of Children of Working Mothers.—Care of children of mothers employed in war industries or in occupations where they relieved men for war service was recognized as a problem of major importance. The War Manpower commission issued a policy statement recognizing that a mother's first responsibility is toward her children and discouraging active recruitment of women with children until all other sources of labour supply are exhausted. Nevertheless the 3,000,000 women added to the labour force during 1942 included a considerable percentage of mothers with young children. Local surveys in more than 300 communities showed numbers of young children left without care during the day, children locked out of their homes, and children kept home from school to care for younger children while their mothers work.

Consultation service to states and communities planning day-care programs was offered by the children's bureau and the office of education through regional consultants. Through the Office of Defense Health and Welfare Services limited federal funds were available to supplement state and local funds where necessary in establishing child-care programs. Federal funds could be used in promoting and administering child-care plans submitted by state welfare departments and recommended for approval by the children's bureau or submitted by state education departments and recommended for approval by the United States office of education. By the middle of Jan. 1943 plans had been approved for 24 states—12 submitted by welfare and 12 by education departments. In addition, funds for the operation of local services were made available by the Federal Works agency under the Work Projects administration (to be terminated in 1943) and the Lanham act.

Child Welfare Services.—Child-welfare-service programs carried on by the states in co-operation with the children's bureau after 1935 under title V, part 3 of the Social Security act continued in operation throughout 1942 in all states and territories, the federal appropriation for grants to states being $1,510,000. Approximately 50,000 children were receiving case-work service through this program in May 1942.

Under plans approved by the children's bureau for the year beginning July 1, 1942, 326 full-time and 43 part-time child-welfare workers paid in whole or in part from federal funds were provided for in 281 defense counties; these plans offered additional evidence of the inadequacy of child-welfare services in the country.

Juvenile Delinquency.—(*See* JUVENILE DELINQUENCY.)

Public Assistance.—The program for aid to dependent children administered by the Social Security board under title IV of the Social Security act was in operation in 45 states and in the District of Columbia and the Territory of Hawaii during 1942. Monthly payments in Oct. 1942 amounted to $12,800,000 and were made to nearly 900,000 children.

A new source of assistance was opened up for families of men in the armed forces by the Servicemen's Dependents Allowance act of 1942. This provided monthly allowances and allotmen amounting to $62 for a wife and one child and $10 for ea additional child. If there is no wife, the amount is $42 for t first child and $10 for each additional child.

Funds for providing civilians with temporary aid necessitate by enemy action were made available by the president throug the Federal Security agency pending the enactment of legislatio The civilian war assistance program provided immediate assis ance and welfare services for civilians and their families, ar the civilian war benefits program provided monthly paymen for injured persons and for dependents of persons killed. The programs were administered by the Social Security board wit the co-operation of state welfare departments. (*See* also SOCIA SECURITY.)

Child Labour and Youth Employment.—The steadily increa ing tempo in the production of war materials affected industri conditions for all workers, including children and young person Young workers under 18 were increasingly in demand to me the mushrooming labour needs of new population centres f workers in stores and service trades, for jobs in war plants, f the cultivating and harvesting of crops, and to take the places workers drawn into war industries and the armed forces.

Employment of Children in Agriculture.—Because of labou scarcity and the need for greater production of food, organize programs to employ nonfarm youth under 18 years of age i agriculture were widespread in 1942. The largest number we placed as day workers, the farmers collecting young workers a the employment-service office, schools, and other central point and returning them at the end of the day. Others were place on the farms where they were to work. In addition, there we many programs to recruit young people from cities and tow to live in work camps in the area where they were to be employed. Though much of the employment was during the scho vacation, a great deal in the spring and fall involved release o children from school. Two states, New York and New Jerse enacted legislation permitting children 14 years of age and ov to be excused for work in agriculture for 30 and 15 days, r spectively, and in a number of other states release of scho children for farm work was provided for through executive o administrative orders.

Standards to safeguard the health and welfare of young eme gency farm workers were developed and promoted by th children's bureau of the United States department of labour i co-operation with other federal, state and private agencies. A outline of general policies on recruitment of young workers fo wartime agriculture, issued by the bureau, was prepared in co sultation with the United States office of education, the Unite States department of agriculture, and the United States employment service.

Federal Legislation.—The child-labour provisions of the Fai Labor Standards act of 1938 provided federal safeguards fo children and young persons under 18 years of age employed i establishments producing goods for shipment in interstate com merce. These provisions affected most work in manufacturin establishments because the great majority of such establishment in the United States carried on an interstate business. The basi 16-year minimum-age standard provided in this act was, therefore, of great value in preventing a large influx of 14- and 15 year-old workers into factory employment.

These provisions were administered by the children's burea which continued and strengthened its co-operative programs wit the state and local agencies administering state child-labour laws Employment and age certificates issued under state law wer accepted as proof of age under the Fair Labor Standards ac in 44 states, the District of Columbia, Hawaii and Puerto Rico deral certificates were issued in four states—Idaho, Mississippi, uth Carolina and Texas—with the co-operation and assistance state and local officials.

In connection with the enforcement of the wage and hour ovisions of the Fair Labor Standards act, prohibitory home-ork regulations were issued in five industries (jewellery, gloves d mittens, knitted outerwear, apparel, and buttons and buckles) d were under consideration for two others. The legal basis these prohibitions was to prevent evasion of the established inimum wage.

The great increase in the production of war materials for the vernment increased the importance of the regulation of emoyment of minors under the Public Contracts act. This act t up, among other conditions of employment, a minimum age 16 for boys and 18 for girls, to be complied with by all nployers producing goods under contract for the United States the value of more than $10,000. Under power given by the t, and at the request of the federal departments most concerned war production, the secretary of labour in Nov. 1942 reduced e minimum age for employment of girls from 18 to 16, but the same time set up certain special safeguards as to hours d conditions of employment of girls 16 and 17 years of age. s 16 years is the minimum for boys under this act and for th boys and girls under the Fair Labor Standards act, the tablishment of the same minimum age under both acts was pected to prevent confusion and difficulty of administration in e many factories subject to both laws.

Protection from Hazardous Work.—Special attention was given the children's bureau to measures to protect young workers om hazardous employment. A minimum age of 18 for employent in occupations involving exposure to radioactive substances as established in May 1942 under the Fair Labor Standards t after investigation and a public hearing. Standards as to pes of employment suitable for young workers of 16 and 17 a number of war industries were being developed by the ureau, and their voluntary observance by employers was urged. nese advisory standards gave information on the hazards of e occupations to which they related, suggested the types of ork in which 16- and 17-year-old persons might be employed th comparative safety, and pointed out the types of work from nich they should be excluded. The industries dealt with during 42 included shipbuilding, lead and lead-using industries, and nployments involving exposure to chlorinated solvents and to rbon disulphide.

State Legislation.—In Louisiana and in Puerto Rico new childbour laws were passed in 1942 which established a basic 16-year inimum age, replacing a 14-year minimum; required certificates to 18 years of age; established standards for work in street ades; and set a minimum age of 18 years for work in a nsiderable number of hazardous occupations.

A National Program.—Certain standards formulated and urged federal agencies exercised considerable influence in maintaing good child-labour conditions in types of employment not subct to the specific federal acts mentioned above. Early in 1942 conference of federal departments and state labour departments war production states, called by the secretary of labour to scuss means of increasing production, agreed on a statement of tional policy which pointed out that although some relaxations hours-of-labour standards might be necessary, there must be relaxation of standards governing employment of minors der 16.

The Ninth National Conference on Labor Legislation, in aking recommendations at its annual meeting in Nov. 1942, lled attention to the necessity for careful planning and guidce in the employment of 14- to 18-year-old youths, and for adherence to certain standards. These were that children under 14 should not be part of the hired labour force, that none under 16 should be employed in manufacturing, and that young persons 16 and 17 years of age whose work is essential should be placed only in occupations suited to their age and capacity.

Program of State Action for Children in Wartime.—In Aug. 1942 the children's bureau Commission on Children in Wartime drew up, in consultation with the Office of Defense Health and Welfare Services and the Office of Civilian Defense, and adopted a "Program of State Action for Our Children in Wartime." This program outlined 10 subjects needing review in every state and community, and recommended fixing responsibility for study and planning on representative state and local committees on children in wartime, preferably affiliated with defense councils.

Through the co-operation of the Office of Civilian Defense this program of state action was widely distributed to civilian defense councils and public officials. In 34 states and more than 250 local communities, committees concerned with the general problems of children in wartime or dealing exclusively with the problems of children of working mothers were helping to develop comprehensive programs drawing together all the agencies and resources that could contribute toward meeting these child-care needs.

Inter-American Co-operation.—The Eighth Pan American Child congress met in Washington, D.C., in May 1942[1] at the invitation of the United States government. The chief of the children's bureau was elected president of the congress. The congress devoted much of its time to the consideration of methods of inter-American co-operation and the importance of maintaining services for mothers and children in wartime and formulated a declaration of opportunities for children, signed by the chairmen of the delegations from the 21 American republics. The American International Institute for the Protection of Childhood, with headquarters in Montevideo, Uruguay, and the governments of several American republics took action on some of the resolutions passed by the congress.

Child Welfare in the American Republics.—In the American republics new developments were noted in social insurance, nutrition, health education, including education in child care, and other fields. The First Inter-American Conference on Social Security, which was held in Santiago, Chile, in Sept. 1942 recommended among other subjects the establishment of welfare services for mothers and children within the framework of social insurance.

In Costa Rica the social-insurance law of 1941 became operative in part of the country, and in Ecuador the law of 1942 replaced a law of 1935. In both countries insured persons receive medical care and cash benefits in case of illness, childbirth and other contingencies. The importance of disease prevention was also stressed in these laws. In Mexico a social-insurance bill was introduced in congress in Dec. 1942. In Argentina and Cuba measures were taken for improving the administration of the laws on maternity insurance.

The interest in nutrition continued to increase. In Brazil the Social Insurance Nutrition service, established in 1941 for the workers protected by the pension insurance laws and for their families, opened in 1942 restaurants where nutritious meals were served at low cost.

The Federal Children's bureau of Brazil selected "Better nutrition of children" as the subject of the 1942 Children's week, and a campaign to arouse public interest was conducted. In Mexico City the government opened the first of a projected chain of dining halls where people in the low-income groups could get balanced meals at nominal cost. The National Commission on Foods of the Federal Department of Public Health of Mexico introduced properly balanced meals in public child-welfare institutions and in government-supervised foster homes. In Venezuela a Division of Nutrition was set up in 1942 in the ministry of health and social welfare.

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[1] The previous congresses were held as follows: Buenos Aires, Argentina, 1916; Montevideo, Uruguay, 1919; Rio de Janeiro, Brazil, 1922; Santiago, Chile, 1924; Havana, Cuba, 1927; Lima, Peru, 1930; and Mexico City, Mexico, 1935.

A "center for the education of mothers" in child care was established in 1942 in Lima, Peru, under the National Institute of the Child, official agency administering child-health work throughout the country. In Haiti a law of Jan. 10, 1942, made primary education compulsory for children 7 to 14 years of age, with some exemptions.

In Panama an "institution for child supervision and protection" to be established under a presidential decree of July 22, 1942, was to deal with children under 16 years of age who were accused of illegal acts or who were neglected, destitute and mentally defective.

Great Britain.—*Child Welfare.*—With the increasing employment of mothers in war industries the care of young children became a subject of national importance. Government agencies co-operated in the setting up of war nurseries and nursery schools, which were maintained by the national government.

Child welfare also received attention in postwar reconstruction plans. The Beveridge report, published and presented to parliament in Dec. 1942 under the title "Social Insurance and Allied Services," proposed the extension of the system of social insurance in Great Britain, including maternity benefits, children's allowances, widows' pensions, and complete medical care. (*See* also SOCIAL SECURITY.)

Child Labour.—The imperative war necessity in Great Britain to secure greater national production brought into employment a large number of children who would otherwise have continued in school beyond the legal school-leaving age (14), and also led to more arduous conditions of work for children and young persons between 14 and 18 years of age. However, efforts to keep schools open and to require attendance of children up to 14 were renewed in 1941 and 1942, and appropriations for education were increased after the beginning of World War II.

Hours of employment for young persons between 14 and 18 years of age were regulated by the Factories act of 1937 and emergency orders issued thereunder by the ministry of labour and national service. The standard was a maximum 9-hour day and 44-hour week for children 14 and 15 years of age, and a maximum 9-hour day and 48-hour week for boys and girls 16 and 17 years of age and for all women, with provision for overtime under certain conditions. Night work between 6 P.M. and 7 A.M. was prohibited for children under 16.

Under the general emergency order for engineering and certain other classes of work, as extended on April 28, 1942, establishments doing emergency work might obtain special permission to employ young persons between 16 and 18 years of age and women up to 60 hours a week and children 14 and 15 up to 48 hours a week. The number of permissions under this order in the early part of 1942 was approximately 9,000, nearly double that for 1940. The permitted hours in the majority of cases were less than 55, and the tendency at the end of 1942 was toward shorter hours.

An order of Jan. 23, 1942 authorized district inspectors of factories to permit in all types of factories the extension of hours of work above the statutory limit, but not to exceed 55 hours a week for young persons between 16 and 18 and women. Not more than ten and one-half hours might be worked on any week day; Saturday hours as high as eight might be specially sanctioned by the district inspector. For children under 16 the statutory 44-hour work week might be lengthened to 48 hours.

By a special order in council, school authorities were permitt in 1942 to exempt from school attendance children of 12 a over under certain safeguards, to help with urgent agricultur work if other labour was not available. Absences were limit to 10 full or 20 half school days a year, with maximum worki hours of seven hours on full days, four hours when a half d is spent in school, and with a break of at least one hour aft not more than four hours of work. No further exemptions we permitted except upon permission of his majesty's inspectors.

Australia.—Pensions for widows and for divorced and desert wives with one child under 16 years were made available Australia under a commonwealth law effective July 1, 1942; f children after the first, allowances were paid under the Chi Endowment act of 1941.

Continental Europe.—The information coming from Europe countries concerning labour conditions emphasized acute labo shortages and the heavy demands that drew upon workers of ages, but for the most part did not touch particularly up employment of children. In the spring of 1942 it was report that in Germany children ten years of age and over were to sent to camps in farm areas to work in the fields.

Concern for the health of working mothers was evidenced an administrative order in Germany, effective July 1, 1942, whi prohibited the employment of women in any occupation for weeks before childbirth; previously, the prohibition applied women in industry only. Employment for 6 to 12 weeks aft childbirth was also prohibited. The mothers were to recei full pay during maternity leave and, in some cases, nursi benefits. Expectant and nursing mothers were not to be employ overtime, or at night, or on Sundays or holidays. Employ nursing mothers were to be allowed time for nursing their childre The administrative order specifically excluded from its app cation Jewish and other non-German women, for whom a min degree of protection was prescribed.

In the soviet union the employment of children 12 to 16 yea of age in families of collective farmers was required for at lea 50 full days a year by an order issued in April 1942. The e ployment of all children between 14 and 18 years of age farm work under the supervision of their teachers, who work with them, was also ordered as a part of a general mobilizati during the spring and summer vacations of 1942. The worki day of the children was to be limited to a period varying fro six to eight hours. Emphasis was placed in the child-care pr gram of 1942 on providing physical training for all scho children and proper institutional and foster-home care a recreation facilities for all war orphans and children of perso in the armed forces.

It is evident that the suffering of the war gravely affect children in continental Europe. Reports from Belgium, Franc Finland, Greece and Norway showed a greater incidence disease, and at least in some localities, of death among childre and even in neutral Switzerland infant mortality increased.

In an attempt to relieve at least partly the suffering amo children, a private welfare federation in Switzerland, under t direction of the Swiss Red Cross, was bringing groups of ch dren from France, Belgium and some Balkan countries Switzerland for a three-month vacation, usually in private home

In the United Kingdom and most of the countries of Europ including Czechoslovakia, Denmark, Finland, France, German Netherlands, Norway, certain Polish provinces and Swede attempts were being made, according to reports received by t League of Nations, in the spring of 1942 to offset food shortag by giving children priority in receiving milk and certain prote tive foods.

(*See* also CENSUS, 1940; CRIME; MARRIAGE AND DIVORCE.)

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(K. F. L.)

hile, a republic on the west coast of South America, extending some 2,800 mi. from just within the tropics to the
barctic south. Area, 289,776 sq.mi.; pop. (1940 census), 5,-
3,539; capital, Santiago; religion, Roman Catholic; president
942): Juan Antonio Ríos. The 11th national census of 1940
owed a population of 639,546 for Santiago, or 943,669 including
burbs. The 20 other principal cities (not including suburbs)
ere: Valparaiso (215,614); Concepción (92,364); Temuco (84,-
6); Viña del Mar (70,013); Osorno (62,106); Chillán (61,-
5); Talca (56,735); Los Angeles (52,259); Antofagasta (51,-
7); Valdivia (49,481); Puerto Montt (44,024); Talcahuano
1,536); Iquique (39,282); Rancagua (38,423); Linares (36,-
3); Curicó (35,270); La Serena (35,055); Nueva Imperial
3,361); Magallanes (Punta Arenas) (33,134); Cauquenes (33,-
6). An official estimate of May 31, 1942 gave Chile a popula-
on of 5,122,665.

History.—After the death of President Pedro Aguirre Cerda in
ov. 1941, Chile was temporarily ruled by an interim president,
erónimo Méndez. By a special election on Feb. 1 the voters
evated Juan Antonio Ríos, the representative of the Radical
arty, to the position of chief executive, and crushed his principal
pponent, ex-president Gen. Carlos Ibañez, who had returned
om exile only a year before. In April 1942 Ríos was inaugu-
ted.

Meanwhile, events had occurred which had made the confusion
rought by the interim rule even more pronounced. Although
uan Bautista Rossetti, the foreign minister of the Méndez ad-
inistration, had been instrumental in calling the Rio de Janeiro
onference of Foreign Ministers in Jan. 1942, his administration
ad not broken off its diplomatic relations with Germany, Italy
nd Japan as the Rio conference had recommended. Since it was
eported that Acting-President Méndez and his cabinet had chosen
policy of neutrality chiefly because the interim government
lt itself without sufficient powers to determine Chile's future
oreign policy, little was done concerning foreign relations until
he accession to power of Ríos. However, during the time be-
ween the end of the Rio conference and the inauguration of the
ew president, Chile tended to be drawn closer to Argentina, the only other Latin-American nation that had not broken its relations with the axis powers.

When the policy of neutrality (usually described as "non-belligerency") was not immediately changed by the accession to power of the newly-elected president, debates on foreign policy, already bitter, became more intense, with intraparty differences acting to bring political confusion. The Radical party, occupying the presidency and a majority of the cabinet posts, soon showed definite signs of splitting. The Socialists were particularly active throughout the year in a campaign against isolation. On June 4 Oscar Schnake, minister of development in the national cabinet (and one of three Socialists in that group), stated, before a crowd demonstrating for the United Nations, that Chile could not and would not remain neutral. Such words from a cabinet minister created a national sensation, and some of the more conservative journals demanded that Schnake be disciplined. In answer, Foreign Minister Ernesto Barros Jarpa pointed out that the minister of development spoke only for himself and not for his government. Amid such debates, the Chilean senate, after having heard a confidential report from Barros Jarpa, voted to leave the foreign policy unaltered at that time. However, demonstrations, both for and against neutrality, continued, and brought violence in many cases. In July a group which was reportedly led by communists invaded a Santiago meeting of the Committee for Peace and Neutrality (an allegedly fascist-sponsored group, composed principally of a membership drawn from the openly pro-fascist "Popular Socialist Vanguard" party), and the resulting clash of the two factions was broken up only by the police. Critics of the administration's policy increased their activities when it was announced in July that the government had ordered home, presumably because of a lack of success, the military officials sent earlier to Washington, D.C., on a purchasing mission.

When, in August, President Ríos accepted an invitation from President Roosevelt to visit the United States, it was conjectured that the Chilean executive was attempting to lead his nation toward a rupture with the axis, but was doing so in a gradual manner. In September, however, he declared that the purpose of his projected visit was to study the needs of hemisphere defense and that it involved no obligation affecting Chile's freedom to decide her own foreign policy. Those words, seemingly intended to quiet the fears of the isolationists, caused the opponents of neutrality, who had remained relatively quiet during August, to reopen their campaign against the administration. In September Socialist Oscar Schnake resigned his post as minister of development, and on Oct. 4 a Santiago newspaper openly charged that Chile was being used as a base of operations by a group of German spies.

The sensation caused by that declaration was, on Oct. 8, forgotten in the uproar resulting from the charges made against Chile by an official of the United States. Speaking in Boston, Mass., on that date, United States Under Secretary of State Sumner Welles had decried the use of two Latin-American nations (unnamed, but unmistakably Argentina and Chile) as bases for axis activities. Although President Ríos had been on the point of departure for his planned visit to the United States, he immediately cancelled the trip and instructed the Chilean ambassador in Washington to protest the Welles speech. Despite the attempt of pro-axis groups to fan the flames of resentment of the Chileans at a public rebuke by an official of a foreign government, some informed nationals asserted the justness of the charges. Substance was given to such views when the government, upon the reception of the evidence supporting the Welles' charges, began a campaign against alien spies. The foreign minister, who had come to represent, in the eyes of many, the principal spokesman for isolation, soon became the centre of attack for the opposition, and by mid-October attempts were made to force his resignation. Since he reportedly refused to leave unless the rest of the cabinet also resigned, on Oct. 20, after the opposition to Barros Jarpa had become more violent, the entire group of ministers asked to be allowed to retire. However, practically all the former ministers, with the exception of Barros Jarpa, were included in the new cabinet. Joaquín Fernández y Fernández, Chilean ambassador to Uruguay, was given the foreign ministry after Germán Riesco, a prominent liberal lawyer and a former minister of war, had refused the post. The new government struck with comparative boldness against the alien agitators. Three German spies, seized earlier but released on a technicality by a local magistrate, were interned on Quiriquina island, and on Oct. 30, Interior Minister Raúl Morales announced the existing laws against alien activities inadequate and prepared new legislation for submission to a special session of congress.

While the debates on foreign policy continued during the remainder of 1942, somewhat less bitterness was shown, and public attention was shifted to the spy hunt being conducted by the interior minister. Popular indignation against the United States, already ebbing after the publication of the evidence supporting the charges made by Welles, tended to subside even more as the year progressed, and on Nov. 5, an estimated 50,000 persons marched through Santiago to call for the end of relations with the axis. In addition, when the United States invaded French North Africa, 25 Chilean political leaders, representing almost all the parties, united in cabled praises to President Roosevelt. Improved relations with all the other American republics seemed close when Interior Minister Morales, on leave of absence from his official duties, appeared in Washington in December for a series of secret conferences.

Cereal crop failures in 1942, added to the already severely risen costs of living, forced the passage by congress in August of a bill giving emergency powers over financial and economic matters for a period of six months to President Ríos.

Education.—Primary education is free, non-sectarian and compulsory. Official reports for 1939 showed 3,522 government and 1,129 private schools with enrolments of 480,678 and 121,759 respectively; 86 public and 175 private secondary schools with 44,404 students; 151 special schools (including agricultural, vocational, industrial, commercial and normal), with 32,176. The National university, at Santiago, had 4,774 students, the Catholic university (Santiago), Santa María university (Valparaiso) and the University of Concepción together had 1,674. In 1942 16.5% of the national budget went for education.

Defense.—The Chilean army, regarded as one of South America's best, had about 1,500 officers, 20,000 regular troops, 15,000 one-year conscripts and a trained reserve of 200,000 men in 1941. The navy included one battleship (built in 1915), three cruisers, eight destroyers and nine submarines (the last being the oldest in active service anywhere in the world). The air force of several hundred planes was being augmented as rapidly as possible and the extraordinary defense appropriation of 4,000,000,000 pesos (approximately $135,000,000) by congress on Dec. 31, 1941 was, in good part, for that purpose.

Finance.—The monetary unit is the peso, valued at approximately 3⅓ cents U.S. The gold peso, used to report foreign trade, was valued at 20.61 cents in 1942. Government revenues for 1941 totalled 2,495,600,000 pesos, expenditures 2,760,700,000 pesos, leaving a deficit of 265,000,000 pesos to be added to the deficit of 120,000,000 pesos for 1940. The ordinary budget of 1942 authorized total expenditures of 2,630,900,000 pesos and estimated revenues at 2,441,900,000 pesos, leaving an indicated deficit of 189,000,000 pesos. To close the gap between revenues and expenditures congress, early in 1942, provided for higher taxes on incomes and a luxury tax of 10%.

Trade.—Imports in 1941 totalled 525,179,800 gold pesos (194 507,110,400 pesos), exports 781,504,400 gold pesos (1940: 69 727,900 pesos). The United States supplied 56.7% of all impo (1940: 47.9%; 1939: 31.1%), Great Britain 9% (1940: 10.4% Peru 9% (1940: 8.4%), Argentina 7.4% (1940: 6.7%). Asi from nitrate and iodine purchases (not reported by country destination, but aggregating 15% of all exports in 1941 and 20.2 in 1940), the United States took 64% (1940: 58.3%), Argenti 4.3% (1940: 2.7%), Great Britain 4.1% (1940: 5.8%), Bra 2% (1940: .05%). Mineral products made up 79.8% of all e ports (1940: 82.9%), agricultural 6.7% (1940: 6.3%), anim 5.1% (1940: 4.7%), manufactures, chiefly meats and sugar, 3.7 (1940: 3.2%). In 1940 copper alone accounted for 54.6% all exports, and in 1941 it was estimated that the percentage w somewhat higher. Precious metals aggregated 7.7% of the 19 total, but exports were decreased in 1941. The leading agric tural exports were beans, lentils and peas. Wool made up tw thirds of animal products exported, fresh and frozen meats a hides nearly one-sixth each. In the first five months of 1942 i ports of 236,300,000 pesos value represented a 26% increase ov the similar period in 1941.

Communication.—Under normal conditions, Chile has exte sive steamship connections with all parts of the world, includi direct service under the Chilean flag to New York city, to Guay quil, and to Argentina, Brazil and Uruguay by way of the Str of Magellan. Air transport service to all parts of America is pr vided by Pan American Airways and its affiliates, with sever flights weekly. Rail lines from Arica and Antofagasta conne with Bolivia. The former was eventually to form the Pacific e of a transcontinental railway to Santos (Brazil), on the Atlanti the latter line is linked directly with the main centres of Chil Rail-bus service to Argentina is maintained through the Tran andine railway route (closed to through rail traffic in 1934) a by way of Bariloche in the south. Approximately 150 mi. of t international line from Antofagasta to Salta (in northwestern A gentina, lying some 550 mi. from Antofagasta) had been co pleted on the Chilean side by the end of 1942, and constructi gangs were nearing the Argentine border.

Internal communication is by rail, coastwise shipping, air a highway. The state-owned railway system extends south to Puer Montt, with a narrow-gauge line on the island of Chiloé, and the north (in Tarapacá province) includes the Nitrate railw lines. Domestic aviation is well developed under the Nation Air lines, with routes from one end of the country to the oth The 23,000-mi. highway system includes nearly 10,000 mi. of i proved road; although still far from adequate, it is being rapid extended. During 1941 143,888,639 pesos were spent on constru tion and maintenance of roads and bridges. The Chilean mercha marine, owned, officered and manned by Chileans, is the best d veloped in Hispanic America.

Manufacturing.—Manufacturing has been confined almost e tirely to goods for domestic consumption, especially heavi goods, but provides only a minor part of domestic needs. In t first half of 1942 the index of manufacturing stood at 167.06 of the 1927–29 average, a decline of about 4% over a simil period of 1941. In 1940 the ten leading industries employe 22,093 persons.

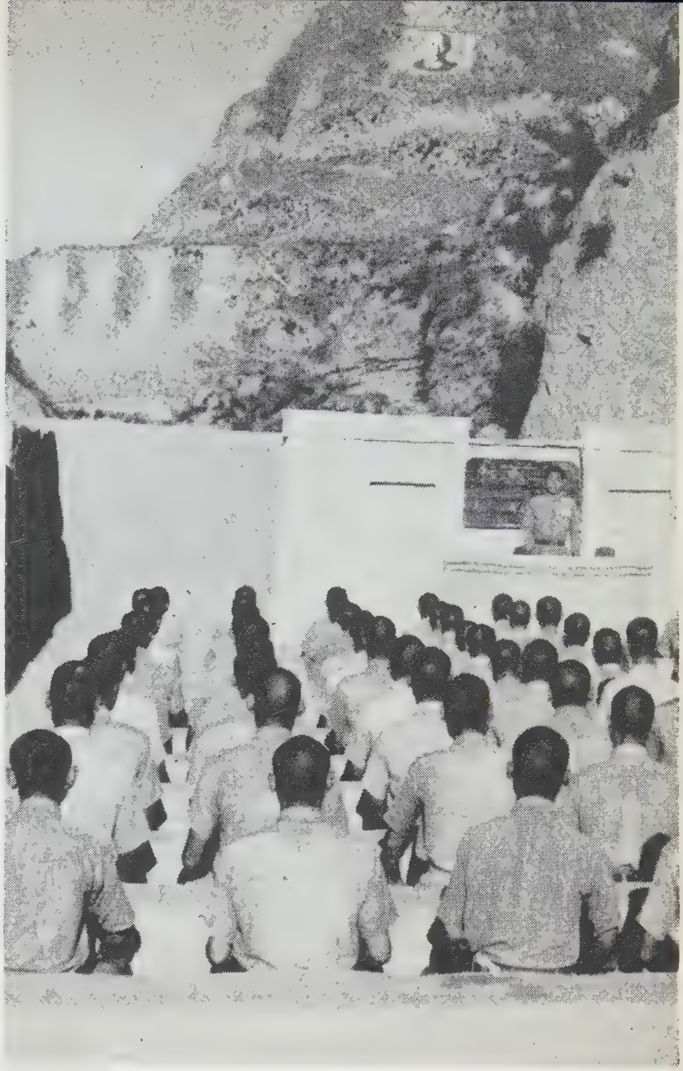
Mineral Production and Agriculture.—The mining indust produces the greater part of all export values, although the pr portion varies somewhat from year to year. Agriculture, ho ever, is the actual economic backbone of the country, in go part because the mines are mostly foreign-owned. Copper produ tion in 1941 rose to an all-time peak of 453,527 tons (194 352,010 tons); nitrates (1,428,379 tons in 1940), iron (1,748,4

ons in 1940), coal (1,937,438 tons in 1940), gold (10,663 kg. in
940) and silver (47,139 kg. in 1940) were produced at a lower
ate in 1941. Agricultural production (cereals, fruits, potatoes,
egetables and legumes) is of wide variety and is mainly con-
umed within the country. In 1942 wheat harvests were the
owest in nine years and the production of other cereals was even
ower, so that large quantities of Argentine grains were imported.
n agricultural and livestock census was begun in 1942, with the
ata to be used by the newly-formed Institute of Agricultural
conomy in formulating a definite farm program. (*See* also HIS-
ANIC AMERICA AND WORLD WAR II.) (C. N. G.)

hina, a republic of eastern Asia. Flag, a red background with
a blue sky and a white sun in the upper left corner.
rea, 4,480,992 sq.mi.; excluding Manchuria, Outer Mongolia
nd Tibet proper, 2,903,475 sq.mi. Total population, approxi-
nately 450,000,000. More than 10% of the area was under
apanese occupation in 1942, representing 30% of the most
opulated Chinese regions. Wartime capital, Chungking. Cities
vith populations of over 100,000 total about 100; after Pearl
Harbor Shanghai was reduced to less than 3,000,000; Nanking
nd Canton were reduced to less than 1,000,000 after the Japa-
ese occupation; Peiping and Tientsin each have more than
,000,000; other cities with a population exceeding 500,000:
Chungking, Changsha and Chengtu; cities over 200,000: Kun-
ning, Sian, Kweiyang, Foochow and Tsingtao. President: Lin
en; premier: Gen. Chiang Kai-shek.

History.—Immediately after Japan's attack on Pearl Harbor,
China, through Generalissimo Chiang, offered to stand with the
United States to defeat their common enemy and suggested the
stablishment of a unified command and the conclusion of a
ormal military alliance. On Dec. 23, 1941, an Allied Far Eastern
Military council was set up in Chungking. On Jan. 1, 1942, China
igned the Declaration of the United Nations as one of the four
ghting powers and on Jan. 6 a united information committee
f the ABCD powers was created in Chungking. However, the
tatements of Secretary Knox and First Lord of the Admiralty
Alexander early in 1942 that the Pacific war was a secondary
ssue caused China to suspect her allies' policy in the Pacific,
vhile Japan's peace bid after her success in the Pacific made
he Allies wonder about China's response. The situation was
larified by the official pronouncements of Senators Tom Con-
ally and Walter George and General Ho Ying-chin. The Anglo-
American new loans of $500,000,000 and £50,000,000 to China
n February, the appointment of Lieut. Gen. Joseph W. Stilwell
s chief of staff in the China theatre of war and commander of
he Chinese armies in Burma, China's decision to send a military
nission to the United States and the formation of a Pacific War
ouncil in Washington, D.C.—all in March—further strengthened
llied co-operation in the Pacific. On June 2 China was brought
nto the structure of Anglo-American lend-lease arrangements by
gning the Master Lend-Lease agreement.

Before Singapore and Rangoon fell, Gen. and Mme. Chiang
aid a state visit to India in an attempt to enlist India's full
upport to the Allied cause and to persuade England to grant
ndia real political power. After her success over the Indian ocean
nd south Asia, Japan started a spring offensive in order to
estroy the United Nations' air bases in China, to establish a
ontinental transportation system and to eliminate the rear and
anking threats that might come from China. China's position
ppeared serious. To assure China of U.S. determination to
rush Japan, President Roosevelt pledged on July 7 to fight
n to victory with China and to establish peace, justice and
reedom throughout the world while the U.S. army and navy
eclared their "firm determination to expel the aggression from every foot of Chinese soil." Wendell Willkie's visit to China in early October further aroused the enthusiasm of the Chinese in Allied war aims, as did the simultaneous announcement of the U.S. and British governments on October 10 of the relinquishment of extraterritoriality and related rights and privileges in China.



CHINESE SOLDIERS listening to a lecture by their commander on the Yellow River front in 1942

The military stalemate which began after the fall of Hankow continued in 1942. Of the thousand and more engagements, the important battles of 1942 were: the third crushing defeat of Japan at Changsha early in January, the battle in Burma and Yunnan from January to May, Japan's May offensive in Chekiang, Kiangsi, Kwangtung, Hunan, Honan and Shansi, Japan's withdrawal of troops from central and south China to the north, and China's successful counterattacks resulting in the recapture of most of the lost cities in Kiangsi and Chekiang in August. On Dec. 6 Japan began offensive operations in western Yunnan after she suffered another setback in the southwest Pacific.

Closer collaboration among soviet Russia, Great Britain and the United States in 1942 helped strengthen China's internal political unity. China's serious problem was economic, since inflation reached an acute stage in 1942.

Education.—The decision to place higher education under the direct control of the central government and the emphasis on the development of technical education marked two important features in 1942. New technical, professional and normal colleges were established and the total number of colleges and universities increased from 113 in 1941 to 129 in 1942, with an enrolment of more than 50,000.

Defense.—The General Mobilization act of May 1942 extended the age for military service from 18 to 40. The Chinese army had grown from about 200 divisions in 1937 to more than 300 divisions in 1942 with 5,000,000 in the field and 15,000,000 in reserve units and training camps.

Finance.—The daily military expenditure was estimated at 7,000,000 yuan. Revenues from direct taxes and government monopolies increased but covered only a very small portion of the expenditures. China depended largely on the following methods to finance the war: land taxes in kind, domestic and foreign loans, lend-lease aid and notes. The total internal loans floated from 1937 through 1942 amounted to 3,430,000,000 yuan, 100,000,000 customs gold units, £20,000,000 and $300,000,000; of these the $100,000,000 Allied Victory loan and the $100,000,000 Savings Certificates were issued in 1942. Up to Dec. 1942 China had received a total of $1,200,000,000 in foreign loans of which $700,000,000, extended by the United States and Great Britain in 1942, had not been used. The volume of note issue in 1942 was estimated at about 18,000,000,000 yuan—about three times the official figures of the note issue for 1940. A large portion of public outlays was financed through inflation. In July 1942 the official exchange rate of the Chinese national dollar was fixed at $5-1/16 and £3-1/64. This may not reflect the true exchange ratio.

There were 300 modern and native banks in Free China in 1942, not counting branches and agencies, as against 164 in prewar time.

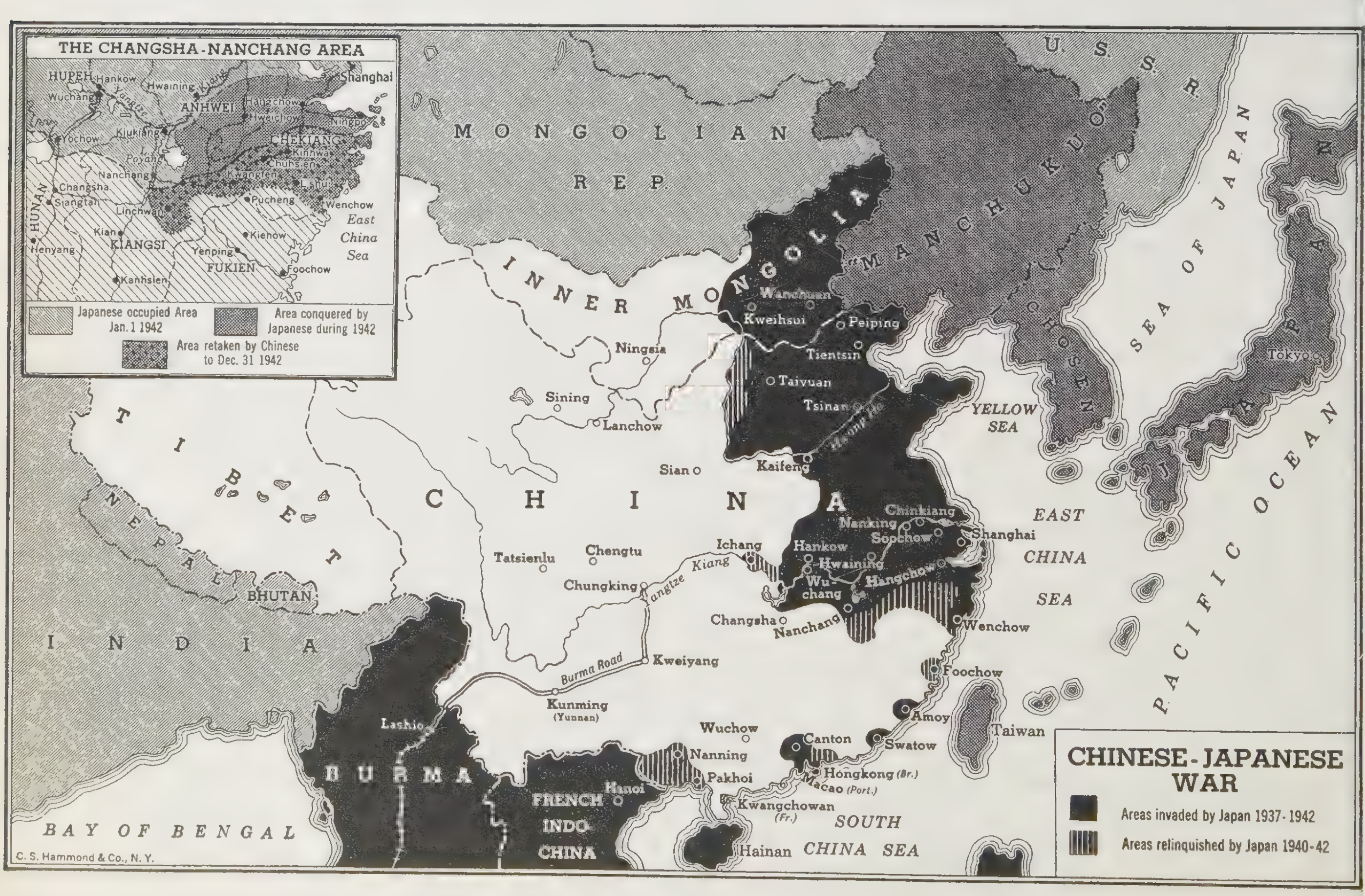
Trade and Communication.—The loss of Hongkong and Burma deprived China of her last important international outlets, and her foreign trade suffered a serious blow. India roads were surveyed and under construction but at the end of 1942 vital war materials were shipped by about two dozen U.S. transport planes.

Exports of tea, bristles, hides and raw silk moved on the Northwest highway to the border of Sinkiang, where it connects with the Turkistan-Siberian railway. From 1937 through 194 China had constructed over 10,000 km. of railroads and added about 10,000 km. of highways to the prewar mileage.

In order to utilize human labour as well as pack animals stage and river transportation was developed to assist the depleted modern transportation system. Over 47,000 km. of telegraph lines and 31,000 km. of telephone lines had been built since the start of the war. The Pacific war wireless contact between Chungking and the United States and Great Britain was efficiently maintained, and in Dec. 1942 a U.S.-China radio-photo communication was established.

Agriculture.—The average annual production of cereals in the 15 provinces in Free China is 1,500,000,000 piculs on 580,000,000 mou of land. The production of 1941 increased by 89,000,000 piculs and acreage increase by 45,000,000 mou (1 picul = 133⅓ lb.; 1 mou = 806.65 sq.yd.). It took about 60,000,000 piculs of rice and wheat to feed the army and public functionaries in 1942. In the first half of 1942 the ministry of agriculture and forestry registered the increase of 32,129,000 mou of cultivated land with a yield of 30,206,117 piculs of cereals.

Manufacturing and Mineral Production.—In 1942 there were 108 units of heavy industries under the direct control of the National Resources commission of the ministry of economic affairs and more than 1,350 privately owned modern industrial plants in Free China. In 1937 there were less than 380 private factories located in the interior. The value of total production in 1941 exceeded the estimated figure of 4,000,000 yuan for 1940. China's coal and iron reserves were estimated at 250,000,000,000 and 1,000,000,000 tons respectively. The production of minerals in Free China in 1941 was approximately as follows: coal 6,000,000 tons; iron ore 300,000 tons; copper 2,000 tons; tungsten 7,000 tons; tin 7,000 tons; antimony 7,600 tons; mercury 120 tons; crude oil 3,000,000 gal. China is extremely deficient in



THE FIFTH ANNIVERSARY of China's war with Japan, July 7, 1942, was observed with a military parade in Chungking

oil and steel and her trained engineers and technicians numbered about 10,000 and industrial workers about 200,000. To strengthen China's national defense and to raise the general standard of living of the people by industrialization, the National Resources commission prepared in 1942 a five-year industrialization plan for postwar China and a large training program was already under way. (*See* also World War II.)

Bibliography.—China Information Committee, *China After Four Years of War;* Chinese News Service, *China After Five Years of War;* G. B. Cressey, *China's Geographic Foundations;* H. D. Fong, *The Post-War Industrialization of China;* Institute of Pacific Relations, *Agrarian China;* Mme. Chiang Kai-shek, *China Shall Rise Again;* Owen Lattimore, *Inner Asian Frontiers of China;* Paul Linebarger, *The China of Chiang Kai-shek.* Periodicals: *Amerasia; Asia; China Year Book; Chinese Year Book; China at War; Contemporary China; Far Eastern Survey; Pacific Affairs; Voice of China* (China news by shortwave radio released by Chinese News Service).

(H. T. Ch.)

Chinese-Japanese War: *see* World War II.

Chinese Turkestan: *see* Sin Kiang.

Chosen

(Korea). A part of the Japanese empire since 1910, Chosen is a peninsula extending southward from the northeastern side of the continent of Asia. It is bounded E. by the Sea of Japan, W. by the Yellow sea and N. by Manchuria and the maritime province of Siberia. Area, 85,206 sq.mi., including 1,018 islands; pop. (Dec. 31, 1938) 22,633,751, including 633,320 Japanese and 49,815 other foreigners, of whom about 1,000 were Europeans and Americans, the remainder being Chinese. The capital is Seoul (Keijo), population (1938), 737,214. Other cities: Fusan (213,744); Phyong-yang (Heijo) (234,726); Taikyû (172,040). Buddhism, Confucianism and Taoism are prevalent forms of religion. There were 494,500 Chosenese and 5,800 Japanese Christians in Chosen in 1938. Chosen is ruled by a Japanese governor-general. The governor-general in 1942 was Gen. Jiro Minami, who took office in 1936.

History.—Chosen was not a theatre of hostilities and there were no events of consequence in the country during 1942. A movement to obtain recognition of Chosen as an independent state was set on foot by some Chosenese resident in the United States; but no official decision on this question was announced.

Education.—Chosen in 1938 possessed 3,372 elementary schools, with 1,311,270 pupils. There were also 53 high schools, with 27,867 students, 57 girls' high schools, with 22,277 students, 226 technical schools, with 34,060 students, 10 normal schools, with 5,565 students, 18 special colleges (for medicine, dentistry, etc.), with 4,015 students and one university, at Seoul, with 558 students.

Defense.—Chosen has no national army, but the former rigorous ban on the enlistment of Chosenese in the Japanese army had been relaxed.

Finance.—The unit of currency is the Japanese yen (fixed at a nominal value of 23.48 cents U.S. for several years prior to the outbreak of war in the Pacific). The Chosenese budget for 1942–43 was balanced at a figure of 1,012,577,000 yen. The national debt, as of 1941, was 593,646,215 yen. The amount of currency in circulation in 1941 was 437,669,000 yen. The bank of note issue is the Bank of Chosen; and there are eight other banks in the country, with a paid-up capital, in 1940, of 84,431,000 yen.

Trade and Communication.—Chosen's imports in 1939 were 1,388,448,284 yen; exports were 1,006,793,785 yen. For nine months of 1940 (after which period figures were no longer published) imports were 1,176,120,813 yen; exports, 700,848,030 yen. Chosen in 1939 had 27,887 km. of roads, in 1940 had 4,293 km. of government railways, 1,815 km. of private railways. There were 738 steamships of a total of 106,712 tons and 1,125 sailing ships, of a total of 45,431 tons in Chosen in Dec. 1939. The length of telegraph and telephone lines in 1941 was respectively 8,863 km. and 11,115 km.

Agriculture, Manufacturing, Mineral Production.—Chosen is predominantly an agricultural country, with rice as the principal crop. The rice crop was 106,775,869 bu. in 1940. There were 1,705,000 cattle, 1,400,000 pigs, 51,000 horses and 20,000 sheep in Chosen in 1939. Principal other agricultural products are barley, millet, apples, rye and soybeans. Industries have developed, especially under the influence of Japan's forced military industrialization. The chemical industry in 1942 was the most important, followed by cotton and rayon, foodstuffs, cement, paper and pottery. Gold, iron, coal, wolfram and mica are important mineral resources. (W. H. Ch.)

Christian X (1870–), king of Denmark, K.G., of whom a biographical account will be found in *Encyclopædia Britannica,* nephew of Queen Alexandra of Great Britain, succeeded his father, Frederick VIII, in 1912. Despite protracted illness in 1942, King Christian still showed the nazi overlords the curt dignity of his independent spirit. During one of the repeated crises when the Germans were insisting on anti-Jewish laws in Denmark, the King and his entourage attended service in a synagogue. To Hitler's flowery birthday greetings on Sept. 26, 1942, the King's 72nd, he replied with only a blunt four-word telegram: "Thank you. Christian, Rex." Similarly precise, he rejected the German demand for the arming of Danish merchant vessels. On Oct. 19, 1942, he fell from his horse and was seriously injured; pneumonia set in, and not until Nov. 22 could he leave the hospital. (*See* also DENMARK.) (F. D. S.)

Christian Science. In 1942, the Wartime Activities of the Church of Christ, Scientist, or Christian Science denomination have been extended, particularly by the appointment of Christian Science Wartime Ministers. At present (January 1943), there are twelve Christian Science Chaplains, appointed, instructed, and paid by the United States Government, over one hundred Christian Science Wartime Ministers, employed, instructed, and paid by the Christian Science Mother Church, and about one hundred fifty Christian Science Wartime Workers, civilians who have volunteered for this service.

The Christian Science Wartime Ministers render a service to officers and men in the armed forces of the United States which could be rendered only by a Christian Scientist as a Chaplain or a Wartime Minister duly instructed for the practice of Christian Science. They conduct Christian Science services, respond to calls for Christian Science help or healing, provide Christian Science literature, arrange for Christian Science lectures, and are available twenty-four hours a day to help the servicemen who may wish to call on them, particularly those desiring Christian Science help or healing. The volunteer Christian Science Wartime Workers minister to the spiritual needs of Christian Scientists and others in the forces who turn to them for the friendly encouragement and practical help which these Workers are prepared to give.

Christian Science Wartime Activities are directed by The Christian Science Board of Directors and financed through The Mother Church's Wartime Fund, which is maintained by voluntary contributions.

Registered under the United States Neutrality Act, the Christian Science War Relief Committee, aided by numerous local committees and by four shipping depots, obtained and shipped to distribution committees in European countries, principally Great Britain, 9,811 cases, containing approximately 1,962,200 garments having an estimated value of $1,457,517. These figures represent shipments to December 1, 1942.

Early in 1942, the editors of *The Christian Science Monitor,* an international daily newspaper issued by The Christian Science Publishing Society, established a Peace Department and provided a Peace Aims Editor. The importance and prominence of the part played by this newspaper in international affairs was attested by the award of the Maria Moors Cabot Plaque, by the Trustees of Columbia University, for promoting understanding and friendship in the Western Hemisphere. This was the first time a North American newspaper received this recognition. (C. P. S.)

Christian Unity. Advanced action by agencies of organized interchurch co-operation was especially marked in the United States. The Federal Council of Churches and the Home Missions Council of North America adopted radical proposals looking toward the review of the church situation, community by community, throughout the nation for the purpose of eliminating duplications of organization by mutual agreement among denominations. In Canada the three major co-operative agencies of the churches united in the employment of a single general secretary with a view to the probable development of a Canadian Council of Churches. Eight major national interchurch agencies held joint sessions in Dec. 1942 and several of the more influential ones approved a plan for the merger of all eight in an inclusive North American Council of Churches. The most important group of war emergency agencies of the churches was earlier co-ordinated under a directing organization. Under the pressure of war emergency, the Lutheran Missouri synod, which had previously held aloof from joint action on account of its doctrinal position, agreed to co-operate "in externals" with other Lutheran churches.

In permanent co-operative organization the most important advance was the organization of the British Council of Churches, merging three already existing partial councils. Several South American and Caribbean countries established National Christian councils. The Federal Council of Churches of Christ in America gained additional strength by the adherence of the Church of the Brethren and the Ukrainian Orthodox Church.

Authorized conversations or formal negotiations between churches for organic union developed in a considerable number of cases. In the United States the Congregational Christian and Evangelical and Reformed Churches formally instituted conversations looking toward corporate union and set forth a preliminary plan. The official negotiators of the Protestant Episcopal and Presbyterian Church, U.S.A., issued a "Basic Elements plan" attempting to cover fundamental issues involved in the proposed organic union of the two bodies. Negotiations for reunion between the Presbyterian Churches U.S.A. and U.S. (Northern and Southern) continued hopefully, and the United Brethren and the Evangelical Churches announced the completion of a plan of union now to be submitted for formal action by the respective bodies. The United Lutheran and American Lutheran Churches agreed to "pulpit and altar fellowship," indicating the religious equality of the two bodies and laying grounds for intimate co-operation though not constituting corporate unity. Leading jurisdictions of the Orthodox Churches in North America also agreed to a plan of federation on the basis of their already existing identical doctrine and worship. In South India the plan of union, involving churches of Anglican, Congregational, Methodist and Presbyterian origins, was furthered by the withdrawal of objections to certain points of the United Church scheme. The North India plan of union (including a narrower range of churches) also made progress through mutual concessions and preliminary action. In South Africa the Presbyterian Church sent down to the presbyteries for consideration a plan of union with the Congregational churches.

The only cases of corporate union actually consummated during the year were those of the United Church of Christ in Japan, where bodies which had previously resisted union apparently were forced into it by governmental pressure; and of churches in central and north China, where a considerable group was also forced into union under Japanese insistence as part of the "New Order in Asia."

The war situation prevented the holding of a world assembly o consummate the organization of the World Council of Churches o which 77 bodies had voted adherence. Additional bodies so oting during 1942 were the Methodist Church of Brazil and the nglican Church of New Zealand. Active visitation by oecumenical eaders back and forth across the Atlantic continued throughout he year and the several international oecumenical study commisions issued various interim reports indicating substantial progress. he Report of the American Section of the Faith and Order ommission on Intercommunion indicated that many churches till found it impossible to allow free intercommunion in the ord's Supper in advance of further achievement of unity on other oints. (*See* also RELIGION.) (H. P. D.)

hromite. Although statistics for 1941 were not published for any important producer, it may be assumed hat wherever possible production was pushed to as high a level s possible. The normal supply to the United Nations was reduced y the loss of Greece, Yugoslavia and the Philippines, and shipnents were hampered from other sources of supply, especially urkey, India and New Caledonia. While the potential supply ost to the axis amounted to about one-quarter of the world output, the actual output which the axis might have been able to ecure was probably materially less, but there was no information n the conditions in which the mines were left when surrendered.

World Production of Chromite
(Metric tons)

	1929	1937	1938	1939	1940
Cuba	53,799	94,592	40,200	67,100	52,800
Greece	24,214	52,600	42,500	55,000?	?
India	50,361	63,300	44,800	?	?
Japan	9,163	?	?	?	?
New Caledonia	52,594	48,022	52,200	52,000	55,800
Philippines . .	—	69,856	66,900	126,700	194,400
South Africa .	63,974	168,600	176,600	150,000	163,600
So. Rhodesia .	265,909	275,617	186,000	139,100	300,000?
Turkey . . .	16,178	192,508	213,600	191,600	110,000
U. S. S. R. . .	52,889	?	?	?	?
Yugoslavia . .	43,022	59,932	58,500	59,500	?
Total .	635,200	1,300,000?	1,050,000?	1,150,000?	1,250,000?

Production in the United States was negligible, up to 1941, and hough efforts were being made to foster the domestic output, it vas doubtful that the 1941 output amounted to more than about % of the consumption. The 1942 output was expected to be of he order of 65,000–70,000 tons, or possibly 8% of the demand; 1918 the domestic production was 44% of the supply, but it vas extremely doubtful if this proportion could be attained with demand that increased in a ratio of 6 to 1, but the tonnage was xpected to surpass the 82,400 tons produced in 1918. Large low rade deposits were being developed in Montana, California and regon, but progress was slow, and in the meantime demand was ncreasing at an unparalleled rate. Imports in 1940 were 657,689 ong tons, and in the first nine months of 1941 rose to 660,936 ons. Essential requirements for 1943 were expected to be about ,000,000 tons, of which not more than 3% would be allotted for ivilian use. (G. A. Ro.)

hronology: *see* CALENDAR OF EVENTS, 1942, PAGES 1–16.

hurchill, Winston Leonard Spencer (1874–), British statesnan, was born at Blenheim palace, Oxfordshire, England, on ov. 30, the elder son of Lord Randolph Churchill and Jennie, aughter of Leonard Jerome of New York city. For his biography nd his political career during World War I, see *Encyclopædia ritannica.*

The outbreak of war on Sept. 3, 1939, was the occasion for Churchill's re-entry into the cabinet in his old office of first lord of the admiralty. On May 10, 1940, when the German drive on France began, Chamberlain resigned and Churchill became prime minister. Churchill emerged as a fighting leader and on June 4, 1940, after the evacuation of Dunkirk, he promised that Britain would fight on alone "whatever the cost may be." During the years 1940–42, Churchill's public addresses and reports to parliament never attempted to disguise the gravity of Britain's danger. His conduct of relations with the U.S. was both diplomatic and straightforward. Equally frank were his statements regarding the U.S.S.R. and Japan. When Germany invaded Russia in June 1941, Churchill promised help to the Russians, yet he refused to modify his opposition to communism in its political sphere. Adamant toward Japanese plans for a "new order" in eastern Asia, he twice warned Tokyo in late 1941 that Great Britain would declare war immediately if Japan attacked the U.S. This promise he fulfilled Dec. 8. Two weeks later he visited President Roosevelt in Washington and on Dec. 26, he addressed a joint session of the U.S. congress, the first British prime minister in history to do so.

Although his government was rocked by the reverses in Burma and Malaya in the first months of 1942, he overwhelmed his critics with eloquence and parliamentary adroitness and on Jan. 29, 1942, won a 464–to–1 vote of confidence. After Singapore fell, however, he reorganized his cabinet (Feb. 22), dropping the ministers branded as "incompetents" by the opposition. On June 27, during his second trip to Washington, Churchill and Roosevelt jointly declared that the Allies would open military operations to divert nazi strength from the U.S.S.R. He conferred with Stalin in Moscow on these proposals in Aug. 1942. The U.S. landings in North Africa and the offensive in Egypt were the fruition of these plans. To critics who charged that Britain was merely in the war to preserve her empire, Churchill bluntly replied on Nov. 10, 1942, that "we mean to hold our own," and that he did not intend to "preside over the liquidation of the British empire." He warned the Italians, in a broadcast, Nov. 29, to sue for peace or suffer "prolonged and shattering air attacks."

Church Membership. The last *Yearbook of American Churches,* compiled under the auspices of the Federal Council of Churches of Christ in America, was published in 1941; and the next was expected to be issued in July 1943. In the absence of any official compilation in 1942, the figures on p. 186 were taken from the 1941 *Yearbook.* The "inclusive membership" column in this report gives the official records of the church bodies listed, based on their own reports. The "13 years or over" column is given for use in comparisons and discussions of the relative numerical standing of the churches reported.

These figures show that about one-half of the total population of the United States (over 49%), and approximately 60% of the population 13 years of age or over, were reported as church members. Of these, 97.4% were within the 52 religious bodies each having more than 50,000 members; the remaining 2.6% were in 198 smaller bodies.

Between 1930 and 1940 the population of the continental United States increased 7.2%; the officially reported church membership increased 7.86%. The 1936 Census of Religious Bodies was incomplete and unsatisfactory for some denominations, on account of the refusal of many ministers in these denominations to co-operate. The main differences were in the figures for the Southern Baptist Convention, the Methodist Episcopal and the Methodist Episcopal South, which reported only

Church Membership in the United States in 1940*

Body	Churches	Inclusive Membership	13 Years or Over
African M. E.	7,115	650,000	581,750
African M. E. Zion	2,252	414,244	332,376
American Baptist Association	1,064	115,022	93,955
American Lutheran	2,028	560,940	393,807
Assemblies of God	3,930	198,834	198,834
Augustana Lutheran	1,189	340,171	258,500
Brethren (Dunkers)	1,017	176,908	163,133
Christian Reformed	298	121,755	80,358
Churches of Christ	3,815	309,551	309,551
Church of Christ, Scientist	2,113	268,915	268,915
Church of God (Anderson, Ind.)	1,428	74,497	62,727
Church of God (Cleveland, Tenn.)	1,602	63,216	61,320
Church of Jesus Christ of Latter-Day Saints	1,499	724,401	512,028
Church of Jesus Christ of Latter-Day Saints (Reorganized)	570	106,554	98,700
Church of Nazarene	2,612	165,532	154,607
Colored M. E.	4,000	365,000	315,000
Congregational Christian	6,041	1,049,575	1,022,287
Cumberland Presbyterian	1,082	73,357	62,353
Disciples of Christ	7,974	1,658,966	1,537,862
Evangelical	2,010	244,278	232,065
Evangelical and Reformed	2,861	658,571	591,455
Free Will Baptist	1,102	118,871	117,130
Friends (Orthodox)	600	68,000	55,750
Mennonite	495	51,304	49,663
Methodist	42,139	7,377,487	6,706,136
Missouri Lutheran	4,205	1,277,097	912,729
National Baptist Convention	24,575	4,046,840	3,654,501
National Baptist Ev. Assembly	176	55,897	49,749
Northern Baptist	7,478	1,543,976	1,463,689
Norwegian Lutheran	2,526	536,073	370,962
Presbyterian, U.S. (South)	3,487	532,135	494,886
Presbyterian, U.S.A.	8,619	1,971,364	1,892,510
Primitive Baptist	1,726	69,157	68,881
Protestant Episcopal	7,074	1,996,434	1,420,171
Reformed Church in America	723	163,135	153,510
Salvation Army	1,647	238,357	104,876
Seventh Day Adventists	2,565	176,218	171,518
Southern Baptist	25,018	4,949,174	4,662,122
Unitarian	380	63,745	63,745
United Brethren	2,809	421,689	377,388
United Lutheran	3,750	1,611,778	1,192,716
United Presbyterian	853	187,470	180,622
Universalist	508	51,489	50,408
Wisconsin Lutheran	807	256,007	177,402
Totals	199,644	36,040,618	31,674,726
Eastern Orthodox Churches	809	735,440	553,356
Jewish Congregations	3,728	4,641,184	3,341,652
Old Catholic Churches	93	25,909	20,803
Polish National Catholic	118	63,366	47,921
Roman Catholic	18,733	21,284,455	15,252,639
198 Smaller Religious Bodies	21,194	1,710,622	1,514,562
Totals	244,319	64,501,594	52,405,659

*Continental United States only.

43,618 churches to the 1936 census, while their own official statistics for the same year reported 65,267 churches. An analysis of the causes of this non-co-operation is found in the 1941 *Yearbook of American Churches* pp. 139–41. (*See* also CHRISTIAN UNITY.) (L. A. WE.)

Church of England.

The year 1942 was an encouraging one in ecclesiastical history. The King again called his peoples to prayer on March 29 and September 3. The first day was widely observed, and September 3 was marked by a wonderful response. The year saw further expansion of the war-time work of the Church and notably of the services rendered to the troops and to suffering civilians by the Church army. The Church continued to respond to the calls for more chaplains for the expanding armed forces. By Sept. 1942, the casualties among Church of England chaplains were 91 out of a total casualty list of 168 for all denominations. The figures were: killed, 11 (out of a total of 24); wounded, 16 (out of 20); prisoners, 64 (out of 124). The work of the chaplains was assisted by the appointment of women workers. The Church suffered further irreparable damage by enemy action, especially in the raids on Canterbury, York, Bath, Exeter (where there was a direct hit on the historic cathedral) and Norwich.

A more advanced Church education policy was planned during the year and there was a further growth of national interest in religious education. There were remarkable developments in Christian co-operation for this and other objects, including evangelism through "Religion and Life" weeks. A British Council of Churches was formed in September, and a Council of Christians and Jews was announced on October 1. Several steps were taken to develop the growing fellowship with the orthodox churches; and co-operation for large social and other aims between the Church of England, the Roman Catholic Church and the Free Churches was formally launched at a meeting in which the archbishop of Canterbury, the cardinal archbishop of Westminster and the Free Church leaders were associated. In January Dr. Cosmo Gordon Lang announced his resignation of the archbishopric of Canterbury, in order that the planning of the post-war Lambeth conference and the shaping of post-war policy and reconstruction might be in the hands of a younger man. He was succeeded by Dr. William Temple (*see* CANTERBURY, ARCHBISHOP OF), who in turn was succeeded as archbishop of York (*q.v.*) by the bishop of Winchester, Dr. C. F. Garbett.

WILLIAM TEMPLE was enthroned as 96th archbishop of Canterbury April 23, 1942

Among other events must be mentioned the presentation to the Church assembly of a scheme for reorganizing the parochial system in "ecclesiastical reorganization areas"; the interim report of the archbishops' commission on training for the ministry, presaging longer study and higher standards; the conclusion by the Ca edral commissioners of their reorganization of the cathedral stem; the growth and reorganization of youth work; and the pointment of Church assembly commissions to consider finan- al needs and episcopal incomes. The diocese of Oxford cele- ated its 4th centenary.

In the wider field of the Anglican communion as a whole, sym- thy went out to the sufferings and losses of the dioceses, mission ations and chaplaincies which were in enemy occupation, nether in the Far East (such as the dioceses of Rangoon and of ctoria, Hongkong) or in Europe. A centenary was celebrated June by the see of Gibraltar, which includes Malta as well as e Anglican chaplaincies in the Mediterranean area. A notable bilee was that of the medical missions of the Church Missionary ciety. Developments furthering the cause of Christian re-union cluded progress with the scheme for re-union in South India; d within the Anglican communion itself, new machinery was set to promote closer co-operation both at home and abroad be- een the Church of England and the American Episcopal nurch. (Ro. Sto.)

hurch Reunion: *see* Christian Unity; Religion.
igars and Cigarettes: *see* Tobacco.
inema Industry: *see* Motion Pictures.
.I.O.: *see* Congress of Industrial Organizations.
itrus Fruits: *see* Grapefruit; Lemons and Limes; Oranges.
ity Government: *see* Municipal Government.
ivil Aeronautics Administration: *see* Airports and Fly- g Fields.
ivil Air Patrol: *see* Aviation, Civil; Civilian Defense.

ivilian Conservation Corps.

The Civilian Conservation corps program, which d been functioning as an agency for the employment and aining of young men and the advancement of conservation pro- ams since April 5, 1933, was brought to a close in 1942. Over e years it had operated, the corps expended about $2,890,- 0,000; employed 3,500,000 persons; gave work and health aining to 2,750,000 young men and several hundred thousand ar veterans, Indians and territorials, and completed conserva- on work of an estimated current and future value of close to ,000,000,000.

The beginning of the war, which enormously increased employ- ent for everyone, including the unemployed young men who ormally would have been eligible for the CCC camps, brought out the closing of the CCC. On June 30, 1942, when corps rength dropped to about 60,000, congress voted to end the CCC d set aside $8,000,000 for liquidation purposes. On Dec. 15 uidation was about complete. All enrollees had been dis- arged, equipment valued at $125,000,000 had been or was in ocess of transfer to the war department, the navy department d the Civil Aeronautics administration, and most of the admin- rative organization had been transferred to other employment.

The materials made surplus by closing the CCC were eagerly ught because of their usefulness in the conduct of the war. rplus graders, tractors, trucks, bulldozers and other heavy uipment were sent to Alaska and used in the construction of e Alaska highway. Thousands of tractors, trucks and graders ent to the war department and were absorbed by the army. mps were used by the Maritime commission for school pur- ses. Scores of camps were assigned to Selective Service for using conscientious objectors. Many were transferred to other encies for use as quarantine centres for prostitutes. All but out 100 camps had been transferred by Dec. 15.

In its last year the corps devoted its energies primarily to train- young men for national service in the armed forces or in war production. Under this program, 200 camps were assigned to military areas where enrollees built roads, bridges, trails, telephone lines of communication, bombproof shelters for men and for planes, and developed a wide variety of training aids.

The corps planted about 3,000,000,000 trees, the bulk on unproductive lands. All told, about 3,000,000 ac. of devastated lands were brought into tree production. The corps worked on erosion control projects and on drainage ditch development, affecting more than 40,000,000 ac. It spent almost 7,000,000 man-days fighting forest fires, aided the wild life population by developing refuges, improved grazing conditions on the public domain, and advanced conservation generally by from 25 to 40 years. (*See* also Veterans Administration.) (J. J. McE.)

Civilian Defense.

Civilian defense in the United States during 1942 was concerned chiefly with the fulfillment of the four principal demands made upon it by the president's executive order which created the Office of Civilian Defense on May 20, 1941. These were:

1. To serve as the centre for the co-ordination of federal civilian defense activities involving relationships between the federal government and state and local governments.
2. To study and plan measures designed to afford adequate protection of life and property in the event of emergency.
3. To promote activities designed to sustain the national morale and to provide opportunities for constructive civilian participation in the defense program.
4. To maintain a clearinghouse of information on state and local defense activities in co-operation with appropriate federal departments and agencies.

Regional Offices of Civilian Defense, directly responsible to the United States Office, had been set up in the nine army corps areas before Dec. 7, 1941. State defense councils also had been established by this date, and, through them, numerous local defense councils, so that the president's first requirement had been met by the time of the attack on Pearl Harbor. Civilian defense had the skeletal organization needed to give direction and purpose to the actions of the thousands of volunteers who asked themselves on that historic Sunday, "How can I help?"

The prime necessity was clearly for "adequate protection of life and property in the event of an emergency," such as that which had struck at Pearl Harbor. Thousands of additional volunteers throughout the United States were enrolled for training as air-raid wardens, auxiliary police, auxiliary firemen, drivers, nurses' aides, and members of repair, rescue, and demolition units of the protective services already outlined by the United States OCD. The Office furnished local councils with complete programs of training for each of the 17 different units recommended for full protection against attack by enemy bombing. The biggest civilian protection news in 1942 was the appropriation by congress of $100,000,000 for use by the OCD. Most of this sum was being spent on fire-fighting equipment which the OCD distributed to local councils as fast as it came from the manufacturers. The cities marked by location or by the nation's war production chart as strategic areas were first on the priority list for this equipment, which included pumping units of 500-gallon permanent rating, pumping hose and other fire supplies, medical kits, and gas protective devices. With the distribution of nearly $60,000,000 worth of this equipment completed by the end of 1942, and with the training and drilling of over 5,500,000 volunteer workers in fire-fighting methods, the OCD's protective program was better than "under way."

Protection against sabotage was developed by the OCD in co-operation with owners and managers of plants and factories. The job of the Facility Security program, created by executive

AIR-RAID WARDEN demonstrating the uses of a water spray at the Civilian Defense institute of New York city in 1942

order on May 20, 1942, was defined to establish certain minimum standards of security for all plants engaged in vital war production and to see that such standards were observed.

The ordinary peacetime forces protecting U.S. forests from fires had an increased burden under wartime conditions in 1942, not only because timber was needed in war housing and production but also because of the added danger from fires started by sabotage. In accordance with the policy of the Facility Security program, the OCD, in co-operation with the departments of interior and agriculture, state forestry officials and private forest fire protective organizations, established a Forest Fire Fighters service. Trained volunteers, working in units of eight or ten members, safeguarded forest lands and other timber facilities and resources and minimized the effects of any fires that started.

Another very active branch of civilian defense in 1942 was the Civil Air Patrol. Volunteers in this work received no salary —only a per diem allowance for expenses while on active duty and a minimum hourly rental for their planes. Being civilians, they did not have to be within military age limits, so that it was not uncommon to find fliers and ground workers past 50 years of age. Although national in chain of command, the state Wings answered state and local defense requests. The patrol flew in blackout tests and mock air raids; took over disaster relief in flood or tornado areas; searched for lost aircraft; and acted as an aerial home guard. The CAP also went on active duty assignments for the armed forces. This work included the anti-submarine coastal patrol and extended courier-cargo service.

In addition to expanding and perfecting essential emergency protective services for the nation during the first months of 1942, the OCD also enlisted and trained a second great volunteer civilian army to engage in civilian war services. The chief job of these workers was to relieve the shock to U.S. cities of the inevitable dislocations in life caused by the swift change from peacetime to wartime production. Population in many cities and towns had doubled. Doctors and trained nurses by the thousands went into the armed forces until the average community had one-third fewer people in medical work than it had in 1941. Transportation problems were aggravated by the rubber shortage. Juvenile delinquency mounted in crowded areas where school facilities and child care centres were overtaxed or inadequate. The need to send good and sufficient food to the men in the U.S. fighting forces, to the lend-lease nations and to the starved people of the conquered countries, demanded a strictly enforced rationing of commodities. The draft created labour shortages in some agricultural and industrial areas.

The 5,500,000 workers enrolled in the Citizens' Service Corp of Civilian Defense met each problem as it arose in 1942. T protect families from being separated or broken up, and to assur workers of adequate living quarters, they made housing survey to find rooms and apartments for incoming war-labourers. The could not replace trained medical personnel, but they recruite volunteers for training as nurses' aides, made health surveys, an arranged mass immunization programs to protect their communities from disease and epidemic. They formed share-a-ca clubs to save rubber. They took training in child care and established centres for care of children whose mothers were the left free to take jobs in war industry. They served on rationin boards, at recreation centres and in nutrition classes, and the recruited labour for agriculture and industry.

These workers were co-operating with—not duplicating th work of—representatives of other government agencies. Th volunteer office of each local defense council supplied the manpower for the war job that the community had to do, whethe the job was under the direction of the Office of Defense Transportation, the Bureau of Industrial Conservation, or the loc council itself. When the task demanded trained personnel, th customary practice was for the local volunteer office to suppl the raw recruits and the agency requesting the volunteers t give the training needed.

In many communities, local kindergartens or child care centre asked the volunteer office for workers whom the children's agenc trained for the special work. Local hospitals usually trained th nurses' aides, public health officials the volunteers in speci services for public health, and so on. The volunteer office was reservoir of woman and manpower upon which all other government agencies could draw.

Before the truly vital programs of rubber conservation, scra collection, and the rationing of numerous commodities could b effective enough to count in winning the war, they had to hav the enthusiastic support of every family in the nation. The OC did much during 1942 to achieve this goal, having organize civilian defense by region, state, and local community, until som 11,000,000 volunteers were enrolled in 11,000 local counci throughout the country by the end of the year.

In Chicago, where the block plan—designed to reach eve citizen for effective war work—went into operation, 1,000,00 persons were enrolled for civilian services in 1942. In every o of the city's 1,500 blocks, leaders chosen from all occupations an walks of life—retired army officers, college athletes, police captains, businessmen—were obtaining splendid co-operation fro their neighbours. Nine specific civilian war activities, includin salvage, conservation, nutrition and defense savings, were unde way in each block.

Almost everything that civilians could do to help win the wa was carried out through the block plan. Surveys by block leade determined the number of spare rooms available for incomin war workers, the number of children needing day care, and th number of children, mothers, old and sick who would have to b taken care of in case of emergency.

The block leaders also made surveys to find out the numbe of women available for training and placement in war industrie or the number of people available for emergency farm labou and the number able to join in share-a-car plans, when counc committees asked for this information.

In Syracuse, N.Y., within a single week, leaders devoted som 18,386 hours to interviewing 27,500 families. This amount of tim would require a force of 2,398 workmen, each putting in a eight-hour day. If paid for at the rate of 50 cents an hou it would involve a labour cost of $9,193. As a matter of fac these 18,000 hours of volunteer labour cost the defense counc

Syracuse only $28.50—the total cost of mimeographed mate-l, record cards, and miscellaneous other expenditure.

The local defense council through the block plan, reached ery possible source of manpower—women, Negroes, young ople, old people—to do these war jobs. The council was the servoir of human energy upon which the government could call carry out any task which could help speed victory. It was not ly a defensive force; it was the greatest civilian offensive army er organized in U.S. history. (*See* also MUNICIPAL GOVERN-ENT; MUNITIONS OF WAR.) (J. M. Ls.)

Great Britain.—The year 1942 was, on the whole, marked by duced activity so far as the luftwaffe was concerned, though it s notable for the so-called "Baedeker" raids; and for a con-derable amount of daylight raids of the "tip and run" variety.

The main feature of the "Baedeker" raids was a concentration attack on targets having a high fire risk and included towns therto regarded as non-target areas. The Germans also modified eir fire bomb tactics and the type of bombs used, all with the ject of trying to overwhelm the fire guard organization and ake its work more dangerous.

The raids provided valuable lessons and showed how the tactics civil defense needed constant modification to meet and, if ssible, to anticipate the moves of the enemy.

The main developments during the year, therefore, were de-gned to meet the more concentrated types of attack, and one the most important was the setting up of regional mobile lumns. These columns, which were located tactically with regard probable target areas, consisted of a number of whole-time rsonnel, highly trained in rescue, first aid and decontamination, d complete with their own transport and equipment. They were ployed by regional headquarters as required. The personnel re either found from local authorities on a rotational basis, or re permanently stationed at the columns. In the former case ey spent a month at the column at a time. This procedure abled a high standard of training and efficiency to be reached. some columns regional schools in rescue, first aid, etc. were so located.

The fire guard organization was expanded, and included the mpulsory enrolment of women. The training was also greatly eveloped, especially the tactics of fire fighting and the im-rtance of combined action by teams in preventive tactics as ll as actual fire fighting.

A civil defense staff college was started at the beginning of e year and proved very successful. The object of the college as to improve the whole standard of staff work in civil defense d to encourage thought. The courses were open to all those hold-g responsible positions in civil defense, including industrial ncerns and public utility undertakings (*e.g.*, water, gas, elec-icity, railways, etc.); and special courses were arranged to ster close liaison with the military authorities and the home ard.

Women were being used increasingly in civil defense, includ-g the decontamination services, and were proving of the greatest lue. One interesting development which advanced greatly during e year was the housewives' service, for which the Women's oluntary service was mainly responsible. The ultimate object as to have a house or houses earmarked in almost every street th some simple first-aid equipment, and the housewives trained elementary first aid; and to have houses where personal eansing could be carried out in case gas should be used. This heme covered other tasks, such as cooking, etc. and in times heavy bombing or invasion this mutual help service would ove—and indeed did prove—of great value.

The after-raid services were further developed and where ecessary expanded, especially in country districts and areas surrounding possible target towns.

The year showed a steady tightening up of the organization with intensive training and exercises, all with a view to meeting any forms of attack. The benefits of the reorganization of the fire services on a national basis were more than apparent in the raids that were experienced. (*See* also AIR RAID DEFENSE; GREAT BRITAIN.) (E. J. H.)

Civil Liberties.

In 1942 the United States, during its first year of war, pursued without hysteria its historic pattern of expanding civil liberties. The supreme court upheld the right of indigents to migrate from state to state, enunciated the employer's rights of free speech under the National Labor Relations act, voided a Georgia peonage statute and reversed convictions for contempt of court in the *Los Angeles Times* case, thus enlarging the area of criticism.

President Roosevelt, as president and as commander-in-chief of the army, promulgated directives expanding the rights of minorities with reference to the employment of aliens and discriminations on racial grounds in defense industries.

Military censorship was established, and although it took some time to pin-prick the frontiers of military necessities as to news, criticism of the operation of such censorship rested on the shoulders of publishers who evidenced little courage in standing up for the rights of a free press.

Attorney General Biddle enunciated a humane pattern for the treatment of enemy aliens and the handling of the problems of conscientious objectors. A paradoxical position was taken as to removal of Japanese citizens from war zones but this wholesale removal was preferred to the difficulties of individual testings as to loyalty. An inter-departmental board to review discharges of federal employees on grounds of subversive beliefs was established.

The department of justice commenced proceedings against the Associated Press, and the Federal Communications commission was successful before the statutory court in breaking through some of the alleged bottlenecks of the dominant network broadcasting companies. This case was on appeal to the supreme court. Democracy showed its inner security in permitting irritating practices of minority groups, such as Jehovah's Witnesses, despite the fact that large portions of the community objected to such practices.

The motion picture industry continued submission to pressure groups and state boards of censorship, but John Steinbeck successfully contested eliminations by the New York censors from his film *Forgotten Village*. Noel Coward's picture *In Which We Serve* was cut by the Hays censorship office despite England's acceptance of the picture uncut.

The post office department for the first time in its history granted hearings before the banning of newspapers from second-class postal privileges, and the consent of Father Coughlin for the withdrawal of *Social Justice* was carried out in orderly administrative fashion.

In the city of New York, Mayor La Guardia urged the police to use the third degree, took magazines off the newsstands without any legal process, closed various theatrical productions, particularly burlesque, and carried on a course of practices in violation of civil liberties.

Civil rights in connection with labour and trade union activities occasioned no great controversies since an overwhelming proportion of labour relinquished the right to strike during the war. Moreover, the American communist movement, a disturbing element *vis-à-vis* civil liberties, with picket lines at the White House against preparedness, made a complete about-face, when Germany attacked Russia, thus reducing substantially the areas of disturbance.

A decision in Connecticut's highest court declared it illegal for a doctor to prescribe contraceptives even to save the life of his patient. This case was on review in the United States supreme court. (*See* also LAW.) (M. L. E.)

Civil Service. Throughout 1942 the U.S. civil service scene was completely dominated by the conditions and requirements of war. There was a drastic streamlining of policy and procedure in many directions, leading to a very substantial modification of well-established procedures, especially by the U.S. Civil Service commission. Shortages of manpower developed in many areas. In the face of the preoccupations of war, many normal trends were interrupted; for example, Virginia was the only additional state to adopt a state-wide merit system statute.

The scope of government employment increased to a new high during 1942. On June 30, 1941, federal employment was somewhat under 1,500,000. By June 30, 1942, total employment in the executive branch of the federal government had risen to about 2,200,000, and by the end of the calendar year it stood at more than 2,600,000. As in 1941, a considerable proportion of this expansion occurred in the war department, in the navy department, and in those agencies concerned with war activities, for example, the office of price administration. At the end of the year the house of representatives authorized an investigation of the federal service by the Civil Service committee, partly to inquire into the question whether some of the federal agencies had not expanded beyond their actual needs.

Employment in state and local governments continued to remain relatively stable. An inquiry about losses of key personnel in a sample of 6 states, 5 counties, and 11 cities for the six-month period from Jan. 1, 1942, to June 30, 1942, showed that 2,550 key employees had been separated in this interval from a total of 51,000 positions. The separations took place in the following proportions: 1,600 to the military service, 375 to war industry, 125 to federal positions, and 450 others.

During the year, government competed with industry and with the armed forces in a constantly tighter labour market. The needs of the armed services had undisputed priority, as signalized in Nov. 1942 by the order of President Roosevelt terminating all military deferments for federal civilian employees except in cases specifically authorized by him. The rate of turnover in the federal departments was extremely great, and the departments were forced to take advantage of every possible device to make the best use of the personnel available.

An early response by the U.S. Civil Service commission in areas where shortages of personnel appeared was to hold open continuous examinations, as a result of which a person possessing minimum qualifications was examined forthwith and immediately certified for employment. This plan was supplemented in many instances by the abandonment of the normal competitive procedures and by the elimination of much paper work incident to selection and appointment under ordinary circumstances.

Another change in procedure developed in expanding control by the commission over transfers from one agency to another. At the outset there was a tendency to follow the pattern of World War I by making transfers difficult in order to prevent one government agency from "pirating" superior employees of another. This restrictive position quickly became intolerable, and the opposite policy was introduced of facilitating transfers under the general direction of the commission. Subsequently the power of the commission was increased by authorizing it to direct the transfer of a specific employee from one agency to another, even without the approval of the agency in which the employee had been employed. A further significant aspect of civil service development was the establishment of a special section of the examining division to handle the whole field of administration and top management.

Subsequent to March 15, 1942, all appointments in the executive branch of the federal government became war service appointments, terminating six months after the end of the war.

A significant aspect of the trend of decentralizing Washington agencies in 1942 was the formation in November of the first regional personnel office in Chicago, a field counterpart of the Council of Personnel Administration in Washington. The balance between headquarters and the field establishment seemed definitely to be in process of reconstruction.

During the year three states held nation-wide examinations for the position of state personnel director, Wisconsin ($5,000), Connecticut ($7,500), Pennsylvania ($7,000–$9,000). (L. D. W.)

Clark, Mark Wayne (1896–), U.S. army officer, was born May 1 at Madison Barracks, N.Y., where his father, Col. Charles C. Clark, was then stationed. A graduate of West Point in 1917, he saw service on the Western Front in World War I and was wounded in June 1918. After the war, he was stationed with the army of occupation at Coblenz. He was graduated from the Command and General Staff school, 1935, and the Army War college, 1937. In Aug. 1942, he arrived in England to take over command of U.S. ground forces in the European theatre of operations, and in Nov. 1942, he was second in command of the U.S. forces that landed in North Africa. Three weeks before the invasion, General Clark and a group of U.S. officers were secretly landed on a coastal point in French North Africa. They established contact with French officers eager to co-operate with the United States and secured an agreement from these officers not to resist the American landings. He was awarded the Distinguished Service Medal and the Congressional Medal of Honor and promoted to a lieutenant general for this mission. He also headed negotiations with Adm. Jean Darlan for the cessation of all hostilities in Morocco and Algiers.

Clays. There was an increase of 31% in sales of kaolin in the United States in 1941, to 1,087,848 short tons, of which the paper industry used 56%. Although paper was the largest consumer, other types of use showed relatively greater increases in the amounts used. Ball clay sales rose 41% to 198,445 tons, of which 92% went into pottery and tile. Imports of both types of clay declined, since England was the chief source. No information was available on other types of clay. Also, it was to be noted that the greater portion of clay used in industry was used directly by the producer, and not sold, so would not be covered by the figures reported. (G. A. Ro.)

Cleveland. Sixth largest city of the United States, Cleveland, O., had a population of 878,336 by the federal census of 1940. Area, 73.74 sq.mi. Mayor (Jan. 1, 1943): Frank J. Lausche. Cuyahoga county, which includes Cleveland and its major suburbs, had a population (1940) of 1,217,250, which the census bureau estimated had risen to 1,231,000 as of May 1, 1942.

After years of discussion, Cleveland in 1942 closed the deal to buy the Cleveland Railway Co. which operated street car and bus lines on the city's streets under a franchise. City council authorized sale of a $17,500,000 traction bond issue to an investment syndicate April 9, and the transfer was completed April 28. Stockholders were paid $45 a share. Passage at the November election of a municipal charter amendment placed control of the city transit system under a three-man board.

Mayor Lausche completed his cabinet by appointing Frank D elebrezze director of public properties and Dr. Charles T. olezal welfare director. When Eliot Ness resigned as safety irector April 30, he was succeeded by Celebrezze, and Councilan William C. Reed was appointed director of public properties. ouncilman Emil J. Crown was named public utilities director.

Financial problems plagued the city administration. Funds eeded for civilian defense prompted Mayor Lausche to ask in 942 for the largest city budget in years—$16,619,925. Budgetary eeds were increased when the city council voted, over the ayor's veto, to increase salaries in the police and fire divisions the extent of $500,000 a year. The problems multiplied as the oters rejected proposed bond issues of $4,000,000 for bridge epairs and $1,000,000 for modernization of the city hospital the August primary election and a proposed 1.7 mills operating evy at the November election. After the proposed operating levy ad been reduced to 1.3 mills and resubmitted at a special election ec. 22, only to be defeated again, Mayor Lausche planned etrenchments.

The board of education in Dec. 1942 voted to increase the pay f 5,200 employees, including teachers and principals, from 2% to 5%. Lee C. Howley, assistant United States district attorney, as appointed to the board of education to replace Charles A. anik, who resigned to take a navy commission.

Bishop Edward F. Hoban, head of the Catholic diocese of ockford, Ill., was appointed coadjutor to Archbishop Joseph chrembs of the Cleveland Catholic diocese, who had been in health.

A new record for handling iron ore was set by the port of leveland in 1942. More than 14,650,000 gross tons of ore were nloaded before ice halted Great Lakes shipping. That amount xceeded the ore receipts of any other port in the world. Grain hipments received totalled 2,221,690 bu. Shipbuilding was purred by war demands, and the ore carrier "Belle Isle," rgest ship ever built in Cleveland, was launched Nov. 15. Shipards also were building minesweepers and other auxiliary craft or the navy. Industrial plant expansion continued, 521 Cleveland ompanies spending $151,543,830 for that purpose in 1942. An eroplane assembly plant costing in excess of $5,000,000 was nder construction and the $18,000,000 federal aircraft engine boratory at Cleveland airport began operating May 8.

More than 51,000 men had entered the armed services from uyahoga county by the end of 1942. Figures released by the hio headquarters of the Selective Service system showed that 2,814 men had enlisted up to Oct. 1 and 38,287 had been inucted up to Nov. 1. (P. By.)

limate: *see* METEOROLOGY.

lothing Industry.

War, conservation, shortages and priorities dominated the clothing industry in 942. Based on the quartermaster theory of one garment to wear, ne in transit and one in stock, huge numbers of military garhents of every description were contracted for; by rapid converon and in the face of rigid specifications the industry met the equirements of the armed forces' unprecedented demands.

Conservation measures promulgated by the War Production oard (WPB) eliminated many style features on civilian clothing. uffs, pleats, high rises, wide trouser legs, patch pockets, pocket aps, vests with double-breasted coats, long coats and wide sweeps ere forbidden on woollen clothing. Regulations were issued afecting pajamas, shirts and other cotton clothing. The zoot suit as eliminated.

Military demands resulted in the scarcity of many items used in ivilian manufacturing. Combed cotton fabrics, woollen fabrics, will tapes, quality thread, metal trimmings, unbleached pocketing, canvas, etc., became difficult to secure without priorities.

Machinery was quickly put under the priority system by the WPB. At the end of the year with the introduction of the controlled materials plan (CMP), machinery became extremely difficult to procure. Clothing machinery manufacturers converted to direct war work.

The rubber shortage affected raincoats; even military rainwear used synthetics. Consequently civilians turned to water-repellent cotton rainwear.

Military garment innovations were: (1) windproof lightweight fabrics for arctic wear, (2) alpaca pile fabric linings for aeronautical garments, (3) electrically-heated flying suits. The outstanding fact about military garments was that they were primarily special purpose utility clothes—designed and produced to facilitate a particular type of action on the part of the wearer.

At the close of 1942 woollen stocks were high, clothes rationing was hinted at and the civilian consumer was prepared for blended fabrics. The American soldier and sailor would however continue to be the "best dressed in the world."

It was estimated that at the end of 1942 not less than 60% (3,000) of the manufacturers in the entire industry, with a potential of 85% of the unit garment production of the United States, were engaged in varying degree on military or industrial garments and equipage.

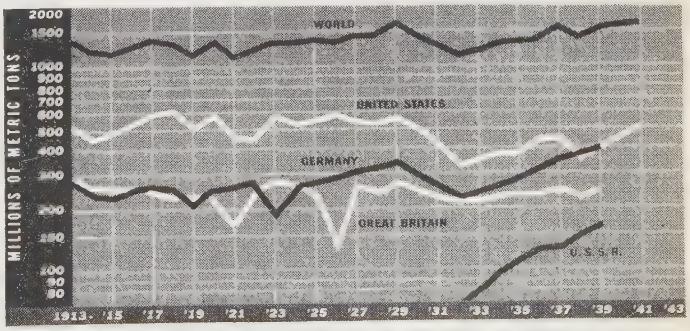
In the first ten months of 1942 total cuttings of men's, youths' and boys' woollen and woollen blend clothing (coats, suits and separate pants) equalled approximately 43,000,000 units; these factories cut and made approximately 15,000,000 military garments (coats, overcoats and pants). During the same period total cuttings in the men's and boys' garment (cotton, leather and allied garments) industry were: overalls and industrials 7,165,000 doz.; work and semidress pants, slacks and shirts 8,106,000 doz.; leather, heavy, oiled, shirt, pajama, wash and miscellaneous garments 23,520,000 doz.; military garments (coats, overcoats and pants) 30,035,000 units; other garments under government contract 4,171,000 doz.

British manufacturers featured "austerity" clothes in 1942 and further cuts in civilian clothing rations were made; as in the United States style was subordinate to conservation. (H. Sn.)

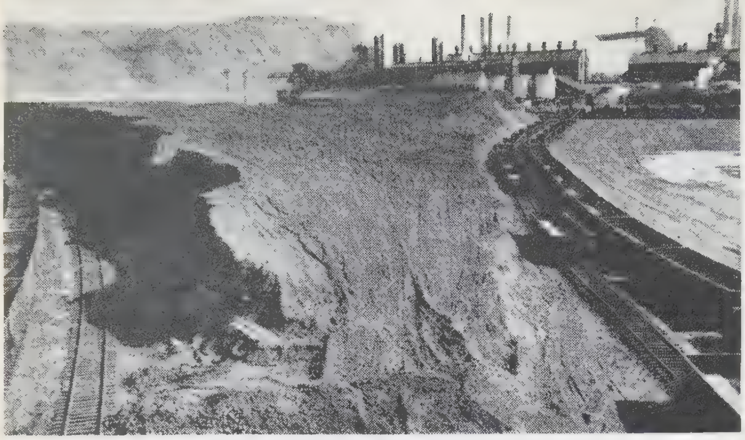
Cloves: *see* SPICES.

Coal.

World Production.—With the distribution of production data held up by war censorship, it was difficult to estimate the total for world coal production after 1939, when it amounted to 1,466,000,000 metric tons. The intense industrial activity required by the war effort greatly increased production in the United States, and possibly to some extent in Great Britain and Germany, the other two largest producers. In other countries there were increases or decreases, as local conditions dictated. To just what extent these changes were offsetting was not known,



COAL PRODUCTION OF THE WORLD and the major producing countries, as compiled by *The Mineral Industry*



COAL RESERVE PILE around steel plants in Pennsylvania. The steel mills consumed record quantities of coal in 1942

but it was estimated that the total output for 1941 was in excess of 1,600,000,000 tons.

Minor Producers.—The three countries mentioned above account for two-thirds or more of the total output, and a large number of minor producers for the remaining third. None of these had an output in 1942 sufficient in size to be of any magnitude in comparison with the world total, but in many cases the limited output was of strategic importance, in that it might add to the resources of the enemy, or might relieve a major producer of the necessity to maintain a supply by export at a time when the fuel might be needed at home, and transportation was difficult.

In Canada the total coal production for 1941 was 18,222,107 short tons, an increase of 4% over 1940, but consumption was 39,499,519 tons, with the remainder supplied from imports. Production during the first 10 months of 1942 was 6% better than the same period of 1941, with a total of 15,485,837 tons, while consumption for this period increased 15% to 36,228,530 tons.

Other western hemisphere outputs in 1941 were 852,000 metric tons in Mexico, 1,404,000 tons in Brazil and 2,040,000 tons in Chile. Consumption in this large area must be supplied by imports, except for these limited outputs.

In Europe Spain had the only continental coal production west of U.S.S.R. that was not directly under axis control, so that the 9,588,000 tons turned out in 1941 had an importance out of proportion to its magnitude. Turkey was another strategic area, with a 1941 output of 3,020,000 tons. Netherlands East Indies, with an output of 1,591,000 tons in 1941, came under Japanese control. No recent figures were received from China, but indications pointed to an increase in output, while in Australia an output estimated at 9,500,000 tons in 1941 was being increased, with hopes of reaching 12,000,000 tons.

Major Producers.—No statistics were published by any of the major producers but the United States, but some inferences could be drawn from prevailing conditions. It seemed likely that Germany had been able to maintain a fairly adequate supply of coal for internal industrial use, and it was presumed also for domestic use, since it had been openly proclaimed that whoever might be cold in Europe, it would not be the Germans. Even if civilian needs in German allied and occupied countries were entirely disregarded, the industrial supply needed in these countries to sustain the aid which Germany demanded from them most certainly suffered to a considerable degree. France and Italy had been both large importers of fuel, from sources no longer available.

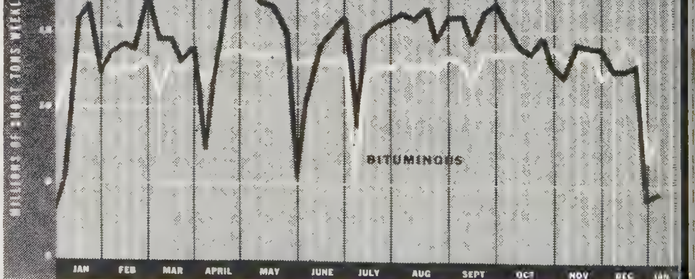
United States.—The total coal production of the United States in 1941 was 567,658,300 short tons, including 511,290,000 tons of bituminous and 56,368,300 tons of anthracite, all increases of approximately 11% over 1940. Work proceeded steadily throughout the year except for the usual vacation periods and a six-weeks' shutdown in April and May while a new bituminous contract was being negotiated, but these delays were sufficient to cut production 10% or more below the level that might otherwise have bee reached. The 1941 bituminous consumption was estimated 480,000,000 tons, up 12% from 1940, while stocks advanced fro 50,958,000 tons on Jan. 1 to 62,737,000 tons on Dec. 31.

Production continued to improve in 1942, the bituminous ou put to the end of November being 525,550,000 tons and anthraci 55,127,000 tons, a total of 580,677,000 tons, while the total f the year was estimated at 632,000,000 tons, an increase of 12 over 1941. Bituminous production was consistently well abo 11,000,000 tons weekly, except for the usual holiday perio and the vacation period in July. The best daily loading w 37,272 cars on May 29, and the best week was 11,620,000 to in the week ending Oct. 31. Consumption through October i creased 11% over the same period of 1941, to a total of 442,908 000 tons, including 354,198,000 tons for industrial use, 85,920,0 tons in retail sales and 2,790,000 tons used as mine fuel. T year-end stocks declined somewhat in January and February, b increased during the remainder of the year, to 89,922,000 to at the end of October, the supply on hand at that time bei equivalent to average consumption for 62 days, against stoc of 40 days at the beginning of the year. As with bituminou anthracite production was well maintained; although the produ tion curve as a whole was somewhat more irregular, the on prominent drops were at the holiday periods, and some of the were markedly less than usual.

Table I.—Coal Production of the World
(Millions of metric tons—all grades)

	1929	1932	1937	1938	1939
Canada	15.87	10.65	14.37	12.97	14.08
United States	552.31	326.19	447.58	358.01	403.28
Belgium	26.93	21.42	29.86	29.58	29.85
Czechoslovakia	29.08	26.82	34.67	26.60	?
France	68.49	57.70	45.33	47.56	51.00
Germany	348.61	227.39	372.70	384.92	430.00
Netherlands	11.74	12.88	14.46	13.66	13.06
Poland	46.31	28.87	36.24	38.11	?
United Kingdom	262.05	212.08	244.27	230.66	236.70
U.S.S.R.	38.42	53.60	127.00	132.89	?
China	?	28.00	?	?	?
India	22.50	20.48	26.09	29.52	28.21
Japan	36.14	28.22	?	?	?
South Africa	13.02	9.92	15.49	16.28	16.89
Australasia	14.88	13.21	18.03	17.87	19.83
Total	1,559.00	1,124.00	1,550.00	1,469.00	1,466.00?

While the estimated total of 632,000,000 tons for 1942 w numerically 7% less than the record high of 1918, in making th comparison it must be remembered that coal demand had unde gone a radical change in that time. In 1918 the fuel equivalent the petroleum production was comparatively small, being less th that of the anthracite production alone, but in 1942 the co equivalent of the petroleum production was equal to 57% of t total coal output, so that after making due allowance for t large proportion of the fuel load that was in 1942 carried b petroleum, the coal output in 1942 was higher with respect to t potential load placed upon the industry than ever before. (S also FUEL BRIQUETTES.)



WEEKLY PRODUCTION of anthracite and of bituminous coal in the Unit States for 1942, as compiled by the U.S. Bureau of Mines

Table II.—*United States Production of Coal*
(Millions of Short Tons)

	1929	1937	1938	1939	1940	1941
labama	17.9	12.4	11.1	12.0	15.2	15.1
olorado	9.9	7.2	5.7	5.9	6.5	6.8
linois	60.7	51.6	41.9	46.5	49.5	53.2
diana	18.3	17.8	14.8	16.7	18.6	22.4
entucky	60.5	47.1	38.5	42.8	48.4	53.0
hio	23.7	25.2	18.6	19.6	22.1	29.5
ennsylvania	143.5	111.0	77.7	92.2	112.9	121.1
ennessee	5.4	5.2	4.5	5.3	6.0	6.7
tah	5.1	3.8	2.9	3.3	3.5	3.9
irginia	12.7	13.8	12.3	13.2	15.0	17.9
est Virginia	138.5	118.6	93.3	107.9	126.3	139.0
yoming	6.7	5.9	5.2	5.4	5.7	6.5
thers	32.1	25.9	22.1	22.3	23.6	26.0
Total Bituminous	535.0	445.5	348.5	393.1	453.2	501.0
nthracite	73.8	51.9	46.1	51.5	50.1	55.5
Grand Total	608.8	497.4	394.6	444.6	503.3	556.5

(G. A. Ro.)

Great Britain.—In 1942 for the first time Great Britain was reatened with a shortage of fuel, and drastic steps were being ken to deal with the crisis.

The facts were that in 1938 the output was 227,000,000 tons, which 46,000,000 were exported and 181,000,000 consumed at me. In the year ending June 1940 the output was 230,000,000; ports (mostly to France) 45,000,000 and home consumption 5,000,000. For the year 1942 the estimated output was 200,- ,000 tons and home consumption over 210,000,000, consump- n having risen sharply for new war factories and the needs of armed forces, increasing demands upon electricity and gas dertakings as well as railways, in spite of a severe curtailment passenger traffic. Munition industries required 25% more coal n in 1940, electricity stations 40% more, gas undertakings % and railways 13%. The drop in production was almost irely due to a shortage of coal-face workers. When France fell d the possibility of an invasion of Britain was fully realized, ousands of miners entered the fighting services. These men, stly between the ages of 18 and 35, were drawn largely from t most virile class, the coal-face worker. Many of these by 42 were on service overseas and to get them back would be ficult and would also take a very long time. Nevertheless some ooo men had been returned to the mines. At the same time average age of mine workers was increasing.

In June the British cabinet, fully realizing the seriousness of position, outlined its proposals for meeting the situation. ese included control by the government over the operation of coal mines, the allocation of the coal raised and the appoint- nt of a responsible minister to exercise this control.

Compulsory rationing of the domestic as well as the industrial nsumer had not been instituted in 1942 but the scheme was dy for launching. Every person was being urged to economize fuel and it might well be that the combination of increased oduction with voluntary economy would succeed in bridging gap between existing production and consumption.

In spite of the war the government persevered with the valua- n of the coal reserves of the country and on July 3, 1942, rchased for £66,500,000 all the unwrought coal amounting to ,000,000,000 tons. (J. A. S. R.)

ast and Geodetic Survey, U. S.

The personnel and facilities of coast and geodetic survey were utilized exclusively in 1942 provide services and products required for the prosecution of war. In order to concentrate on these war needs, activities rmally carried on in areas essential to the advancement of the nmerce of the United States on land and sea were superseded those performed to meet the requirements of the military and val forces.

Hydrographic surveys were made of selected coastal waters in advance of their use by ships of the navy. These waters were sounded by modern survey methods to supply information of benefit for various operations. Channels were found across foul areas to shorten routes and were dragged to permit passage without danger of grounding on uncharted obstructions. Ocean tides, tidal currents and geomagnetic changes were investigated in widely distributed localities. The results of these observations provided navigators with information of vital need. Magnetic observations supplied data on vertical intensity at selected positions for war purposes connected with magnetic mine defense of coastal areas and the degaussing of vessels. The seismographs of the bureau were continued in operation. Records obtained from these and from other sources were studied to determine the nature of earth shocks and to provide data relative to proposed construction of war plants in earthquake regions.

The bureau provided basic geodetic control for the work of several federal agencies engaged in mapping strategic land areas and performed detail topography as part of an extensive war mapping project. For the latter purpose the nine-lens aerial camera of the bureau was utilized extensively for the first time outside the continental limits of the United States.

The production of all nautical and aeronautical charts was about seven times the normal annual issue, although for purposes of security many were placed on a confidential basis and were not made available to the public. War shipping and naval movements were aided by the compilation of special nautical charts and revised printings of coast pilot information. The aeronautical charting program was expanded primarily to meet the training needs for air pilots, and later was extended to cover world areas to provide the U.S. air forces with compiled maps of the best available information in the standard type of United States aeronautical chart.

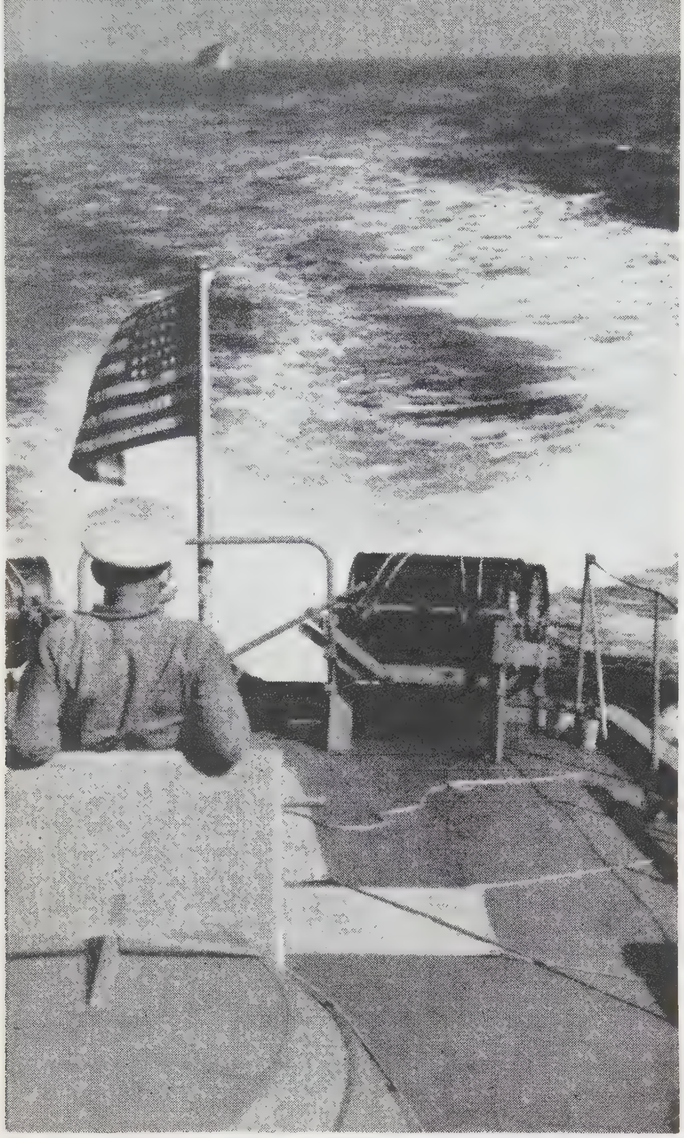
The services of the commissioned officers of the coast and geodetic survey were in demand not only for their normal functions, but for special assignment with the armed forces because of their specialized training and experience. About 40% of these officers were on duty with the army, navy and marine corps at the close of 1942. (L. O. C.)

Coast Guard, U.S.

The year ended June 30, 1942, witnessed the complete transition of the U.S. Coast Guard from its peacetime role as the nation's maritime police, under the treasury department, to its traditional wartime role as a service operating as a part of the navy, effective from Nov. 1, 1942, pursuant to executive order of the president.

The larger cutters and patrol boats, capable of offshore operations, were assigned to the fleet, naval sea frontier or task forces,

U.S. COAST GUARDSMEN rescuing the crew of a grounded navy patrol boat near San Francisco's Golden Gate in July 1942. The men were brought ashore by breeches buoy



COAST GUARD SUB-BUSTER leaving a torpedoed ship (on horizon) off the Atlantic coast in the spring of 1942. After rescuing the survivors, these cutters begin a comprehensive search for the submarine

for convoy, anti-submarine and patrol duty, and aircraft participated in the aerial phase of such duty. The Greenland patrol was made up largely of Coast Guard units. A large force of small motorboats was organized for anti-submarine patrol, for operation under the naval sea frontier forces. One of the peacetime duties of the service in rescuing the shipwrecked found a similar task in war in saving the victims of enemy submarine attacks.

Buoy tenders were engaged in the establishment of mine fields and other anti-submarine defenses. In the development of offshore bases by the navy and for other military operations, large numbers of aids to navigation were provided, in addition to the maintenance of aids to navigation in United States waters. Coast Guard lifeboat stations, light stations and lookout stations supplemented by beach patrols were organized into a co-ordinated observation and protective guard along U.S. coasts.

Additional recruit and training stations were established to meet the demands for personnel for increased duties of the service, for providing landing-boat crews for amphibious forces and for manning of transports and naval auxiliaries.

The Coast Guard academy course was reduced to three years to increase the flow of regular commissioned officers, and a four-months course was instituted for the continuous training of large classes of reserve officers. The Coast Guard reserve was recruited to the maximum strength of training facilities and accommodations, and a strong force of motorboats affiliated with the Coast Guard auxiliary was utilized in assisting in service operations.

Icebreaking operations were carried on upon an expanded sca to insure the maximum utilization of U.S. navigable waterwa in the transportation of iron ore and other essential commoditi in the prosecution of the war. The personnel and certain functio of the bureau of marine inspection and navigation, department commerce, were transferred to the Coast Guard in the expediti of the prosecution of the war effort. Safety equipment aboa merchant vessels, the welfare of the seamen and the utilizati of merchant marine manpower were furthered in every possib manner to meet wartime conditions and requirements; and intensive program of familiarizing the seamen with fire-fightin lifesaving and safety equipment and its operation was carried o

In addition to enforcement of the law and regulations gover ing the anchorage and movements of vessels in navigable wate and supervision over the handling of explosives and other dange ous cargo aboard vessels, the Coast Guard was made responsib for the safeguarding of vessels, harbours, ports and waterfro facilities against destruction, loss, injury from sabotage and oth subversive acts, accidents or other causes; protection was pr vided for important bridges over navigable waters, for canals, ar dams. The nation's largest fireboat organization was establishe and in the interest of the security of the huge supplies of wa materials moving by vessels through U.S. ports, more than million identification cards were issued to officials and employee

Additional buildings, two shipways and one drydock were co structed at the Coast Guard yard, Curtis Bay, Md., and amon the ship and shore projects under way were 4 major trainin stations, 8 major radio stations, 4 large icebreakers, 13 cruisin cutters, 14 tender-class cutters, 6 river tenders, 9 harbour cutte and 1 ice plow.

The strength of Coast Guard personnel and material resourc reached an all-time peak in its history, and service activities combatant war operations and in protective measures for t safety of shipping, property and life were on an unprecedent scale. (R. R. W.)

Coast Guard Academy, U.S.: *see* COAST GUARD, U.S.

Cobalt. While there is a small amount of by-product cob recovered in the United States, the bulk of the supp has been imported as ore from Canada, Chile or Australia, or metal from Belgium or Canada; after 1940 the Belgian Cong residues were shipped to the United States for treatment, inste of Belgium, so that these and Canadian ores were almost t entire source of supply. The total imports in 1940 were equivale to about 2,000 short tons of metal and apparently increase somewhat in 1941. (G. A. Ro.)

Cochin-China: *see* FRENCH COLONIAL EMPIRE.

Cocoa (CACAO). The production of cocoa represents the lar est native industry that has been developed on o continent, Africa. French West Africa produces about 50,000 to of cocoa annually, principally from the Ivory Coast, and in 19 supplied the axis countries with at least 41,000 tons of coco U.S. official reports asserted, indicating a situation that w changed in 1942 by the U.S.-British expeditionary force to Fren Africa. Overproduction continued in 1942 in British West Afri as a result of restricted markets and shipping. The cocoa cr there is about 40,000 tons annually. After the outbreak of Wor War II the British government bought the entire annual crop, su taining a loss of £263,000 thereby in 1940, but making a profit £1,300,000 in 1941. This sum was ear-marked as a further cus ion for the British African cocoa industry but was reported have been probably wiped out by the necessity for buying ar stroying a large part of the 1942 crop. Typical of conditions of e cocoa industry in the western hemisphere was the practice opted in 1942 in the Dominican Republic, where a large part the crop was fumigated and specially prepared to stand a long riod of storage, awaiting available shipping. The Dominican epublic exported 14,181,609 kg. of cocoa the first seven months 1942, compared with 11,043,755 kg. in the same period of 41. Stocks on hand at Bahia, Brazil, in Oct. 1942, were 381,488 gs (60 kg. to the bag), compared with 142,150 bags in Oct. 41. Costa Rica exported 49,444 kg. in Sept. 1942, a drop of ,989 kg. from the exports of Sept. 1941. Grenada exported 57,-2 cwt. from Jan. 1 to Aug. 31, 1942, compared with 51,403 t. in the same period in 1941. (S. O. R.)

oco-Nuts.

Honduras is the only country in Central America where coco-nuts are a chief agricultural product. onsequently, when supplies of coco-nut oil, copra and copra eal were cut off from the Philippines and the Netherlands East dies by Japanese occupation, attention was directed to pos-bilities of expanded production in Honduras. Before World War , the British West Indies normally exported about $690,000 coco-nut products, but coco-nut culture was subordinate to her production—sugar, bananas, coffee and cocoa. Honduras oduced about 10,000,000 coco-nuts annually, but was reported 1942 to have a potential output of 17,000,000. As the ripening riod, September, October and November, coincides with the iny season, production of sun-dried copra had not proved prac-able. Honduras had not, therefore, developed coco-nut oil for port, but instead shipped coco-nuts to the United States to eet the continually increasing demand at Thanksgiving and ristmas time. About 5,000 coco-nuts are required to produce 000 lb. of copra, which, adequately treated with modern ma-inery, yields 1,200 lb. of oil and 800 lb. of copra meal. About 0 lb. of coco-nut carbon may be obtained from 5,000 nuts. (*See* o VEGETABLE OILS AND ANIMAL FATS.) (S. O. R.)

offee.

Scarcity of available ocean shipping exercised more drastic control over the coffee supply in 1942 than d the system of co-operative quota exports adopted in 1941 by e United States and the 14 American coffee-exporting countries. a result, coffee rationing was put in force in the United States Dec. 1942, with household consumption being restricted to 1 lb. r person every five weeks, purchases being regulated by the ue of official coupons.

During 1942 coffee continued to pile up in ports of exporting untries and on Oct. 31, 1942, amounted to 1,752,154 bags (60 . to the bag) at principal Brazilian ports, compared with 1,272,-6 bags at the same ports Oct. 31, 1941. Normally, Brazil pro-ces enough coffee in one year to supply the entire world for 14 onths. Brazil, however, had for years followed a policy of de-roying surplus coffee to prevent market gluts and between 1931 d Sept. 15, 1942, had destroyed 76,235,865 bags. Between Sept. and 15, 1942, such destruction totalled 150,728 bags. Un-icial estimates placed the crop in Brazil at 5,000,000 to 6,000,-0 bags. Freezes in July and August in São Paulo and Parana used much damage to the crop. Brazilian coffee exports in Sept. 42 were 495,642 bags compared with 777,106 bags the same onth in 1941.

The 1942–43 crop in El Salvador was reported as 850,000 bags, which about 250,000 bags had been sold abroad, as compared normal exports approximating 500,000 bags. The 1942–43 crop Ecuador was expected to be about 200,000 quintals (101.4 lb. r quintal), about one-third under normal production. Peru ex-rted 273 metric tons the first six months of 1942 compared with 2 tons the first six months in 1941. The quantity available for export from the 1942–43 crop in Peru was estimated at 43,000 metric quintals of 220.46 lb. each. The Costa Rican crop was estimated as between 555,000 and 600,000 quintals. Exports from Costa Rica in Oct. 1942 were 15,981 bags of 60 kg. each, compared with 18,298 bags in Oct. 1941. Haiti had the unusual experience of exporting more coffee in the fiscal year ending Sept. 30, 1942, than in the preceding year. Such exports in 1942 were 349,253 bags valued at $3,976,274, compared with 329,850 bags valued at $2,083,999 in 1941.

Prices to growers throughout the coffee-producing areas were substantially higher in 1942 than in 1941. By decree of Oct. 2, 1942, all coffee export contracts in the republic of Haiti had to be approved by the National bank, to restrain exporters from depressing prices of Haitian coffee abroad. Exports of coffee from the Ivory Coast constituted 97% of all coffee exports from the seven colonies comprising the federation known as French West Africa. Such exports amounted to 185,707 metric quintals in 1941. No figures were available for 1942. A decree of Aug. 13, 1942, forbade shipment of all coffee waste from the Ivory Coast, indicating that coffee had been added to the list of commodities whose consumption had been curtailed for the benefit of France.

Chicory.—Scarcity and rationing of coffee in the United States revived interest in chicory, the product most frequently used as an adulterant of coffee. The U.S. census of 1940 showed an annual production of 44,122,925 lb. Of this, 44,106,725 lb. were produced in Michigan, although chicory is grown in many states, particularly in areas suitable to sugar beets. In some communities, notably New Orleans, there is a preference for coffee containing chicory. Per capita imports of coffee into the United States, for persons 15 years old or over, increased from 12.6 lb. in 1900 to 17.4 lb. in 1940. Reports in the trade indicated the supply of coffee on hand in the United States Jan. 1, 1943, as about 1,000,000 bags. The normal annual U.S. consumption is approximately 14,000,000 bags. (*See* also BRAZIL; GUATEMALA; RATIONING.) (S. O. R.)

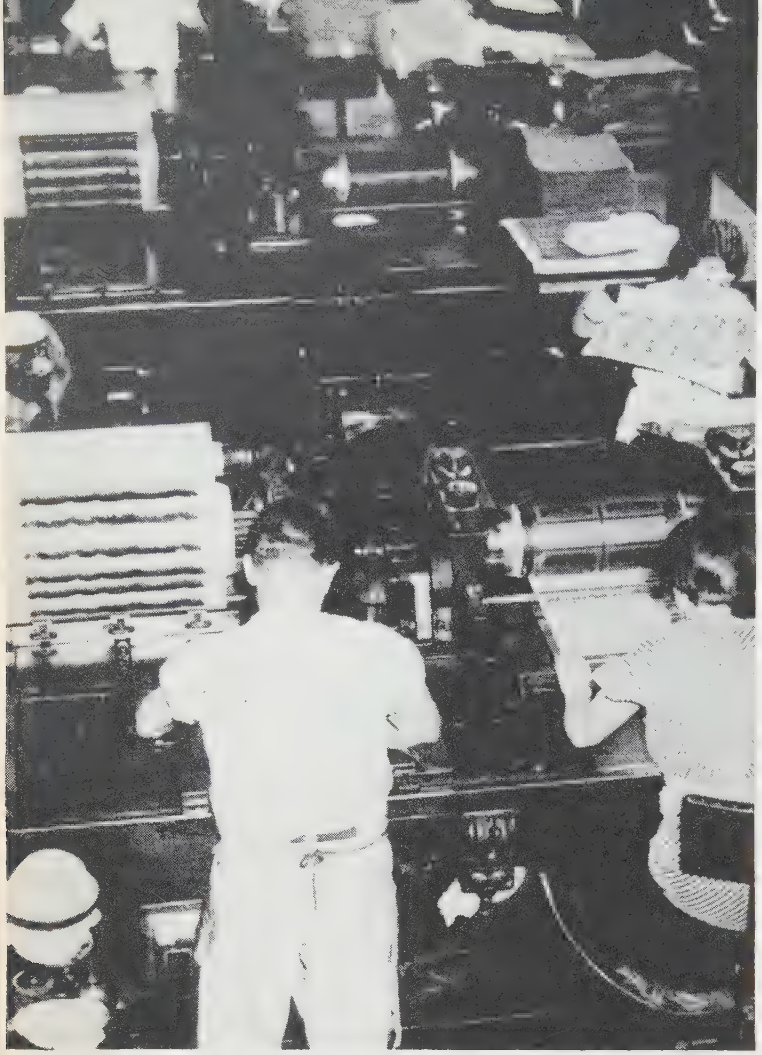
Cohan, George Michael

(1878–1942), U.S. playwright, song writer, actor and producer, was born July 4 in Providence, R.I. One of the most talented showmen in the history of the U.S. stage, he was equally skilled as a song writer. During World War I, he wrote "Over There," a rousing war song which became a minor American classic. In 1940, President Roosevelt awarded him the congressional medal of honour for the writing of both "Over There" and "It's a Grand Old Flag" (1905). Cohan reached the peak of his fame as a song writer, producer and actor in the years between 1910 and 1920. In 1933, he returned to the stage after a short period of retirement to play straight drama in Eugene O'Neill's *Ah, Wilderness!* In 1937, he had a leading role in a musical comedy, *I'd Rather Be Right,* in which he impersonated President Roosevelt. In 1942, a motion picture based on Cohan's life was a nationwide success. Cohan died in New York city, Nov. 5. (*See* also *Encyclopædia Britannica.*)

Coinage.

There were, in 1942, under the bureau of the mint, an adjunct of the treasury department, 3 coinage mints: in Philadelphia, Pa., Denver, Colo., and San Francisco, Cal.; assay offices in New York, N.Y., and Seattle, Wash.; a bullion depository for storage of gold at Fort Knox, Ky., and a bullion depository for storage of silver at West Point, N.Y. The United States mint at New Orleans, which operated as an assay office, was closed June 30, 1942.

Domestic Coinage.—Coinage manufactured by the United States mints for the United States during the calendar year 1942 amounted to 1,630,655,372 pieces, valued at $119,283,799.65.



SHEETS OF 12 $1 BILLS being printed on a flat-bed press in the U.S. treasury. Vigilance against counterfeiting of coinage and currency by axis powers was increased by the U.S. secret service in 1942

Half dollars	71,520,920 pieces
Quarter dollars	138,988,323 pieces
Dimes	315,472,329 pieces
Nickels	154,557,200 pieces
Cents	950,116,600 pieces

The content of the 1-cent piece was changed slightly, through administrative action, Jan. 16, 1942, by eliminating all but a trace of tin from the bronze alloy. It was estimated 100,000 lb. of tin is saved annually by eliminating it from coinage.

The content of the cent, under the law of 1873, had been 95% copper, 5% tin and zinc. The congress on Dec. 18, 1942, authorized a change in the coin, which would be made of zinc-coated steel instead of bronze. The Lincoln design was retained, and the dimensions were unchanged. The weight was to be 41.5 grains, slightly less than the bronze cent, which weighed 48 grains. It was estimated that the change of alloy would result in an annual saving of approximately 4,600 tons of copper for use in the war.

The content of the 5-cent piece was changed by act of congress March 27, 1942. The former alloy, set by law of 1873, was $\frac{3}{4}$ copper and $\frac{1}{4}$ nickel. The new coin was 35% silver, 56% copper and 9% manganese. This change saved annually, according to mint estimates, 435 tons, approximately, of nickel and the same amount of copper for use in the war effort. The Jefferson design was retained, but the mint mark now appeared over the dome of Monticello instead of at the right side of the building. For the first time in history, a United States coin from the Philadelphia mint (which is the original mint), bore a mint mark—the letter "P."

The new alloys for the 1-cent piece and 5-cent piece were adopted strictly as a war measure; the laws authorizing changes were to expire Dec. 31, 1946.

Foreign Coinage.—Coinage for foreign governments amoun to 307,737,000 pieces. The U.S. mints in 1942 executed co for Australia, Bolivia, Curaçao, Dominican Republic, Ecuad Fiji Islands, Netherlands East Indies, Peru and Surinam.

(N. T. R.

Coke.

The production of coke in the United States in 19 increased by 13% over 1940, with 58,482,422 short t of by-product coke and 6,704,156 tons of beehive coke, a to of 65,186,578 tons, besides 4,554,513 tons of breeze or screenin This production of coke required 18% of the year's output coal, the total charged into the ovens being 93,138,153 tons. D ing the year the number of ovens in use increased from 27,884 31,685, with 181 additional ovens under construction at the of the year. The capacity of the ovens in use at the end of year was 73,772,200 tons per year. The largest consumer of coke was the iron blast furnace, which took 77% of the tot domestic use took 10%, gas production 4% and foundries 4%.

Production during the first three-quarters of 1942 totalled 493,187 tons, an increase of 9% over the same period of 19 On this basis the total for the year was expected to be somew greater than 70,000,000 tons.

No information was available from the other important co producing countries, which in order of importance were in 19 Germany, Great Britain, U.S.S.R., France and Belgium.

(G. A. Ro.

Colby, Nathalie Sedgwick

(1875–1942), U.S. novel was born Feb. 4 in N York city. As the wife of Bainbridge Colby, secretary of st in President Wilson's cabinet, Mrs. Colby came in close cont with the upper strata of Washington society. Her observati drawn from these experiences supplied her with rich material her novels. With wit and satire she bared the foibles of Wa ington and New York society in her books. She was the autho *Green Forest* (1927), *Black Stream* (1927), *A Man Can Buil House* (1928), *For Life* (1936), *An American Life Coming* (1937), and *Remembering*, an autobiography (1938). Mrs. Co died in New York city, June 10.

Cold, Common.

According to a one-week survey end Dec. 24, 1941, there were colds in o third of all American homes, with an estimated total of 18,000, persons afflicted. The highest incidence was reported am children under ten. About one in four was treated by a physici

Investigations aimed at preventing colds took various for In a small controlled experiment in the air raid shelters in Brit an antiseptic solution was employed as a spray to each nos Conclusions as to its value were doubtful. Kaiser studied tonsil and adenoid in relation to respiratory infections in child Although he concluded that the tonsils are undoubtedly respo ble for many upper respiratory tract infections in children, he not support the opinion that laryngitis, bronchitis and pneumon can be reduced in incidence by removing tonsils and adeno Two Philadelphia workers noted a great reduction in incide of respiratory infections in a convalescent ward during a per when vaporization of propylene glycol was carried out in ward. Their preliminary observations appeared to confirm effectiveness of propylene glycol vapour as an agent for sterili air in enclosed spaces. This technique might prove to be applica to concentrations such as occur in military barracks. Walsh c tinued his work with nasal vaccines, encouraging enough to w rant further trial of this method in the prevention of the comn cold.

O'Neil divided the upper respiratory infections into those primarily bacterial origin, those in which bacteria are active as secondary invaders, and those in which bacteria, while not actually involved, are always potentially a danger. The organisms involved in the majority of the infections showing bacterial involvement were the haemolytic streptococcus, the pneumococcus and the staphylococcus. Sulphathiazole, he said, is effective against these organisms. It is not a panacea but should be reserved for those cases in which bacterial involvement seems definite. Siegel administered sulphadiazine at the onset of recognizable symptoms of respiratory illness to half of a small group of highly susceptible mentally defective children. Those treated with sulphadiazine appeared less toxic after 24 hours and recovered more promptly. The preliminary observations indicated that sulphadiazine can be advantageously employed early in the course of many acute respiratory illnesses.

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(E. P. J.)

Colleges and Universities: *see* Universities and Colleges.

Colombia. A republic of northwestern South America, possessing a littoral on both the Caribbean and the Pacific. Area, 448,794 sq.mi.; pop. (1942 est.) 9,523,200. Most of the population lives in the great Andean valleys drained by the Magdalena river and its tributaries. Capital, Bogotá (395,300). Other cities: Medellín (198,100), Barranquilla (183,500), Cali (121,400), Manizales (99,840), Cartagena (94,700), Ibagué (71,610), Cúcuta (66,080), Bucaramanga (59,940), Pasto (55,760), Santa Marta (37,950), Neiva (36,670), Popayán (32,720), Tunja (23,240). Language: Spanish; religion: Roman Catholic. President (elected in May 1942): Dr. Alfonso López.

History.—The political event attracting greatest attention in Colombia during 1942 was the national election held in May, and the campaign preceding it. The leading candidate was Dr. Alfonso López, president of the republic 1934–38. Long a leader in the dominant Liberal party, he had inaugurated a Colombian "New Deal" during his earlier period in office which had involved a number of social and labour reforms not very pleasing to Conservatives and even to some members of his own party.

In the election, however, Dr. López won, as expected, by a majority of some 200,000 votes. Before taking office in Aug. 1942 he made a flying trip to the United States for a conference presumably on military problems (significant since Colombia is so close to the Canal Zone), control of axis nationals and discussion of transportation needs and priority ratings vital to Colombian industry and general welfare. Shortly after his inauguration he announced a program designed to improve sanitation and dietary conditions among the Colombian lower classes. In order to appease the right wing of his own party, his political appointments included men who had opposed him in the election.

Insofar as hemisphere defense was concerned, the republic continued its policy of co-operation. Public opinion was seriously aroused by the sinking of a Colombian vessel, but not to the extent of a declaration of war (relations with axis powers had been severed in 1941). Extensive controls, involving registration and restriction from a coastal zone, were set up to prevent subversive action by Colombia's 5,000 Germans and 1,000 Italians. A school inspection program was inaugurated to prevent infiltration of foreign ideology; and three German schools were closed. Civilians were prohibited from owning firearms. A compulsory military service act was passed July 9, 1942, and much money was spent for military supplies.

In the economic field, Colombian industry and standards of living were affected by wartime shortages. A National Committee of Economic Study was established in April, to co-operate with the Inter-American Financial and Economic committee. Control over the sale of tires and essential metals was found necessary. All trade in rubber, chicle and balata was first suspended and then put under government regulation; every effort was made to increase the production of wild rubber, even to the extent of construction of an airport in Colombia's Amazon territory. Trade suffered from lack of shipping with the result that some Colombian industries were forced to slow production; this caused unemployment in certain areas. Strikes in government service were prohibited. Decreases in government revenue resulted in the levying of a 3% sales tax on some items, in June, and also the authorization of a 15,000,000-peso bond issue.

One law enacted, which required all firms doing business in the republic to retain a Colombian lawyer to represent them in legal matters, aroused much protest by foreign firms doing business in the state.

Education.—The school system in 1942 consisted of approximately 9,000 primary schools and 450 secondary schools. Enrolment (1939), for all: 700,677. The 1942 budget allowed 7,735,000 pesos for education.

Defense.—The Colombian regular army normally amounts to 16,000 effectives, the navy to 1,625. Military service is compulsory. Colombia in 1942 had 2 destroyers, 4 gunboats. Budget for war (1942): 14,116,000 pesos.

Finance.—The monetary unit is the peso: official value in Dec. 1942, 56 cents U.S. The total public debt (Sept. 1942) was 354,000,000 pesos (225,000,000 external, 129,000,000 internal). Bond issues up to 15,000,000 pesos were authorized by June 1942. Total notes in circulation (Sept. 1942): 106,700,000 pesos; gold reserves were allowed to decrease to 30% for the duration of World War II.

Trade.—Trade for 1942 from January to September totalled approximately 233,000,000 pesos (exports: 154,000,000; imports: 79,000,000). Coffee exports for the period were valued at 114,000,000 pesos; gold, 19,800,000 pesos; petroleum, 13,600,000 pesos. The U.S. normally takes about 70% of Colombian exports and supplies 75% of imports.

Communication.—Maritime communication suffered from war shortages in 1942, particularly in regard to tankers and refrigerated boats. The Magdalena river, important in internal communication, had unusually low water in the summer, which handicapped river traffic.

Agriculture.—Agriculture is the basic industry of Colombia. Coffee, the principal crop (normally 45% of exports), was limited by quota, but increased prices about balanced decreased shipments. The quota was also revised upward in June. Coffee plantations are largely Colombian owned. Banana shipments almost completely ceased during 1942. Cotton production supplies about one-third of domestic needs; Colombia purchased all the Haitian crop for 1942 (value: $471,970). Fibre crop plantings were encouraged by war conditions, also rubber-gathering, with the Rubber Reserve company of the U.S. guaranteeing purchase of the entire Colombian output for five years.

Manufacturing.—The textile industry produced more than 7,000,000 yd. of cloth per month in 1941; shortages of dyestuffs and chemicals possibly cut output for 1942. Cement production in 1941 increased 12% over that of 1940. Most industries suffered from serious shortages in machinery and other equipment in 1942, because of priority regulations in the U.S.

Mineral Production.—Petroleum output in 1941 was 22,216,000 bbl., somewhat below that of 1940 (26,864,000 bbl.). The production for 1942 was even less because of decreased output in the fields and shipping difficulties. The U.S. oil import quota for 1942 allowed Colombia 2,250,000 bbl.

Gold production was decreasing in 1942, while the platinum output was larger.

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Colorado. A Rocky mountain state of the United States, in the west-central part; mean elevation above sea level, 6,800 ft. Admitted to the union in 1876 as the 38th state and known as the "Centennial state." Land area, 103,967 sq.mi. Population (1940), 1,123,296; 52.6% urban, 47.4% rural; 93.6% native, 6.4% foreign born; white 98.5%, Negro 1.1%, other .4%; 102.6 males per 100 females. Capital and largest city, Denver, 322,412. Other cities in order: Pueblo, 52,162; Colorado Springs, 36,789; Greeley, 15,995; Trinidad, Boulder, Grand Junction and Fort Collins, 12,000 to 15,000.

History.—John C. Vivian (R.) was elected governor Nov. 3, 1942. Other officers elected were: lieutenant governor, William E. Higby (R.); secretary of state, Walter F. Morrison (R.); auditor, James L. Bradley (R.); treasurer, Leon E. Lavington (R.); attorney general, Gail L. Ireland (R.); superintendent of public instruction, Mrs. Inez Johnson Lewis (D.). The vote for governor was: Vivian (R.), 194,041, Bedford (D.), 149,402. The state property tax was reduced from 4.35 mills to 4.25 in 1941, and to 4.00 in 1942. Robert F. Rockwell, Republican, elected in 1941 to succeed Edward T. Taylor, deceased, as congressman for the Fourth Colorado district, was re-elected in 1942. United States Senator Eugene D. Millikin, Republican, appointed by Governor Carr to succeed Senator Alva B. Adams until the 1942 election, was elected to fill the unexpired term. In 1939 Colorado had four Democratic representatives and two Democratic senators; in 1943, one Democratic and three Republican representatives, and one Democratic and one Republican senator.

Chief Justice John C. Young, by right of seniority in office, became chief justice of the Colorado supreme court. Justice William S. Jackson (R.), appointed in 1941, was elected to fill out the unexpired term of former Chief Justice Francis E. Bouck (D.); Justice Frank B. Goudy (R.), was appointed to fill out the term of Justice Otto Bock (D.), deceased, and was elected for the unexpired term.

JOHN C. VIVIAN, Republican, was elected governor of Colorado Nov. 3, 1942

Education.—There were 225,967 pupils enrolled in public schools in 1942, from kindergarten through high school and vocational schools, with 10,214 teachers. The parochial, elementary and high schools had an enrolment of 913,983, with 515 instructors. Seven state colleges and universities had a total enrolment of 9,961 during the regular term and 8,967 during the summer term, with teaching staffs of 722 and 630, respectively, for the two terms; total annual disbursements, $6,961,697. Privately controlled universities and colleges had a regular term enrolment of 5,828, with 523 instructors, and a summer school enrolment of 1,646, with 149 instructors.

Public Welfare, Charities, Corrections.—Public welfare disbursements in 1942, including $10,164,613 in federal grants amounted to $22,654,046. Pensions, 42,447 persons over 60, $17,032,328; dependent children, 3,931, $2,273,272; blind, 610, $242,878; direct relief, 12,075, $2,565,698; child welfare, 2,840 $41,792; tuberculosis, 337, $131,134; unemployment insurance 300,000 insured in 1941; 212,346 checks totalling $2,229,297.3 in benefits. Four correctional institutions, with 1,961 inmates annual disbursements, $1,430,190. Eight charitable institutions with 6,314 inmates; annual disbursements, $2,709,240.

Communications.—State Highway system in 1942, includin 3,721 mi. federal aid, primary, and 8,128 federal aid secondary totalled 12,390 mi.; city-streets, 3,491; country roads, 36,176 other local roads, 26,423; National forests, 788; toll, 8; total 79,276 mi. Thirty railroads had 4,507 mi. of main line track There were 37 airports and landing fields, and 12,060 license pilots. Number of telephones, in excess of 250,000.

Banking and Finance.—As of Jan. 1942 there were 78 national and 66 state banks; total deposits, $415,238,458, assets $455,331,289; 23 federal and 31 state savings, building and loa associations, with assets of $38,009,531. Biennial state budget $120,967,319. Outstanding state bonds, as of Nov. 30, 194 $2,155,200 net; highway anticipation warrants, $19,780,000 ne

Agriculture.—Farm crops harvested from 6,140,500 ac. in 194 were valued at $97,235,000. Cash farm income was $157,998,000 value of crops and livestock used on farms $8,951,000; government payments, $9,382,000; total $176,331,000. Climatic conditions generally were favourable in 1942, with above-averag precipitation and irrigation water supplies.

Table I.—*Leading Agricultural Products of Colorado, 1942 and 1941*

Crop	Unit	1942	1941
Wheat	bu.	24,764,000	25,036,000
Corn	"	19,342,000	15,026,000
Barley	"	17,250,000	15,372,000
Oats	"	5,398,000	5,859,000
Dry beans	100# bags	2,151,000	1,621,000
Sugar beets	short ton	......	1,901,000
Tame hay	ton	1,841,000	1,879,000
Potatoes	bu.	14,740,000	11,968,000
Grain sorghums	"	4,953,000	5,738,000

Manufacturing.—Total value of products manufactured i 1939 was $221,642,666, compared with $237,838,370 in 193 Persons employed, 27,893 in 1939; 31,129 in 1937. Wages an salaries, $37,509,961 in 1939; $42,052,535 in 1937. Publishe figures on war production contracts alone totalled in 1941 i excess of $156,000,000.

Table II.—*Principal Industries of Colorado, 1939 and 1937*
(Exclusive of steel and rubber industries)

Industry	Value of Products	
	1939	1937
Meat packing	$33,005,533	$39,805,939
Bakery products	8,422,889	11,844,068
Butter	6,627,153	8,394,917
Newspaper and publishing	9,567,285	9,471,535
Flour, etc.	6,916,494	10,229,567

Mineral Production.—Production of all minerals in 1941 wa valued in excess of $70,000,000. Molybdenum continued in fir

Table III.—*Principal Mineral Products of Colorado, 1941 and 1940*
(Exclusive of molybdenum and vanadium)

Mineral	Value, 1941	Value, 1940
Gold	$13,301,015	$12,856,760
Coal	18,416,460	17,749,060
Silver	5,192,318	6,905,39
Zinc	2,358,300	637,560
Copper	1,592,528	2,746,35
Petroleum	2,337,533	1,700,090
Lead	1,433,436	1,147,600

ace; vanadium and other nonprecious metals increased in rela- ve importance. This trend continued in 1942. In 1941 Colorado roduced in excess of 27,000,000 lb. of molybdenum concentrates, pproximately 70% of U.S. and 65% of world output, and 000,000 lb. of vanadium concentrates, approximately 93.4% U.S. and 37% of world output.

olour Photography: *see* PHOTOGRAPHY.
olumbia, District of: *see* WASHINGTON, D.C.

olumbia University. An institution of higher learning in New York city. The number of uildings on the campus at Morningside Heights was 71. The udget appropriation for 1941–42 was $14,703,406.12. During 942 participation in war activities became one of the major pro- rams of the university, with many members of the faculty en- aged in national service or research. Three dormitories and a nsiderable proportion of the classroom space on Morningside ere taken over by the naval reserve midshipmen's school, with me 2,500 candidates for commissions quartered on the campus. or statistics of enrolment, faculty members, endowment, library lumes, etc., *see* UNIVERSITIES AND COLLEGES. (M. H. T.)

olumbium. The production of columbite in Nigeria in 1940 was 396 long tons, of which 250 tons was ex- rted to the United States. Sales increased in 1941, and con- acts were reported to have been closed covering deliveries to- lling 1,200 tons in 1942 and 1943. (G. A. Ro.)

ommerce, U.S. Department of: *see* GOVERNMENT DE- ARTMENTS AND BUREAUS.
ommerce Commission, Interstate: *see* INTERSTATE COM- ERCE COMMISSION.
ommittee for Industrial Organization: *see* CONGRESS F INDUSTRIAL ORGANIZATIONS.

ommodity Credit Corporation. Loan, purchase and sales operations of e CCC were expanded in 1942 to implement farm price support rograms for increased wartime food production and to acquire oreign agricultural commodities needed strategically by the nited States. Loans to farmers totalled $610,000,000 during the scal year 1942 as compared with $452,000,000 in fiscal 1941. urchases in 1942 included approximately $900,000,000 of com- odities for lend-lease export through the Agricultural Marketing dministration.

The increase in volume of loans on commodities stored on rms and in warehouses was the result principally of an increase loan rates to 85% of parity. Legislation enacted in Oct. 1942 ised the rates to 90% of parity on cotton, tobacco, peanuts and ce. Purchases during 1942 included large quantities of agricul- ral supplies for distribution among farmers for the production f commodities formerly imported or for the production of sub- itute commodities. Sales were principally of government-owned mmodities, accumulated in the "ever-normal granary" during receding years, to farmers to increase the production of meats, ilk, eggs and other foods, or for industrial uses such as the pro- uction of industrial alcohol.

Price support programs instituted during 1942 included loans d purchases in connection with vegetable oil crops and oil crop roducts through commitments to producers and contracts with rocessors. The objective was to make possible the maximum pro- uction of vegetable oils needed to replace the reduction in im- orts of oils as a result of the war. Prices to farmers were sup- orted at minimum levels and ceiling prices on finished products were preserved in furtherance of the government program to keep down the cost of living. Similar price-support programs were instituted to facilitate the production of pork by small packers, to maintain milk production in the metropolitan New York area, and to obviate increases in prices of flour and bread.

More than a score of projects were included in the agricultural supplies program, notably the purchase and distribution of supplies for increased production of hempseed and hemp fibre, castor beans, peanuts for oil, sorgo for conversion into alcohol, long staple cotton for aviation fabrics, flax fibre, winter cover crops, hybrid seed corn, pyrethrum seed and naval stores.

Foreign purchase operations during 1942 were for the purpose of acquiring agricultural commodities strategically needed by the United States, and to relieve the economic distress of Latin-American countries whose usual export markets had been cut off by the war. Commitments included the purchase of surplus stocks of cotton in Haiti, Peru and Nicaragua; castor beans, babassu kernels, coffee and cocoa from Brazil, rotenone from Brazil, and flax fibre from Peru. Through Sept. 15, 1942, more than 250,000 tons of 20 different oils and oil-bearing materials had been purchased from countries friendly to the United States; subsequently the corporation appointed an emergency group of importers as its agent to handle imports of fats, oils and oil-bearing materials.

The corporation, created under the president's executive order 6340, Oct. 16, 1933, functions as a part of the U.S. department of agriculture. The corporation is authorized to issue and have outstanding at any one time bonds, notes, debentures and other obligations not to exceed $2,650,000,000. These obligations are fully and unconditionally guaranteed by the United States. The corporation has been continued as an agency of the United States until June 30, 1943, or such earlier date as may be determined by the president. (J. B. Hu.)

Commodity Prices: *see* BUSINESS REVIEW; PRICES.
Commons, Members of House of: *see* PARLIAMENT, HOUSES OF.

Commonwealth Fund, The. This endowment, established in 1918 by Mrs. Stephen V. Harkness "to do something for the welfare of mankind," and later increased by gifts from the founder and from Edward S. Harkness, president of the fund from its inception until his death on Jan. 29, 1940, amounted in 1942 to approximately $49,000,000. In the year ending Sept. 30, 1942, the fund appropriated $1,777,396.03. Of this total more than two-thirds was devoted to activities tending to promote or maintain physical and mental health. Public health activities, designed to raise standards of rural service, centred in Tennessee, Mississippi and Oklahoma. Thirteen rural community hospitals, built or remodelled with aid from the fund, were at work during the year. New construction was delayed by war shortages. As a means of strengthening teaching resources, fellowships were offered to instructors in medical schools and provision was made for visiting instructors, without restriction as to field; continued aid was given to departments of preventive medicine and psychiatry, to extension teaching and other forms of postgraduate medical education, and to teaching arrangements designed to promote interplay between pediatrics and psychiatry. Nearly $386,000 was appropriated for medical research. The Commonwealth fund fellowships for British graduate students at American universities were suspended for the war, but fifteen fellowships for study in medicine and public health were made available to Latin-Americans. The fund continued to aid child guidance enterprises in England; maintained an advisory service for community mental hygiene clinics in the

United States; and published during the year six books and one pamphlet of educational significance in its fields of operation. The directors of the fund were, in 1942, Malcolm P. Aldrich, president; Phil W. Bunnell, Adrian Massie, George Welwood Murray, Dean Sage, William E. Stevenson and Thomas D. Thacher.

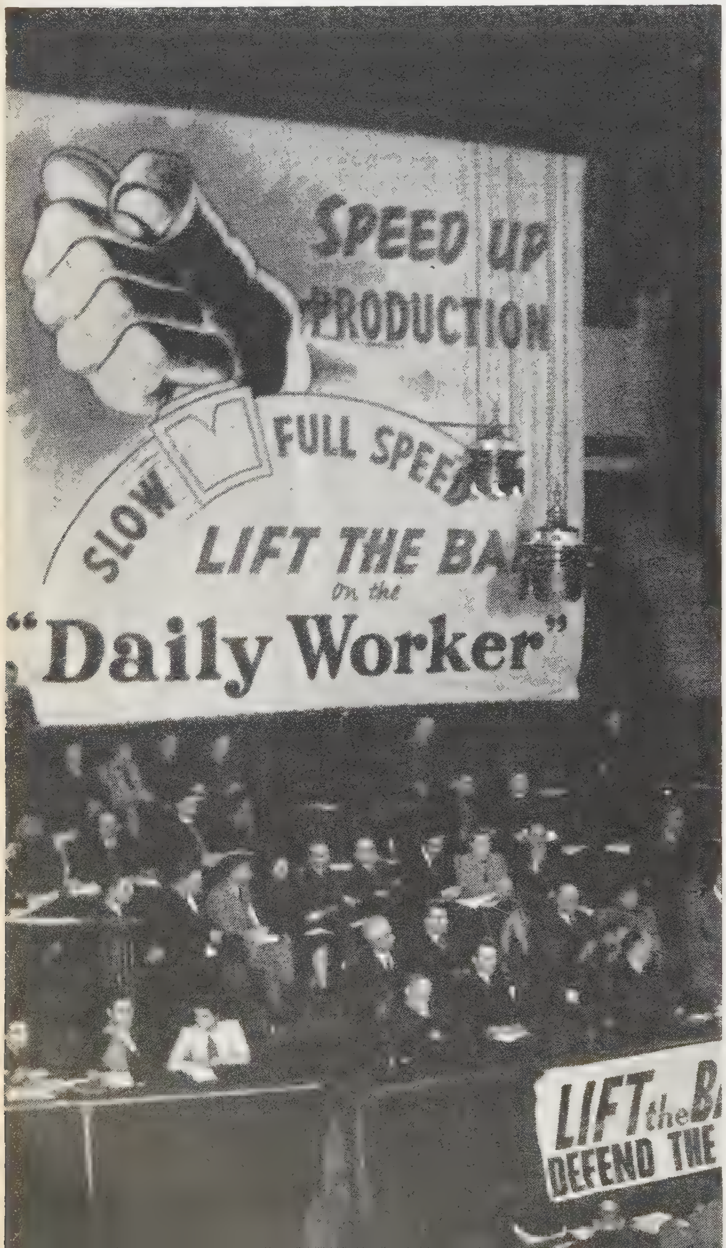
(B. C. S.)

Communications Commission, Federal: *see* FEDERAL COMMUNICATIONS COMMISSION.

Communism, or revolutionary Marxism, is a system of government evolved under the leadership of Lenin and Stalin in the soviet union. Communism believes in the dictatorship of the proletariat for a transitional period, after which a free society would come into existence in which everybody would contribute to the common weal according to his capacities and receive a reward according to his need. This ultimate goal seemed in 1942 still very far away in the soviet union; meanwhile the soviet union represented a dictatorship of the Communist party, with state ownership of all the important means of production. Communism proclaims the equality of all peoples and races and the final establishment of a peaceful international order.

In its foreign policy communism followed strictly the line demanded by the national interest of the soviet union as interpreted by Stalin. The communist parties throughout the world adapted themselves to that line, in complete disregard of the national interests of the country in which they were working. Thus, in Aug. 1939 the soviet union lined up side by side with aggressive fascism against the democracies. The soviet union adopted a most benevolent neutrality toward Germany and made all the official propaganda slogans broadcast by Germany, about the origins and the meaning of the war, her own. The communist parties in France and Great Britain belittled and hindered the effort of these countries to resist fascist aggression, and in the United States the communists declared themselves against all defense measures and against all preparation against future fascist aggression. This attitude of course changed completely with the German attack upon the soviet union on June 22, 1941. Not only did the soviet union offer utmost resistance to fascist aggression but showed itself better prepared than most observers believed. With the existence of the soviet union at stake, communists everywhere suddenly saw the war in an entirely different light and became the most determined proponents of relentless war against Germany. This attitude culminated in their propaganda for a second front in western Europe to relieve the pressure on the soviet union. As the soviet union was at peace with Japan, no demand was raised by communists anywhere for a fight against Japanese fascism. Thus all considerations in World War II centered for the communists around the national existence of the soviet union, not around any principle of an international struggle against fascism. Yet the love of the soviet union inspired not only the people of the soviet union, but communists everywhere, especially in the occupied countries of Europe, to heroic resistance.

BRITISH COMMUNIST MEETING of 1942 at which the government was urged to "lift the ban" on the *Daily Worker*, London communist paper suppressed in Jan. 1941



In the soviet union the national patriotic trend which had been visible already in the preceding years became more and more pronounced. Stalin himself took the lead in a message to the Russian people on July 30, 1942. He called upon them to be inspired in this war by "the daring spirit of our great ancestors," and he set as examples heroes of Russia's feudal past, like Alexander Nevsky, who defeated the Teutonic knights in 1242 and was canonized by the orthodox church; Dmitry Donskoi, who annexed Rostov to Russia in 1380; Prince Pozharsky, who drove the Poles out of Moscow in 1612 and set the Romanoff dynasty on the Russian throne; General Suvorov, who led the Tsar's armies victoriously in the second half of the 18th century; and General Kutusov, who defeated Napoleon. This invocation of the heroic past filled the soviet youth with a deeply national spirit, fundamentally different from the international proletarian spirit prevailing in the first years of the Russian revolution, in which the whole Russian past had been viewed with indifference and even hostility. Heroes of past Russian wars were being as much celebrated as the soldiers and guerrillas of World War II. The literature and the theatre, the movies and sculpture, music and songs, celebrated them. Kosta Simonov glorified them in his melodrama "The Russian People"; Shostakovich wrote in their spirit his seventh symphony, Prokofiev his suite "1941" and his opera "War and Peace," Dzerzhinsky his opera "Blood of the People," and Victor Byely the choral music of "Song of Wrath." Alexey Tolstoy wrote a play in glorification of Ivan the Terrible. No longer was it class origin, but the national achievement which was the basis of the evaluation of figures and movements of the Russian past. The young guerrilla hero martyr Zoya Kosmodemyanskaya, an 18-year-old girl, venerated by the soviet youth, had studied Ilya Muromets and other ancient heroes of Russian ballads as her inspiration.

As a result of this tendency and of the stress of warfare, the soviet attitude to the Russian church changed. Although formerly religious worship had not been forbidden, religious propaganda education was strictly prohibited. Now the officially sponsored ti-religious propaganda of the "Union of the Godless" ceased, e clergy received civil rights and the rôle of religion in Russian story was recognized in a positive spirit. School books and pub- performances were changed in accord with the new trend.

The war generally aroused in the Russian mind not only a irit of fierce Russian nationalism but also, in view of Germany's rocities, a probably unparalleled hatred of the Germans. Again alin set the example in his address of May 1, 1942. And the *Red ar,* the organ of the soviet army, wrote on July 24: "From now , the word 'German' is a terrible curse; it is a word which makes e spring to arms. Indignation is not enough; we must kill. ery day you don't kill Germans is a day wasted." This attitude ain contrasted with former attitudes adopted by communism.

An important change in the outlook of communism produced the war could be seen in a measure taken Oct. 10, 1942, by ich the political commissars as such in the Red Army were olished and full powers of command vested in the army officers, der whose control the political commissars were now placed receiving military rank, after having become fully trained fight- g men. By this measure not only was the command more unified d thus more efficient, but the prestige of the military com- anders was vastly increased. On the other hand, the former litical commissars were added as fighting army officers. This easure increased the number of highly qualified officers and eeded the process of a complete amalgamation of party and my, of political and military command. It expressed also full nfidence in the military chiefs, in the common national effort r the liberation of the soviet union from foreign invaders.

A new attitude toward the church expressed itself also in two easures taken in Nov. 1942. The soviet government appointed e metropolitan Nikolai of Kiev a member of a special commis- on to investigate the damage, the cruelties and the barbarous ts done by the German occupation forces in the soviet union. or the first time a high church dignitary was appointed to an ficial position in the soviet union. This step was matched by e message which the metropolitan Sergei of Moscow, the acting triarch of the Russian church, sent to Premier Stalin on the th anniversary of the communist revolution, in which he eeted him as the "divinely appointed leader of our armed and ltural forces leading us to victory over the barbarian invasion."

Outside the soviet union communist parties and activities re- ained strictly forbidden in all countries under axis control. In e United States, Great Britain and Canada certain measures ken against communist leaders or organs in previous years were scinded; in the United States and Canada some imprisoned mmunist leaders were released; in Great Britain the *Daily orker* was allowed to reappear. Though the strong resistance fered by the soviet union to German aggression aroused wide- read sympathies for the soviet union, communist propaganda rdly made any headway in the democratic countries. (*See* also EMOCRACY; FASCISM; SOCIALISM.)

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ommunist Party: *see* COMMUNISM.

ommunity Chest

is the name given to a local co-operative organization of citizens and social elfare agencies; also known as "community fund," "welfare nd," or "united fund." In many communities during 1942 the fa- iliar peacetime community chest organization enlarged to take various appeals for war relief, changing its name to "community ar chest," "united war fund" or variants.

The new war chests differed in structure from place to place. However, the general plan combined with the normal functions of the community chest responsibility for raising the community's contribution to the various appeals for money for war relief causes, insofar as they were approved by responsible local authorities. In most instances, either the war chest was based on the community chest with war relief appeals added, or it was so organized that the community chest, such organizations as USO, the various war relief appeals of the Allies and the War Prisoners' Aid all participated as members of a new organization, usually called a war chest. In many instances, the personnel of the community chest, with necessary supplementation, was responsible for administering the war chest.

In support of voluntary social and health work for 1942, community and war chests together raised $96,287,044. They raised also $8,088,486 for war and defense services and received $200,360 in tax subsidies, making a total of $104,575,890 taken in through 632 chest campaigns during the year. This was an increase of $12,620,908 over the funds raised in 598 campaigns held in 1941.

The average per capita raised for 1942 by 135 chests, which were included in an intensive study, was $1.87. Approximately 33 out of every 100 persons in these 135 cities subscribed to their community chests in 1942, which is 43.5% more than the average number of givers in the same cities for 1935–39, and an increase of 15% over 1941.

On Oct. 1, 1942, 654 community chests were known to exist, 622 of them in continental United States, 28 in Canada, 2 in Hawaii, 2 in South Africa.

Community Chests and Councils, Inc., 155 East 44th st., New York city, the national organization of community chests and councils of social agencies, was organized in 1918 as a clearing house of information for the 21 chests then organized. On Oct. 1, 1942 the number of member chests and councils, affiliated on a voluntary basis, was 419.

Officers for 1942–43 were: Gerard Swope, honorary president; Harry C. Knight, chairman of the board; Robert Cutler, president; vice-presidents, John Stewart Bryan, Harry P. Wareham; J. Herbert Case, treasurer; Lynn D. Mowat, secretary. Allen T. Burns was executive vice-president; Ralph H. Blanchard, administrative director. (*See* also RELIEF.) (A. T. B.)

Community Trusts.

Seventy-six community trusts in continental United States, Canada and Hawaii reported the increase of their philanthropic resources at Dec. 31, 1941 to $54,275,000 from $52,500,000 at the close of 1940. The largest community foundation was the New York Community trust with funds totaling $11,265,624; followed by the Chicago Community trust, $10,541,071; the Cleveland foundation, $6,777,923; and the Permanent Charity fund, Boston, $5,609,590. The total principal of all community trusts passed $25,000,000 in 1928 and $50,000,000 in 1939.

Aggregate outpayments in 1941 totaled $1,605,801 compared with $2,225,396 in 1940 and $1,277,927 in 1939. First in volume of disbursements was the New York Community trust whose appropriations rose to $398,504. The next largest benefactor among these foundations was the Chicago Community trust, followed by the trusts in Boston, Cleveland and Los Angeles.

The initial community foundation was established in Cleveland, Ohio, Jan. 2, 1914 to afford an opportunity alike to individuals of wealth or modest means to establish perpetual charitable funds by will or trust deed, secure from the ravages of time and the Dead Hand. (R. Hs.)

Composers, Authors and Publishers, American Society of: *see* PERFORMING RIGHT SOCIETIES; MUSIC.

Conant, Gordon

(1885–), Canadian politician, prime minister of Ontario after the resignation of Mitchell Hepburn, Oct. 21, 1942. He was born Jan. 11 at Oshawa, Ont., of a United Empire Loyalist family still holding their original lands. He was educated in the Oshawa schools, graduated B.A. from University college, Toronto, in 1905 and received his LL.B. in 1912. He practised law in Oshawa and was early in politics, being secretary of the Liberal association for 25 years. Conant was active in the civic life of Oshawa, holding office as alderman and as mayor. He was made a K.C. in 1933 and upon election to the Ontario legislative assembly was appointed attorney general in 1937. From this office he was elevated to that of prime minister.

Confectionery: *see* CANDY.
Congo, Belgian: *see* BELGIAN COLONIAL EMPIRE.

Congregational Christian Churches.

This denomination is made up of what was previously two denominations: the Congregational, established in America in 1620 at Plymouth, Mass., and the Christian, which grew up about the time of the Revolutionary War. Finding they had much in common, the two groups merged into the present body in 1931.

The denomination is governed by two cardinal principles: freedom of the local congregation in everything that concerns its life and work; and fellowship of all the congregations in common enterprises. This freedom is not license; it is a regulated freedom. The regulation comes from within, not from without. There is no power that can compel a congregation to do anything it does not wish to do. The slight measure of denominational control of a local church lies in the association to which the church belongs. This association is made up of official delegates of the churches that belong to it. It meets twice a year. The representatives of the churches make such reports of their life and work as they deem will be of interest, but there is no set form of report nor are there formal questions to be answered.

If, however, a congregation is pursuing a course the delegates from other churches of the association deem is unwise, inquiry may be made, usually through a council called for this specific purpose, and if the course of the church is found not in harmony with the basic ideas of the association or council, the association has but one means to register its judgment and that is to withdraw fellowship, if and when the congregation has declined to change its course. That is the only measure of control the denomination can exercise.

There is no written creed or discipline, but the denomination is not lawless, for there is a body of tradition and precedent reaching back through 300 years during which these churches have sought to develop church life and work on the principles laid down in the New Testament. In present day life they seek to embody the spirit and teachings of Jesus Christ. The authority that governs is the understanding by the members of the will of God as evidenced in the life and teachings of Jesus and interpreted by Christian experience through the ages.

Within the congregation there is the same freedom as among the churches. Each person is entitled to interpret Christian teachings for the guidance of his own life. If his conduct or language is contrary to the generally accepted interpretation of Christian teachings, the congregation may withdraw fellowship after a full hearing. That is the extent to which discipline of the individual may be administered. There are no such things as heresy trials among Congregationalists, as there are no official creeds to serve as standards for such a trial.

The same liberality extends to the churches' attitude towards the clergy. Through the centuries the churches have insisted on a educated ministry. To insure a supply of educated ministers th early churches founded Harvard and Yale universities to trai young men for the gospel ministry "when our present pastor shall lie in the dust." A candidate for the ministry enters into th pastorate by a process of ordination and election. The election by the members of the Church. No outside person or body ha any official voice in this election, and the congregation fixes th terms under which the minister serves and has power to terminat the pastorate without outside interference.

The ordination, however, has more denominational supervisio Here the churches in the vicinity, or members of the associatio send delegates to an ordaining council on invitation of the churc sponsoring the candidate. These delegates are lay and clerical an all members have equal vote. The candidate presents a statemen of his belief and Christian experience, and if these are in gener accord with Christian teachings, the ordination proceeds. Ther are no official tests on the basis of creed; questioning is on th basis of New Testament teachings.

During the year 1942, the National meeting of these church was held at Durham, N.H. The reports showed that during th preceding biennium the number of churches had increased 90, t a total of 6,096. The membership increased 15,531, to a tot of 1,058,807.

The central office of the denomination in 1942 was the Gener Council of Congregational Christian Churches, 287 Fourth Av nue, New York, N.Y. (F. L. F.)

Congress, United States.

The 78th U.S. congress m for its first session Jan. 1943. It comprised the following members (as of Jan. 15, 1943

United States Senate (†re-elected in 1942)

Presiding Officer: Henry A. Wallace, Vice-President the United States
Majority Leader: Alben W. Barkley, of Kentucky
Minority Leader: Charles L. McNary, of Oregon

State	*Name*	*Party*	*Term Expires*	*Residence*
Ala.	†Bankhead, John H., 2nd	Dem.	1949	Jasper
	Hill, Lister	Dem.	1945	Montgomery
Ariz.	McFarland, Ernest W.	Dem.	1947	Florence
	Hayden, Carl	Dem.	1945	Phoenix
Ark.	Caraway, Hattie W.	Dem.	1945	Jonesboro
	McClellan, John L.	Dem.	1949	Camden
Calif.	Johnson, Hiram W.	Rep.	1947	San Francisco
	Downey, Sheridan	Dem.	1945	Claremont
Colo.	Millikin, Eugene D.	Rep.	1945	Denver
	†Johnson, Edwin C.	Dem.	1949	Craig
Conn.	Danaher, John A.	Rep.	1945	Portland
	Maloney, Francis T.	Dem.	1947	Meriden
Del.	Tunnell, James M.	Dem.	1947	Georgetown
	Buck, C. Douglass	Rep.	1949	Wilmington
Fla.	Pepper, Claude	Dem.	1945	Tallahassee
	Andrews, Charles O.	Dem.	1947	Orlando
Ga.	George, Walter F.	Dem.	1945	Vienna
	†Russell, Richard B.	Dem.	1949	Winder
Ida.	†Thomas, John	Rep.	1949	Gooding
	Clark, D. Worth	Dem.	1945	Pocatello
Ill.	†Brooks, C. Wayland	Rep.	1949	Chicago
	Lucas, Scott W.	Dem.	1945	Havana
Ind.	Van Nuys, Frederick	Dem.	1945	Indianapolis
	Willis, Raymond E.	Rep.	1947	Angola
Iowa	Gillette, Guy M.	Dem.	1945	Cherokee
	Wilson, George A.	Rep.	1949	Des Moines
Kan.	†Capper, Arthur	Rep.	1949	Topeka
	Reed, Clyde M.	Rep.	1945	Parsons
Ky.	Barkley, Alben W.	Dem.	1945	Paducah
	†Chandler, A. B.	Dem.	1949	Versailles
La.	Overton, John H.	Dem.	1945	Alexandria
	†Ellender, Allen J.	Dem.	1949	Houma
Me.	Brewster, Ralph O.	Rep.	1947	Dexter
	†White, Wallace H., Jr.	Rep.	1949	Auburn
Md.	Tydings, Millard E.	Dem.	1945	Havre de Gra
	Radcliffe, George L.	Dem.	1947	Baltimore
Mass.	Walsh, David I.	Dem.	1947	Clinton
	†Lodge, Henry C., Jr.	Rep.	1949	Beverly
Mich.	Vandenberg, Arthur H.	Rep.	1947	Grand Rapids
	Ferguson, Homer	Rep.	1949	Detroit

ate	Name	Party	Term Expires	Residence
n.	Shipstead, Henrik	Rep.	1947	Miltona
	†Ball, Joseph H.	Rep.	1949	St. Paul
s.	Eastland, James O.	Dem.	1949	Ruleville
	Bilbo, Theodore G.	Dem.	1947	Poplarville
.	Clark, Bennett C.	Dem.	1945	University City
	Truman, Harry S.	Dem.	1947	Independence
nt.	Wheeler, Burton K.	Dem.	1947	Butte
	†Murray, James E.	Dem.	1949	Butte
.	Wherry, Kenneth S.	Rep.	1949	Pawnee City
	Butler, Hugh A.	Rep.	1947	Omaha
.	Scrugham, James G.	Dem.	1947	Reno
	McCarran, Patrick A.	Dem.	1945	Reno
I.	Tobey, Charles W.	Rep.	1945	Temple
	†Bridges, H. Styles	Rep.	1949	East Concord
.	Hawkes, Albert W.	Rep.	1949	Montclair
	Barbour, W. Warren	Rep.	1947	Locust
I.	†Hatch, Carl A.	Dem.	1949	Clovis
	Chavez, Dennis	Dem.	1947	Albuquerque
.	Mead, James M.	Dem.	1947	Buffalo
	Wagner, Robert F.	Dem.	1945	New York city
.	†Bailey, Josiah W.	Dem.	1949	Raleigh
	Reynolds, Robert R.	Dem.	1945	Asheville
.	Langer, William	Rep.	1947	Bismarck
	Nye, Gerald P.	Rep.	1945	Cooperstown
o	Taft, Robert A.	Rep.	1945	Cincinnati
	Burton, Harold H.	Rep.	1947	Cleveland
a.	Thomas, Elmer	Dem.	1945	Medicine Park
	Moore, E. H.	Rep.	1949	Tulsa
.	†McNary, Charles L.	Rep.	1949	Salem
	Holman, Rufus C.	Rep.	1945	Portland
	Davis, James J.	Rep.	1945	Pittsburgh
	Guffey, Joseph F.	Dem.	1947	Pittsburgh
.	Gerry, Peter G.	Dem.	1947	Warwick
	†Green, Theodore F.	Dem.	1949	Providence
.	Smith, Ellison DuR.	Dem.	1945	Lynchburg
	†Maybank, Burnet R.	Dem.	1949	Charleston
.	Bushfield, Harlan J.	Rep.	1949	Miller
	Gurney, Chan	Rep.	1945	Yankton
n.	McKellar, Kenneth	Dem.	1947	Memphis
	†Stewart, Tom	Dem.	1949	Winchester
.	†O'Daniel, W. Lee.	Dem.	1949	Ft. Worth
	Connally, Tom	Dem.	1947	Marlin
h	Murdock, Abe	Dem.	1947	Beaver
	Thomas, Elbert D.	Dem.	1945	Salt Lake City
	Austin, Warren R.	Rep.	1947	Burlington
	Aiken, George D.	Rep.	1945	Putney
	†Glass, Carter	Dem.	1949	Lynchburg
	Byrd, Harry F.	Dem.	1947	Berryville
sh.	Bone, Homer T.	Dem.	1945	Tacoma
	Wallgren, Mon C.	Dem.	1947	Everett
Va.	Revercomb, Chapman	Rep.	1949	Charleston
	Kilgore, Harley M.	Dem.	1947	Beckley
s.	LaFollette, Robert M., Jr.	Pro.	1947	Madison
	Wiley, Alexander	Rep.	1945	Chippewa Falls
o.	O'Mahoney, Joseph C.	Dem.	1947	Cheyenne
	Robertson, Edward V.	Rep.	1949	Cody

United States House of Representatives (*served in 77th ngress)

Speaker: Sam Rayburn, of Texas
Majority Leader: John W. McCormack, of Massachusetts
Minority Leader: Joseph W. Martin, Jr., of Massachusetts

te	Dist.	Name	Party	Residence
.	1	*Boykin, Frank W.	Dem.	Mobile
	2	*Grant, George M.	Dem.	Troy
	3	*Steagall, Henry B.	Dem.	Ozark
	4	*Hobbs, Sam	Dem.	Selma
	5	*Starnes, Joe	Dem.	Guntersville
	6	*Jarman, Pete	Dem.	Livingston
	7	*Manasco, Carter	Dem.	Jasper
	8	*Sparkman, John J.	Dem.	Huntsville
	9	Newsome, John P.	Dem.	Birmingham
z.		*Murdock, John R.	Dem.	Tempe
		Harless, Richard F.	Dem.	Phoenix
.	1	*Gathings, E. C.	Dem.	West Memphis
	2	*Mills, Wilbur D.	Dem.	Kensett
	3	Fulbright, J. W.	Dem.	Fayetteville
	4	*Cravens, Fadjo	Dem.	Fort Smith
	5	Hays, Brooks	Dem.	Little Rock
	6	*Norrell, W. F.	Dem.	Monticello
	7	*Harris, Oren	Dem.	El Dorado
lif.	1	*Lea, Clarence F.	Dem.	Santa Rosa
	2	*Englebright, Harry L.	Rep.	Nevada City
	3	Johnson, J. Leroy	Rep.	Stockton
	4	*Rolph, Thomas	Rep.	San Francisco
	5	*Welch, Richard J.	Rep.	San Francisco
	6	*Carter, Albert E.	Rep.	Oakland
	7	*Tolan, John H.	Dem.	Oakland
	8	*Anderson, John Z.	Rep.	San Juan Bautista
	9	*Gearhart, Bertrand W.	Rep.	Fresno
	10	*Elliott, Alfred J.	Dem.	Tulare

THE U.S. FARM BLOC'S IDEA of killing inflation, as satirized by Duffy of the Baltimore *Sun*. "Let's bury him just a *little* bit," says the farm-minded congressman. The senate's farm bloc fought bitterly against the farm-price ceilings of the anti-inflation bill passed by congress Oct. 2, 1942

State	Dist.	Name	Party	Residence
Calif.	11	Outland, George E.	Dem.	Santa Barbara
	12	*Voorhis, Jerry	Dem.	San Dimas
	13	Poulson, Norris	Rep.	Los Angeles
	14	*Ford, Thomas F.	Dem.	Los Angeles
	15	*Costello, John M.	Dem.	Hollywood
	16	Rogers, Will, Jr.	Dem.	Culver City
	17	*King, Cecil R.	Dem.	Los Angeles
	18	*Johnson, Ward	Rep.	Long Beach
	19	Holifield, Chet	Dem.	Montebello
	20	*Hinshaw, Carl	Rep.	Pasadena
	21	*Sheppard, Harry R.	Dem.	Yucaipa
	22	Phillips, John	Rep.	Banning
	23	*Izac, Edouard V. M.	Dem.	San Diego
Colo.	1	*Lewis, Lawrence	Dem.	Denver
	2	*Hill, William S.	Rep.	Fort Collins
	3	*Chenoweth, J. Edgar	Rep.	Trinidad
	4	*Rockwell, Robert F.	Rep.	Paonia
Conn.		Monkiewicz, B. J.	Rep.	New Britain
	1	Miller, William J.	Rep.	Wethersfield
	2	McWilliams, John D.	Rep.	Norwich
	3	Compton, Ranulf	Rep.	Madison
	4	Luce, Clare Boothe	Rep.	Greenwich
	5	*Talbot, Joseph E.	Rep.	Naugatuck
Del.		Willey, Earle D.	Rep.	Dover
Fla.		*Green, Lex	Dem.	Starke
	1	*Peterson, J. Hardin	Dem.	Lakeland
	2	Price, Emory H.	Dem.	Jacksonville
	3	*Sikes, Robert L. F.	Dem.	Crestview
	4	*Cannon, Pat	Dem.	Miami
	5	*Hendricks, Joe	Dem.	De Land
Ga.	1	*Peterson, Hugh	Dem.	Ailey
	2	*Cox, Edward E.	Dem.	Camilla
	3	*Pace, Stephen	Dem.	Americus
	4	*Camp, Albert S.	Dem.	Newnan
	5	*Ramspeck, Robert	Dem.	Atlanta
	6	*Vinson, Carl	Dem.	Milledgeville
	7	*Tarver, Malcolm C.	Dem.	Dalton
	8	*Gibson, John S.	Dem.	Douglas
	9	*Whelchel, B. Frank	Dem.	Gainesville
	10	*Brown, Paul	Dem.	Elberton
Ida.	1	*White, Compton I.	Dem.	Clark Fork
	2	*Dworshak, Henry C.	Rep.	Burley
Ill.		*Day, Stephen A.	Rep.	Chicago
	1	Dawson, William L.	Dem.	Chicago
	2	Rowan, William A.	Dem.	Chicago
	3	Busbey, Fred E.	Rep.	Chicago

State	Dist.	Name	Party	Residence
Ill.	4	Gorski, Martin	Dem.	Chicago
	5	*Sabath, Adolph J.	Dem.	Chicago
	6	O'Brien, Thomas J.	Dem.	Chicago
	7	*Schuetz, Leonard W.	Dem.	Chicago
	8	Gordon, Thomas S.	Dem.	Chicago
	9	*Dewey, Charles S.	Rep.	Chicago
	10	Church, Ralph E.	Rep.	Evanston
	11	*Reed, Chauncey W.	Rep.	West Chicago
	12	*Mason, Noah M.	Rep.	Oglesby
	13	*Allen, Leo E.	Rep.	Galena
	14	*Johnson, Anton J.	Rep.	Macomb
	15	*Chiperfield, Robert B.	Rep.	Canton
	16	*Dirksen, Everett McK.	Rep.	Pekin
	17	*Arends, Leslie C.	Rep.	Melvin
	18	*Sumner, Jessie	Rep.	Miltord
	19	*Wheat, William H.	Rep.	Rantoul
	20	Simpson, Sid	Rep.	Carrollton
	21	*Howell, Evan	Rep.	Springfield
	22	Johnson, Calvin D.	Rep.	Belleville
	23	Vursell, Charles W.	Rep.	Salem
	24	*Heidinger, James V.	Rep.	Fairfield
	25	*Bishop, C. W.	Rep.	Carterville
Ind.	1	Madden, Ray J.	Dem.	Gary
	2	*Halleck, Charles A.	Rep.	Rensselaer
	3	*Grant, Robert A.	Rep.	South Bend
	4	*Gillie, George W.	Rep.	Fort Wayne
	5	*Harness, Forest A.	Rep.	Kokomo
	6	*Johnson, Noble J.	Rep.	Terre Haute
	7	*Landis, Gerald W.	Rep.	Linton
	8	LaFollette, Charles M.	Rep.	Evansville
	9	*Wilson, Earl	Rep.	Huron
	10	*Springer, Raymond S.	Rep.	Connersville
	11	*Ludlow, Louis	Dem.	Indianapolis
Iowa	1	*Martin, Thomas E.	Rep.	Iowa City
	2	*Talle, Henry O.	Rep.	Decorah
	3	*Gwynne, John W.	Rep.	Waterloo
	4	*LeCompte, Karl M.	Rep.	Corydon
	5	*Cunningham, Paul	Rep.	Des Moines
	6	*Gilchrist, Fred C.	Rep.	Laurens
	7	*Jensen, Ben F.	Rep.	Exira
	8	Hoeven, Charles B.	Rep.	Alton
Kan.	1	*Lambertson, William P.	Rep.	Fairview
	2	*Guyer, Ulysses S.	Rep.	Kansas City
	3	*Winter, Thomas D.	Rep.	Girard
	4	*Rees, Edward H.	Rep.	Emporia
	5	*Hope, Clifford R.	Rep.	Garden City
	6	*Carlson, Frank	Rep.	Concordia
Ky.	1	*Gregory, Noble J.	Dem.	Mayfield
	2	*Vincent, Beverly M.	Dem.	Brownsville
	3	*O'Neal, Emmet	Dem.	Louisville
	4	*Creal, Edward W.	Dem.	Hodgenville
	5	*Spence, Brent	Dem.	Fort Thomas
	6	*Chapman, Virgil	Dem.	Paris
	7	*May, Andrew J.	Dem.	Prestonsburg
	8	*Bates, Joe B.	Dem.	Greenup
	9	*Robsion, John M.	Rep.	Barbourville
La.	1	*Hébert, F. Edward	Dem.	New Orleans
	2	Maloney, Paul H.	Dem.	New Orleans
	3	*Domengeaux, James	Dem.	Lafayette
	4	*Brooks, Overton	Dem.	Shreveport
	5	McKenzie, Charles E.	Dem.	Monroe
	6	Morrison, James H.	Dem.	Hammond
	7	Larcade, Henry D., Jr.	Dem.	Opelousas
	8	*Allen, A. Leonard	Dem.	Winnfield
Me.	1	Hale, Robert	Rep.	Portland
	2	*Smith, Margaret Chase	Rep.	Skowhegan
	3	*Fellows, Frank	Rep.	Bangor
Md.	1	*Ward, David J.	Dem.	Salisbury
	2	Baldwin, H. Streett	Dem.	Towson
	3	*D'Alesandro, Thomas, Jr.	Dem.	Baltimore
	4	Ellison, Daniel	Rep.	Baltimore
	5	*Sasscer, Lansdale G.	Dem.	Upper Marlboro
	6	Beall, J. Glenn	Rep.	Frostburg
Mass.	1	*Treadway, Allen T.	Rep.	Stockbridge
	2	*Clason, Charles R.	Rep.	Springfield
	3	Philbin, Philip J.	Dem.	Clinton
	4	*Holmes, Pehr G.	Rep.	Worcester
	5	*Rogers, Edith N.	Rep.	Lowell
	6	*Bates, George J.	Rep.	Salem
	7	*Lane, Thomas J.	Dem.	Lawrence
	8	Goodwin, Angier L.	Rep.	Melrose
	9	*Gifford, Charles L.	Rep.	Cotuit
	10	Herter, Christian A.	Rep.	Boston
	11	Curley, James M.	Dem.	Boston
	12	*McCormack, John W.	Dem.	Boston
	13	*Wigglesworth, Richard B.	Rep.	Milton
	14	*Martin, Joseph W., Jr.	Rep.	North Attleboro
Mich.	1	Sadowski, George G.	Dem.	Detroit
	2	*Michener, Earl C.	Rep.	Adrian
	3	*Shafer, Paul W.	Rep.	Battle Creek
	4	*Hoffman, Clare E.	Rep.	Allegan
	5	*Jonkman, Bartel J.	Rep.	Grand Rapids
	6	*Blackney, William W.	Rep.	Flint
	7	*Wolcott, Jesse P.	Rep.	Port Huron
	8	*Crawford, Fred L.	Rep.	Saginaw
	9	*Engel, Albert J.	Rep.	Muskegon
	10	*Woodruff, Roy O.	Rep.	Bay City
	11	*Bradley, Fred	Rep.	Rogers City
Mich.	12	Bennett, John B.	Rep.	Ontonagon
	13	*O'Brien, George D.	Dem.	Detroit
	14	*Rabaut, Louis C.	Dem.	Grosse Pointe Par
	15	*Dingell, John D.	Dem.	Detroit
	16	*Lesinski, John	Dem.	Dearborn
	17	*Dondero, George A.	Rep.	Royal Oak
Minn.	1	*Andresen, August H.	Rep.	Red Wing
	2	*O'Hara, Joseph P.	Rep.	Glencoe
	3	*Gale, Richard P.	Rep.	Mound
	4	*Maas, Melvin J.	Rep.	St. Paul
	5	Judd, Walter H.	Rep.	Minneapolis
	6	*Knutson, Harold	Rep.	St. Cloud
	7	*Andersen, H. Carl	Rep.	Tyler
	8	*Pittenger, William A.	Rep.	Duluth
	9	Hagen, Harold C.	F.L.	Crookston
Miss.	1	*Rankin, John E.	Dem.	Tupelo
	2	*Whitten, Jamie L.	Dem.	Charleston
	3	*Whittington, William M.	Dem.	Greenwood
	4	Abernethy, Thomas G.	Dem.	Okolona
	5	Winstead, Arthur	Dem.	Philadelphia
	6	*Colmer, William M.	Dem.	Pascagoula
	7	*McGehee, Dan R.	Dem.	Meadville
Mo.	1	Arnold, Wat	Rep.	Kirksville
	2	Schwabe, Max	Rep.	Columbia
	3	Cole, William C.	Rep.	St. Joseph
	4	*Bell, C. Jasper	Dem.	Blue Springs
	5	Slaughter, Roger C.	Dem.	Kansas City
	6	Bennett, Marion T.	Rep.	Springfield
	7	*Short, Dewey	Rep.	Galena
	8	Elmer, William P.	Rep.	Salem
	9	*Cannon, Clarence	Dem.	Elsberry
	10	*Zimmerman, Orville	Dem.	Kennett
	11	Miller, Louis E.	Rep.	St. Louis
	12	*Ploeser, Walter C.	Rep.	St. Louis
	13	*Cochran, John J.	Dem.	St. Louis
Mont.	1	Mansfield, Mike	Dem.	Missoula
	2	*O'Connor, James F.	Dem.	Livingston
Neb.	1	*Curtis, Carl T.	Rep.	Minden
	2	Buffett, Howard H.	Rep.	Omaha
	3	*Stefan, Karl	Rep.	Norfolk
	4	Miller, A. L.	Rep.	Kimball
Nev.		Sullivan, Maurice J.	Dem.	Reno
N.H.	1	Merrow, Chester E.	Rep.	Center Ossipee
	2	*Stearns, Foster	Rep.	Hancock
N.J.	1	*Wolverton, Charles A.	Rep.	Merchantville
	2	*Wene, Elmer H.	Dem.	Vineland
	3	Auchincloss, James C.	Rep.	Rumson
	4	*Powers, D. Lane	Rep.	Trenton
	5	*Eaton, Charles A.	Rep.	Watchung
	6	*McLean, Donald H.	Rep.	Elizabeth
	7	*Thomas, J. Parnell	Rep.	Allendale
	8	*Canfield, Gordon	Rep.	Paterson
	9	Towe, Harry L.	Rep.	Rutherford
	10	*Hartley, Fred A., Jr.	Rep.	Kearny
	11	Sundstrom, Frank L.	Rep.	East Orange
	12	*Kean, Robert W.	Rep.	Livingston
	13	*Norton, Mary T.	Dem.	Jersey City
	14	*Hart, Edward J.	Dem.	Jersey City
N.M.		*Anderson, Clinton P.	Dem.	Albuquerque
		Fernandez, Antonio M.	Dem.	Santa Fe
N.Y.		*Merritt, Matthew J.	Dem.	Flushing
		Stanley, Winifred C.	Rep.	Buffalo
	1	*Hall, Leonard W.	Rep.	Oyster Bay
	2	*Barry, William B.	Dem.	St. Albans
	3	*Pfeifer, Joseph L.	Dem.	Brooklyn
	4	*Cullen, Thomas H.	Dem.	Brooklyn
	5	*Heffernan, James J.	Dem.	Brooklyn
	6	*Somers, Andrew L.	Dem.	Brooklyn
	7	*Delaney, John J.	Dem.	Brooklyn
	8	*O'Toole, Donald L.	Dem.	Brooklyn
	9	*Keogh, Eugene J.	Dem.	Brooklyn
	10	*Celler, Emanuel	Dem.	Brooklyn
	11	*O'Leary, James A.	Dem.	W. New Bright
	12	*Dickstein, Samuel	Dem.	New York city
	13	*Capozzoli, Louis J.	Dem.	New York city
	14	*Klein, Arthur G.	Dem.	New York city
	15	Burchill, Thomas F.	Dem.	New York city
	16	Fay, James H.	Dem.	New York city
	17	*Baldwin, Joseph C.	Rep.	New York city
	18	*Kennedy, Martin J.	Dem.	New York city
	19	*Bloom, Sol	Dem.	New York city
	20	*Marcantonio, Vito	Am.Lab.	New York city
	21	*Gavagan, Joseph A.	Dem.	New York city
	22	*Lynch, Walter A.	Dem.	New York city
	23	*Buckley, Charles A.	Dem.	New York city
	24	*Fitzpatrick, James M.	Dem.	New York city
	25	*Gamble, Ralph A.	Rep.	Larchmont
	26	*Fish, Hamilton	Rep.	Garrison
	27	Le Fevre, Jay	Rep.	New Paltz
	28	*Byrne, William T.	Dem.	Loudonville
	29	Taylor, Dean P.	Rep.	Troy
	30	Kearney, Bernard W.	Rep.	Gloversville
	31	*Kilburn, Clarence E.	Rep.	Malone
	32	*Culkin, Francis D.	Rep.	Oswego
	33	*Douglas, Fred J.	Rep.	Utica
	34	*Hall, Edwin A.	Rep.	Binghamton
	35	*Hancock, Clarence E.	Rep.	Syracuse
	36	*Taber, John	Rep.	Auburn

State	Dist.	Name	Party	Residence
	37	*Cole, W. Sterling	Rep.	Bath
	38	*O'Brien, Joseph J.	Rep.	East Rochester
	39	*Wadsworth, James W.	Rep.	Geneseo
	40	*Andrews, Walter G.	Rep.	Buffalo
	41	Mruk, Joseph	Rep.	Buffalo
	42	*Butler, John C.	Rep.	Buffalo
	43	*Reed, Daniel A.	Rep.	Dunkirk
	1	*Bonner, Herbert C.	Dem.	Washington
	2	*Kerr, John H.	Dem.	Warrenton
	3	*Barden, Graham A.	Dem.	New Bern
	4	*Cooley, Harold D.	Dem.	Nashville
	5	*Folger, John H.	Dem.	Mount Airy
	6	*Durham, Carl T.	Dem.	Chapel Hill
	7	*Clark, J. Bayard	Dem.	Fayetteville
	8	*Burgin, William O.	Dem.	Lexington
	9	*Doughton, Robert L.	Dem.	Laurel Springs
	10	Morrison, Cameron	Dem.	Charlotte
	11	*Bulwinkle, Alfred L.	Dem.	Gastonia
	12	*Weaver, Zebulon	Dem.	Asheville
.		*Burdick, Usher L.	Rep.	Williston
		Lemke, William	Rep.	Fargo
		*Bender, George H.	Rep.	Cleveland Heights
	1	*Elston, Charles H.	Rep.	Cincinnati
	2	*Hess, William E.	Rep.	Cincinnati
	3	Jeffrey, Harry P.	Rep.	Dayton
	4	*Jones, Robert F.	Rep.	Lima
	5	*Clevenger, Cliff	Rep.	Bryan
	6	McCowen, Edward O.	Rep.	Wheelersburg
	7	*Brown, Clarence J.	Rep.	Blanchester
	8	*Smith, Frederick C.	Rep.	Marion
	9	Ramey, Homer A.	Rep.	Toledo
	10	*Jenkins, Thomas A.	Rep.	Ironton
	11	Brehm, Walter E.	Rep.	Logan
	12	*Vorys, John M.	Rep.	Columbus
	13	Weichel, Alvin F.	Rep.	Sandusky
	14	Rowe, Ed.	Rep.	Akron
	15	Griffiths, P. W.	Rep.	Marietta
	16	Carson, Henderson H.	Rep.	Canton
	17	*McGregor, J. Harry	Rep.	West Lafayette
	18	Lewis, Earl R.	Rep.	St. Clairsville
	19	*Kirwan, Michael J.	Dem.	Youngstown
	20	Feighan, Michael A.	Dem.	Cleveland
	21	*Crosser, Robert	Dem.	Cleveland
	22	*Bolton, Frances P.	Rep.	Lyndhurst
a.	1	*Disney, Wesley E.	Dem.	Tulsa
	2	*Nichols, Jack	Dem.	Eufaula
	3	Stewart, Paul	Dem.	Antlers
	4	*Boren, Lyle H.	Dem.	Seminole
	5	*Monroney, Mike	Dem.	Oklahoma City
	6	*Johnson, Jed	Dem.	Anadarko
	7	*Wickersham, Victor	Dem.	Mangum
	8	*Rizley, Ross	Rep.	Guymon
	1	*Mott, James W.	Rep.	Salem
	2	Stockman, Lowell	Rep.	Pendleton
	3	*Angell, Homer D.	Rep.	Portland
	4	Ellsworth, Harris	Rep.	Roseburg
		Troutman, William I.	Rep.	Shamokin
	1	Gallagher, James, Sr.	Rep.	Philadelphia
	2	*McGranery, James P.	Dem.	Philadelphia
	3	*Bradley, Michael J.	Dem.	Philadelphia
	4	*Sheridan, John E.	Dem.	Philadelphia
	5	Pracht, C. Frederick	Rep.	Philadelphia
	6	*Myers, Francis J.	Dem.	Philadelphia
	7	*Scott, Hugh D., Jr.	Rep.	Philadelphia
	8	*Wolfenden, James	Rep.	Upper Darby
	9	*Gerlach, Charles L.	Rep.	Allentown
	10	*Kinzer, J. Roland	Rep.	Lancaster
	11	Murphy, John W.	Dem.	Dunmore
	12	*Miller, Thomas B.	Rep.	Plymouth
	13	*Fenton, Ivor D.	Rep.	Mahanoy City
	14	Hoch, Daniel K.	Dem.	Reading
	15	*Gillette, Wilson D.	Rep.	Towanda
	16	*Scanlon, Thomas E.	Dem.	Pittsburgh
	17	*Ditter, J. William	Rep.	Ambler
	18	*Simpson, Richard M.	Rep.	Huntingdon
	19	*Kunkel, John C.	Rep.	Harrisburg
	20	Gavin, Leon H.	Rep.	Oil City
	21	*Walter, Francis E.	Dem.	Easton
	22	Gross, Chester H.	Rep.	Manchester
	23	*Van Zandt, James E.	Rep.	Altoona
	24	*Snyder, J. Buell	Dem.	Perryopolis
	25	Furlong, Grant	Dem.	Donora
	26	*Graham, Louis E.	Rep.	Beaver
	27	*Tibbott, Harve	Rep.	Ebensburg
	28	*Kelley, Augustine B.	Dem.	Greensburg
	29	*Rodgers, Robert L.	Rep.	Erie
	30	*Weiss, Samuel A.	Dem.	Glassport
	31	*Eberharter, Herman P.	Dem.	Pittsburgh
	32	*Wright, James A.	Dem.	Carnegie
	1	*Forand, Aime J.	Dem.	Cumberland
	2	*Fogarty, John E.	Dem.	Harmony
	1	*Rivers, L. Mendel	Dem.	North Charleston
	2	*Fulmer, Hampton P.	Dem.	Orangeburg
	3	*Hare, Butler B.	Dem.	Saluda
	4	*Bryson, Joseph R.	Dem.	Greenville
	5	*Richards, James P.	Dem.	Lancaster
	6	*McMillan, John L.	Dem.	Florence
S.D.	1	*Mundt, Karl E.	Rep.	Madison
	2	*Case, Francis	Rep.	Custer
Tenn.	1	*Reece, B. Carroll	Rep.	Johnson City
	2	*Jennings, John, Jr.	Rep.	Knoxville
	3	*Kefauver, Estes	Dem.	Chattanooga
	4	*Gore, Albert	Dem.	Carthage
	5	McCord, Jim	Dem.	Lewisburg
	6	*Priest, J. Percy	Dem.	Nashville
	7	*Courtney, Wirt	Dem.	Franklin
	8	Murray, Tom	Dem.	Jackson
	9	*Cooper, Jere	Dem.	Dyersburg
	10	*Davis, Clifford	Dem.	Memphis
Tex.	1	*Patman, Wright	Dem.	Texarkana
	2	*Dies, Martin	Dem.	Orange
	3	*Beckworth, Lindley	Dem.	Gilmer
	4	*Rayburn, Sam	Dem.	Bonham
	5	*Sumners, Hatton W.	Dem.	Dallas
	6	*Johnson, Luther A.	Dem.	Corsicana
	7	*Patton, Nat	Dem.	Crockett
	8	*Thomas, Albert	Dem.	Houston
	9	*Mansfield, Joseph J.	Dem.	Columbus
	10	*Johnson, Lyndon B.	Dem.	Johnson City
	11	*Poage, William R.	Dem.	Waco
	12	*Lanham, Fritz G.	Dem.	Fort Worth
	13	*Gossett, Ed.	Dem.	Wichita Falls
	14	*Kleberg, Richard M.	Dem.	Corpus Christi
	15	*West, Milton H.	Dem.	Brownsville
	16	*Thomason, R. Ewing	Dem.	El Paso
	17	*Russell, Sam M.	Dem.	Stephenville
	18	*Worley, Eugene	Dem.	Shamrock
	19	*Mahon, George H.	Dem.	Colorado City
	20	*Kilday, Paul J.	Dem.	San Antonio
	21	Fisher, O. C.	Dem.	San Angelo
Utah	1	*Granger, Walter K.	Dem.	Cedar City
	2	*Robinson, J. Will	Dem.	Provo
Vt.		*Plumley, Charles A.	Rep.	Northfield
Va.	1	*Bland, Schuyler O.	Dem.	Newport News
	2	*Harris, Winder R.	Dem.	Norfolk
	3	*Satterfield, Dave E., Jr.	Dem.	Richmond
	4	*Drewry, Patrick H.	Dem.	Petersburg
	5	*Burch, Thomas G.	Dem.	Martinsville
	6	*Woodrum, Clifton A.	Dem.	Roanoke
	7	*Robertson, A. Willis	Dem.	Lexington
	8	*Smith, Howard W.	Dem.	Alexandria
	9	*Flannagan, John W., Jr.	Dem.	Bristol
Wash.	1	*Magnuson, Warren G.	Dem.	Seattle
	2	*Jackson, Henry M.	Dem.	Everett
	3	Norman, Fred	Rep.	Raymond
	4	Holmes, Hal	Rep.	Ellensburg
	5	Horan, Walter F.	Rep.	Wenatchee
	6	*Coffee, John M.	Dem.	Tacoma
W Va.	1	Schiffler, Andrew C.	Rep.	Wheeling
	2	*Randolph, Jennings	Dem.	Elkins
	3	Rohrbough, Edward G.	Rep.	Glenville
	4	Ellis, Hubert S.	Rep.	Huntington
	5	*Kee, John	Dem.	Bluefield
	6	*Smith, Joe L.	Dem.	Beckley
Wis.	1	*Smith, Lawrence H.	Rep.	Racine
	2	*Sauthoff, Harry	Pro.	Madison
	3	*Stevenson, William H.	Rep.	La Crosse
	4	*Wasielewski, Thad F.	Dem.	Milwaukee
	5	McMurray, Howard J.	Dem.	Milwaukee
	6	*Keefe, Frank B.	Rep.	Oshkosh
	7	*Murray, Reid F.	Rep.	Ogdensburg
	8	Dilweg, La Vern R.	Dem.	Green Bay
	9	*Hull, Merlin	Pro.	Black River Falls
	10	O'Konski, Alvin E.	Rep.	Mercer
Wyo.		Barrett, Frank A.	Rep.	Lusk

Congress of Industrial Organizations.

Most noteworthy in the record of the CIO for 1942 was the activity of the CIO's 5,000,000 members in working and fighting for victory in the war of survival against the axis.

Following up its action in promoting the Industry Council plan for greater production, various affiliates of the CIO came forward with detailed plans for increasing output in their industries. A number of these plans were adopted, and greatly increased production of war materials and supplies.

CIO affiliates functioned effectively in the joint labour-management production committees, some 1,700 of which were set up throughout war industry. Hundreds of CIO organized plants won army-navy E awards for excellence in production, and thousands of individual CIO members won official recognition for their own contributions to increased output.

On the legislative side, and in co-operation with government war agencies, the CIO pressed for increased labour representation

A SHOWER OF CONFETTI testified to the popularity of Philip Murray, president of the Congress of Industrial Organizations, at the convention of the United Automobile Workers in Chicago in Aug. 1942

to bring the skill and experience of organized workers to bear on problems of production. At its Boston convention in 1942, the CIO unanimously pressed a demand for centralized, over-all national planning under one federal war mobilization agency.

The Boston convention was also marked by CIO resolutions calling for a second land front against nazi Germany; for total mobilization of all resources for total war and victory; for unity between U.S. labour movements and for co-operation between the labour movements of all the United Nations, including Latin America through direct contact; for freedom for India; for stabilization of the national economy through price control, rationing and taxation on ability to pay; for greater effort in organizing workers for victory; for abolition of the poll tax and similar measures.

Philip Murray was re-elected president at the convention and James B. Carey, secretary-treasurer. (*See* also AMERICAN FEDERATION OF LABOR; LABOUR UNIONS; STRIKES AND LOCK-OUTS; UNITED STATES.) (P. MY.)

Conjunctivitis, Shipyard: *see* EYE, DISEASES OF.

Connaught, Arthur William Patrick Albert,

DUKE OF (1850–1942), third son of Queen Victoria and great uncle of King George VI, was born May 1 at Buckingham palace. In 1899, he succeeded to the duchy of Saxe-Coburg and Gotha on the death of his elder brother, Alfred, duke of Edinburgh, but renounced his rights because he wished to remain an Englishman. The duke of Connaught, senior field marshal of the British army, was appointed on his 86th birthday by Edward VIII as the first of his personal aides-de-camp. Because of failing health, the duke remained in seclusion at his country home, Bagshot Park, Surrey, after the start of World War II. He died at his home Jan. 16, the dukedom passing to his grandson, 27-year-old Alastair Arthur, earl of Macduff. (See *Encyclopædia Britannica.*)

Connecticut.

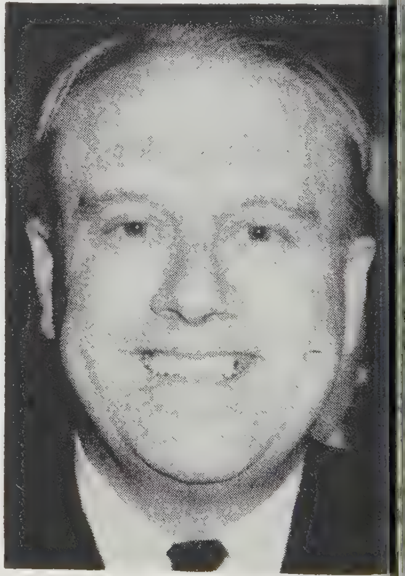
The most southwesterly of the New England states, Connecticut is popularly known as the "Nutmeg state" and the "Land of Steady Habits"; land area, 4,899 sq.mi.; population (1940), 1,709,242, an increase of 6.4% over 1930. Capital, Hartford (166,267). Other cities with more than 50,000 population in 1940: New Haven (160,605); Bridgeport (147,121); Waterbury (99,314); New Britain (68,685). Of the state's population in 1940, 1,158,162 were urban, or 67.8%. In 1940 there were 1,675,407 whites; 32,992 Negroes; 1,347,466 native born; 327,941 foreign born. Especially in and around the 24 leading industrial centres, the population of the state gr greatly after the 1940 census, though no statistics of the increa were available in 1942.

History.—The principal officers in 1942 (for the term 1941–4 were: governor, Robert A. Hurley (Dem.); lieutenant-govern Odell Shepard; secretary of the state, Mrs. Chase Going Woo house. The Republicans carried the state election in Nov. 194 electing for the 1943–45 term: governor, Raymond E. Baldw (281,362 votes, against Hurley, Democrat, 255,166, and McLev Socialist, 34,537); lieutenant-governor, William L. Hadden; sec tary of the state, Mrs. Frances B. Redick. The Republicans al won additional representation in both houses of the gener assembly, as follows: Senate, 22 Republicans, 14 Democrat House, 201 Republicans, 71 Democrats. The general assemb was not in session in 1942, except for a very brief special sessi to remedy a defect in the election laws.

Education.—In 1940–41 the enrolment in 866 elementa schools was 184,388, with 5,395 teachers. In 39 junior hi schools, with 619 teachers, there were 23,170 pupils enrolled; 84 senior high schools, with 2,329 teachers, the enrolment w 89,568. In 1941–42 enrolment declined to 167,912 in elementa schools, 21,732 in junior high, and 84,546 in senior high. Curre expenses for 1941–42 were $29,776,000, of which nearly 70 was for salaries; capital outlays were $4,989,000.

Public Welfare, Charities, Correction.—June 1942, 2,3 persons on WPA payrolls received $190,734, a decrease of mo than 50% from the preceding year. In the same period, gener relief payments for 13,186 town charges amounted to $208,03 and for 4,701 state charges to $94,201. In the same month, 17,5 beneficiaries received old age assistance amounting to $516,5 and 189 blind received payments of $5,267. Also in June, 6,1 persons received $95,972 for aid to dependent children.

Communications.—Up to Nov. 10, 1942 the number of c registrations had decreased slightly, being 562,184, but the nu ber of operators' licenses had increased slightly to 614,790. T state highway system in 1942 included 2,890 mi. of trunk li and state-aid roads, of which 60 mi. were improved during t year, and about 1,600 mi. of town-aid roads. During the year the most important construction was the continuation of the Wilbur Cross highway, for which the new bridge over the Connecticut was opened at Hartford in Sept. There were 812 mi. of railroads in operation in 1942, most of which belonged to the New York, New Haven, and Hartford system. As of Nov. 1, 1942, the Southern New England Telephone company had 451,201 telephones in service in the state. There were about 10,000 telephones serviced by other companies.



RAYMOND E. BALDWIN, Republican, w elected governor of Connecticut Nov. 3, 194

Banking and Finance.—On Sept. 30, 1942 the 72 mutu savings banks in the state had total deposits of $787,742,241 a total assets of $885,934,843. The number of accounts was 1,01 581. The 64 state banks and trust companies had total assets

3,124,727, with savings deposits of $121,110,011. The 52 ional banks on April 4, 1942 had total assets of $480,374,000. rtford is the headquarters of most of the 25 large insurance npanies operating under Connecticut charters. The five Concticut life insurance companies wrote 10% of the ordinary life urance of the country and 36% of group insurance. The eight nnecticut casualty companies wrote 20% of all casualty siness in the country.

The state income for the fiscal year ended June 30, 1942 was ,672,228 and the net expenditures were $71,277,045. Of the penditures, $28,683,356 was for the general fund, $27,076,440 highways and bridges, $6,632,804 for old age assistance, and 083,160 for unemployment compensation. On June 30, 1942, state's bonded debt was $30,213,000, partly offset by $10,681,- in the retirement fund.

Agriculture.—According to the census of 1940 there were 163 farms in the state, of which all but 8% were operated owners. The acreage under crops in 1941 was 357,800 and market value of products was $67,299,000. Conditions in 2 were favourable to production, and marketing conditions proved except in the case of garden products.

Leading Agricultural Products of Connecticut, 1942 and 1941

Crop	1942 (est.)	1941
ay, tons	430,000	403,000
obacco, lb.	21,960,000	23,370,000
otatoes, bu.	3,078,000	2,862,000
orn, bu.	2,021,000	1,974,000
pples, bu.	2,030,000	1,412,000

Manufacturing.—The census report showed, in 1939, 2,936 nufacturing establishments in the state employing 233,525 ge earners with products valued at $1,229,585,773. In 1942 se numbers had increased respectively to 3,350; 491,000, and 000,000,000 approximately. In 1942, Connecticut ranked first ong the states of the union in per capita production of war terials. The index of general business activity in the state in e 1940 was 10% above normal; in June 1941, 72% above; l in June 1942, 93% above. Building contracts awarded in 1941 re approximately 95% above the combined total for the two eceding years, and the early months of 1942 showed a still ther increase. While Connecticut leads in the manufacture aeroplane motors and propellers, submarines, and small arms munition, it is also a large producer of a wide range of other es of war materials.

Mineral Production.—The state's mineral production is relaely negligible, the principal products being stone, valued at $2,- ,366 in 1939, and clay, valued at $1,257,049. (G. M. Du.)

onscientious Objectors: *see* Friends, Religious Society ; Pacifism.

onscription: *see* Selective Service.

onservation, Soil: *see* Soil Erosion and Soil Conservan.

onservation Corps, Civilian: *see* Civilian Conservation rps.

nservative Party, Great Britain.

A decision to call, in March 1943, first full party conference since the war began was the outnding event of the Conservative and Unionist party's year. thout breaching the political truce, agreed with the other rties on the declaration of war, this marked a feeling, which l steadily grown during the year, that as the principal partner nind the national government it must prepare for postwar difences of outlook.

The importance of the party's making its own contribution to the common pool when the time for reconstruction comes was emphasized in a letter from the prime minister, as its leader, to Mrs. Lionel Whitehead, chairman of the Conservative Central council, when she presided at the second of its two meetings in October. Winston Churchill referred to the government's concern, as shown by the charging of ministers with specific responsibility for postwar planning, and added: "This does not absolve the organization of our party from pursuing its own survey."

One of these surveys excited controversy within the party itself. It came from the education subcommittee, over which Geoffrey Faber presided, and for which W. F. Oakeshott, high master of St. Paul's school (a member), had prepared a "plan for youth." Nearly all the comments at the central council meeting were critical, especially of its insistence on compulsion. In consequence the subcommittee was to think again. But a second report was commended by R. A. Butler (president of the Board of Education and chairman of the party's central postwar problems committee) as "inspired by a sincere belief that the country has definite spiritual needs" and this won general acceptance.

Mrs. Whitehead, who was elected chairman at the earlier council meeting in March, was the sixth woman to hold that office. At the same meeting the marquis of Salisbury was elected president of the National Union of Conservative associations. During 1942, Sir Douglas Hacking retired from the chairmanship of the party organization and Major J. L. Dugdale became chairman. The two vice-chairmen were Col. H. P. Mitchell and Lady Hester Bourne. Lord Marchwood remained treasurer of the party and Sir Robert Topping general director. The central offices were removed during the year to 24–26 Old Queen St., Westminster S.W.1.

In parliament the party, which (including 10 Ulster unionists) held 364 of the 615 seats, steadfastly supported the war policy of the coalition government while continuing to express its own viewpoint through the 1942 committee, of which A. G. Erskine-Hill was chairman. (L. D.)

Consumer Credit.

The outstanding amount of consumer credit in the United States in 1942 had grown enormously during the preceding 50 years. The expansion of instalment credit had contributed a very large part of the growth, particularly after 1920. The long-term expansion had been interrupted, however, by cyclical fluctuations. After reaching a peak of $8,200,000,000 in 1929, the outstanding amount of consumer credit declined sharply to about $4,600,000,000 in March 1933. Then another period of expansion carried the total to $8,500,000,000 in Sept. 1937. This new peak was followed by a sharp decline until the latter part of 1938, when a new expansion began. By Aug. 1941, an all-time high of about $10,200,000,000 had been reached.

These fluctuations were caused by changes in the national income. When incomes rise, people tend to expand their credit; and when incomes fall, they tend to repay their obligations. In addition, however, fluctuations of consumer credit contribute to the expansion and contraction of incomes. Expansions of consumer credit tend to pour additional funds into the income stream, while contractions tend to reduce the flow of income funds. Thus consumer credit has served to exaggerate and to prolong business booms and depressions.

Recognition of these characteristics led in 1941 to control by the federal government. Under authority of an executive order dated Aug. 9 of that year, the federal reserve board undertook to restrict consumer credit as a means of partially offsetting the inflationary forces generated by the rapid expansion of military expenditures. Regulation W, which became effective Sept. 1, prescribed minimum down-payments, varying between 10% and

$33\frac{1}{3}\%$ of the purchase price, and a maximum maturity period of 18 months for instalment sales of an extensive list of consumers' durable goods. It imposed the same maturity limitations upon all instalment loans of $1,000 or less. The latter figure was later increased to $1,500.

The initial regulation was directed primarily toward the curtailment of demand for specific goods the manufacture of which used machines, materials and skills needed for military production. Important amendments which became effective early in 1942, however, were designed to create a general deflationary force by inducing a broad liquidation of consumer credit. The amendment of March 23, 1942, added additional articles to the list subject to credit restrictions, increased minimum down-payments and reduced the maximum maturity period for instalment loans and most listed articles to 15 months. The amendment of May 6, 1942, which followed closely the President's seven-point stabilization message to congress, further increased down-payment requirements, reduced the maturity for instalment loans and most listed articles to 12 months and restricted charge accounts. The charge-account provision required merchants to suspend further credits for listed articles where accounts remained unpaid on the 10th day of the second month following the month of purchase.

Prior to the date of the initial regulation, consumer credit had been expanding at the rate of about $1,500,000,000 a year. The regulation immediately reversed this trend. The liquidation was gradual at first; but it accelerated, as the result of the March and May amendments, the restriction of automobile sales through rationing, and the discontinuance of production of many consumers' durable goods that had commonly been sold on credit.

Between Sept. 1, 1941 and Sept. 1, 1942, the outstanding amount of consumer credit declined by about $3,000,000,000. The liquidation for the calendar year 1942 was estimated at between $3,500,000,000 and $4,000,000,000. Roughly half of the liquidation was attributable to the discontinuance of production of consumers' durable goods and the remainder to the restrictions imposed by the regulation. The liquidation produced a deflationary force of substantial magnitude which contributed importantly to the stabilization of the price level.

A considerable volume of necessitous borrowing and essential credit buying could not be eliminated without great inconvenience and hardship, and to attempt to do so would have led to the development of black markets for credit. Consequently, the rate of liquidation of consumer credit was not expected to decline early in 1943. In view of the gradual loss of the deflationary effects from this source, the Office of Price Administration developed a plan for selling consumers' durable goods, which had disappeared from the market, for postwar delivery. Payments for such goods would replace payments on previous instalment purchases as contracts were completed and in this way the deflationary effects of instalment payments could be continued and even increased.

Under this proposal, consumers who purchased postwar-delivery certificates would be entitled to a prior claim to postwar production and a price discount. Sales and collections would be made so far as practicable through regular dealers and finance agencies. Funds would be channelled to the United States treasury, which would have the use of purchasers' payments pending the restoration of production.

During 1942, the regulation of consumer credit for economic purposes overshadowed the regulation of consumer credit for protecting debtors, a traditional function of state governments. There were no significant changes in the latter field during the year. (R. Nt.)

Continental Divide Tunnel: *see* Tunnels.

Contract Bridge. The war had less impact on contra bridge in 1942 than might have been e pected. Reliable indices of popularity, such as the sale of playin cards, bridge books, and other paraphernalia, attested to the co tinued popularity of the game, and even tournament bridge d not suffer greatly reduced attendance. There were no chang in any of the leading systems—such as the Culbertson syste or the Four Aces' system—nor was there any revision in t official laws of the game, although such revision was envisag for 1943.

The results in the three leading tournaments conducted by t American Contract Bridge league, governing body of almost tournament bridge played in the United States, were as follo in 1942:

Eastern States Tournament, New York., N.Y., Feb. 28–Mar 6, 1942. Open Pairs: won by Richard L. Frey and A. Moyse, J New York city; Open Teams-of-Four: won by Harry J. Fishbei Tobias Stone, George Rapee and B. Jay Becker, New York ci and Simon Becker, Philadelphia; Women's Pairs: won by Mr Barbara Collyer and Mrs. Erwin Seligman, New York city; Mix Pairs: won by Mrs. A. M. Sobel and Edward Hymes, New Yo city; Non-Master Pairs: won by Jules Aceeves and Joseph O'Co nor, New York city.

Summer National Tournament, New York, N.Y., Aug. 3– 1942. Masters' Pair Championship: won by Mrs. A. M. Sob New York city, and Charles H. Goren, Philadelphia; Maste Team-of-Four Championship: won by Richard L. Frey, Sa Stayman, Sigmund Dornbusch, Murray Seiler, Lee Hazen, Ne York city; National Men's Pair Championship: won by Robe von Engel, New York city, and Aaron Goodman, Montreal, Can National Women's Pair Championship: won by Mrs. Erwin Seli man and Mrs. Mae P. Rosen, New York city; Mixed Team-o Four Championship: won by Waldemar von Zedwitz, New Yo city; Mrs. Olive Peterson and John Crawford, Philadelphia, Mr Wilkinson Wagar, Atlanta; Non-Masters Pairs Championshi won by F. P. Begley and Dr. Kalman Apfel, New York city Amateur Team-of-Four Championship: won by Mrs. C. Va Slochem, Mrs. Julius Daub, Arthur Jarmel and Morris Straus New York city.

Winter National Tournament, Syracuse, N.Y., Nov. 30–De 6, 1942. Open Pairs: won by Tobias Stone, New York city, an Alvin Roth, Washington; Women's Team-of-Four: won by Mr Benjamin M. Golder and Mrs. Olive A. Peterson, Philadelphi and Miss Ruth Sherman and Mrs. Olga J. Hilliard, New Yor city; Mixed Pairs: won by Miss Ruth Sherman and Harry Fishbein, New York city; Open Teams-of-Four: won by Charl H. Goren, John R. Crawford, Sidney Silidor, and B. Jay Becke Philadelphia; Amateur Pairs: won by Kenneth Cadawallade Syracuse and Arthur Waterbury, Euclid, N.Y. (E. Cul.)

Contract Renegotiation: *see* Business Review.

Controlled Materials Plan: *see* Priorities and Alloca tions; War Production, U.S.

Convoys: *see* Blockade.

Cooper, Sir Edwin (1874–1942), British architect, wa credited with having designed mo buildings in the old City of London than any architect since S Christopher Wren. His most important work was the Port o London Authority building on Tower Hill. He was made a honorary member of Lloyd's for his design of the company Royal Mail building.

He was knighted in 1923, won the Royal Gold medal in 193 and was an associate of the Royal academy. He died in Londo June 24.

pper. There were no production statistics from most of the important producing countries after 1939, so that y of the later data in the accompanying world table are esties; only those figures in which a decimal is used are reported outs. So far as could be determined at the close of 1942, protion exceeded that of the preceding year by about 10% in o and 7% in 1941.

Table I.—*World Production of Copper*
(In thousands of metric tons)

	1937	1938	1939	1940	1941
lgian Congo . .	150.6	124.0	121.5	148.6	165
nada.	238.1	263.3	281.5	310	?
ile.	412.9	351.4	339.2	352.4	461
pan	75.9	77.0	77.0	113	?
exico	46.8	41.4	48.8	40.9	51.6
ru	35.7	37.5	35.4	36.4	37.7
odesia	212.7	215.3	216.0	231	?
S. S. R.	92.5	114.5	144.0	151	?
ited States . . .	757.4	505.0	666.8	824.7	876.4
World Total . .	2,271.6	1,984.1	2,161.5	2,375	2,550
Ex. U. S.	1,514.2	1,479.1	1,494.7	1,550	1,674

he mine production of copper in the United States in 1941 958,147 short tons, smelter production from domestic ores ,072 tons, and refinery production from domestic ores 975,408 ; the total refinery production, including 419,901 tons from ign ores, was 1,395,309 tons. In addition to this supply of copper there was a recovery of secondary copper from old p amounting to 412,699 tons, and 313,697 tons was reworked n new scrap.

mports were reported only for the first nine months of 1941, these amounted to 745,736 tons as compared with 559,679 in the full year 1940; in the same periods exports had ined from 804,758 tons to 185,617 tons; hence a net export of ,079 tons in 1940 had been shifted to a net import of 560,119 for the first three-quarters of 1941.

ombining the various data cited above, we have the following the make-up of the known available supply for 1941:

Refined from domestic ores	975,400 tons
Recovered from old scrap	412,700
Recovered from new scrap	313,700
Received from net imports	560,100
Total known supply	2,261,900 tons

n the other hand, it was reported from the War Production rd that the total supply in 1941 was 2,467,100 tons, as comed with 1,913,000 tons in 1940. Presumably the official figure uded imports for the full year, and therefore should be larger, er than smaller than the known supply tabulated above. In same official report the total supply for 1942 was estimated ,571,700 tons, though it was also stated that the essential irements for the year were 8% in excess of this figure, and total requirements exceeded it by 25%. Unless something stic could be done about shortage of mine labour and equipt, it seemed that domestic production had about reached its t, and improvement in the copper position depended on increased imports, more active scrap recovery, and a more extensive use of substitutes.

Table II.—*Mine Production of Copper in the United States*
(Thousands of short tons)

	1936	1937	1938	1939	1940	1941
ska	18.9	17.3	14.5	0.1	0.1	0.1
zona	211.3	288.5	210.8	262.1	281.2	326.3
ifornia	4.4	5.3	0.8	4.2	6.4	3.9
orado	8.9	10.9	14.2	13.2	12.2	6.7
ho	1.5	2.2	2.1	2.5	3.3	3.6
chigan	48.0	47.5	46.7	44.0	45.2	46.4
ntana	109.5	144.5	77.2	97.8	126.4	128.0
vada	70.7	74.6	46.2	66.6	78.5	78.9
v Mexico	3.2	32.1	20.4	46.1	69.8	73.5
h	126.2	206.0	108.1	171.9	231.9	266.8
shington	0.1	0.1	6.0	9.0	9.6	8.7
ers	13.2	13.0	10.8	10.8	13.5	14.9
Total	614.5	842.0	557.8	728.3	878.1	958.1

The copper shortage was frequently criticized as being unnecessary, had there been proper utilization of the supplies at hand. There were arguments on both sides of the question, of which probably the most striking one was that from such statistics as were available it seemed apparent that the amounts of copper made available to the war effort in the United States in the years 1941 and 1942 were equal to and possibly exceeded the total amounts that had been available in Germany during the previous ten years, including scrap recovery in Germany itself and from the occupied areas after they were taken over.

There was some time during World War I when copper sold for more than 30 cents per pound, but in World War II the price was under control from the start, with the result that the price at the close of 1942 in a market where demand far exceeded supply was 12 cents less than the price before the war began.

Indications as to the trend of operations in 1942 were scarce. The United States statistics were suspended after the publication of the May data, which showed a production of 456,486 tons in the five months, and total deliveries, including imports, of 589,925 tons. In Chile the total of the first four months was 156,800 metric tons, 4% better than the 1941 average. The Mexican total for three months was only 8,100 tons, down one-third from the 1941 rate. In Peru the exports through July were 18,400 metric tons, 14% ahead of 1941. Data were entirely too scanty to justify any attempt to estimate world production. (*See* also MINERAL AND METAL PRICES AND PRODUCTION; STRATEGIC MINERAL SUPPLIES; WAR PRODUCTION, U.S.) (G. A. Ro.)

Copra: *see* COCO-NUTS.

Copyright. In 1942 there was no amendment to the Copyright act. Several copyright bills were introduced in congress, but because of the exigency of other matters no final action was taken. On Dec. 18, 1941 the president approved the "First War Powers Act, 1941" (Public Law 354) confirming, ratifying and amending The Trading With the Enemy act of Oct. 6, 1917 (40 Stat. 411) as amended. Under Section 10 of the latter act enemy aliens may file and prosecute in the United States applications for letters patent, or for registration of copyrights, subject to regulations issued by the Alien Property Custodian.

During the year 1942, there was some falling off in the number of copyright registrations, especially in relation to foreign works published abroad; yet despite the war the gross receipts of the copyright office for the fiscal year 1942 ($376,906.63) reflect the largest copyright business in the history of the office.

The copyright law in force requires, as one of the conditions precedent to the registration of a claim to copyright in any work, the deposit of two copies of American books and one copy of foreign books, for the enrichment of the Library of Congress. During the fiscal year 1942, 286,436 books and other articles were deposited, including 20,754 printed volumes, 67,240 pamphlets and leaflets, 90,290 periodicals, 5,468 dramas, 60,098 pieces of music, 2,402 maps, 2,543 photographs, 20,026 prints, labels and pictorial illustrations, 4,319 motion pictures, and 6,054 works of art and drawings. These were all produced in the United States. From abroad there were received 651 books in foreign languages and 509 books in English. Of this great collection of copyrighted works, 174,355 were transferred to the permanent collections of the Library of Congress; 1,863 were sent to other governmental libraries, and 4,094 were returned to the claimants of copyright. (*See* also LAW.) (C. L. B.)

Coral Sea, Battle of: *see* JAPAN; WORLD WAR II.

Corn

(Maize). Corn production in the United States in 1942 set an all-time high of 3,175,154,000 bu., which was 105,000,000 bu. more than the previous record of 3,070,000,000 bu. in 1920. The yield per acre in 1942 was also the highest on record, 35.5 bu. per ac. compared with the previous high of 31.7 bu. per ac. in 1906. Yields were well above average in most states, but high records were made in Iowa, Indiana, Ohio, Illinois, Michigan and Wisconsin because of widespread seeding of hybrid varieties. The foregoing figures are estimates as of Dec. 1, 1942, by the department of agriculture and relate to corn harvested for all purposes, for grain silage, forage, hogging and grazing. About 91% of the total crop, or 2,884,744,000 bu., was harvested for grain, compared with 2,435,307,000 bu. harvested for grain in 1941, when the total crop was 2,677,517,000 bu. The ten-year (1930–39) average was 2,307,452,000 bu. Corn silage production in 1942 was estimated at 33,927,000 tons. In addition, 4,651,000 ac. were hogged down or used for grazing or forage. The total acreage of corn harvested was 89,484,000 ac. in 1942, and 86,186,000 ac. in 1941. The ten-year average was 98.049,000 ac. The increased production on smaller acreage indicated the rapid spread of the higher-yielding hybrid varieties throughout the corn belt. The 1941 yield of 31.1 bu. per ac. was the third largest on record. The 1942 record crop was considered remarkable not only because of its size, but also because it was produced under adverse conditions. In many important sections planting was one to three weeks late, and continued rains prevented good cultivation. An early June drought threatened the crop in the south central states, but rains late in the month brought relief. In the northern states early freezing temperatures stopped plant growth at least a week earlier than usual. Corn harvested for grain in Canada in 1942 was estimated at 14,372,000 bu., compared with 13,362,000 bu. in 1941; corn fodder, 4,491,000 tons in 1942 and 4,154,000 tons in 1941. (S. O. R.)

U.S. Corn Production by States, 1942 and 1941

State	1942 bu.	1941 bu.	State	1942 bu.	1941 bu.
Iowa	596,796,000	462,510,000	Louisiana	24,412,000	22,260,000
Illinois	433,438,000	409,213,000	South Carolina	21,330,000	22,316,000
Nebraska	242,708,000	157,638,000	Colorado	19,138,000	15,026,000
Indiana	216,702,000	177,030,000	Maryland	16,344,000	15,750,000
Minnesota	207,100,000	194,040,000	West Virginia	14,042,000	12,307,000
Ohio	185,752,000	160,974,000	New Jersey	8,370,000	7,503,000
Missouri	146,899,000	113,216,000	Florida	7,413,000	6,840,000
Wisconsin	103,544,000	90,000,000	Delaware	4,092,000	3,990,000
South Dakota	103,214,000	50,006,000	Montana	3,800,000	3,560,000
Kansas	90,060,000	57,224,000	New Mexico	3,792,000	3,315,000
Kentucky	82,200,000	73,080,000	Vermont	2,800,000	2,622,000
Texas	78,561,000	73,875,000	California	2,574,000	2,624,000
Tennessee	75,924,000	69,615,000	Idaho	2,444,000	2,475,000
Michigan	69,703,000	48,032,000	Connecticut	2,058,000	1,974,000
Pennsylvania	55,685,000	53,203,000	Wyoming	2,013,000	2,432,000
Mississippi	49,198,000	51,255,000	Massachusetts	1,804,000	1,681,000
North Carolina	47,068,000	52,624,000	Oregon	1,742,000	2,013,000
Alabama	43,960,000	51,228,000	Washington	1,353,000	1,435,000
Georgia	39,160,000	42,000,000	Utah	792,000	812,000
Arkansas	37,116,000	40,812,000	Maine	672,000	656,000
Oklahoma	35,631,000	31,202,000	New Hampshire	630,000	630,000
Virginia	35,586,000	32,924,000	Arizona	396,000	451,000
North Dakota	29,000,000	25,645,000	Rhode Island	328,000	312,000
New York	27,600,000	27,040,000	Nevada	120,000	120,000

Cornell University.

An institution of higher learning, nonsectarian and co-educational, at Ithaca, N.Y., founded in 1865 and incorporated as a land-grant college under the Morrill act of 1862.

The university comprises the endowed schools and colleges of arts and sciences, engineering, architecture, law and medicine (located in New York city and operated in conjunction with the New York hospital), and the state-supported colleges of agriculture, home economics and veterinary medicine. Two experiment stations, at Geneva and Farmingdale, N.Y., are operated in connection with the college of agriculture. Degrees for advanced study other than professional are awarded through a graduate school.

Early in the academic year 1941–42 there was established school of nutrition, offering a five-year program leading to t M.S. degree. Special wartime developments were the establis ment of a naval training school with an enrolment of 1, officers; and a great expansion in engineering, science, manag ment war training courses offered under the sponsorship of t U.S. office of education. Additions to plant included Olin hall chemical engineering and the high-voltage laboratory of the en neering college. For statistics of the faculty, student enrolme library, endowment, etc., *see* Universities and Colleges. Pre dent, Edmund Ezra Day, Ph.D., LL.D. (E. E. D.)

Cornhusking.

The national and most state cornhusking cha pionships were cancelled because of the w and cornhusking became a project in which many townspeo participated in an effort to harvest the crops for the farme Besides the nationals, state contests were cancelled in Iowa, N braska, South Dakota, Wisconsin, Minnesota, Kansas, Missou Illinois, Indiana, Ohio and Pennsylvania. Floyd Wise of Prai Center, Ill., the 1941 champion, was in the U.S. armed forc during 1942. (M. P. W.)

Corporation Income Tax: *see* Taxation.

Corrigan, Joseph Moran

(1879–1942), U.S. clergyma was born May 18 in Philad phia. He attended Overbrook seminary and received his S.T. degree from the Pontifical College of North America in Rom He was ordained priest in Rome in 1903 and was assigned to Philadelphia church, where he was active in settlement work. was made chancellor of the archdiocese of Philadelphia in 19 prelate of the papal household, 1929, and apostolic protonotary 1937. He was consecrated titular bishop of Bilta in 1940. A lea ing Catholic educator, Bishop Corrigan was rector of the Catho University of America, Washington, D.C., 1936–42. He died Washington, June 9.

Corundum: *see* Abrasives.
Cosmetics: *see* Soap, Perfumery and Cosmetics.
Cosmic Rays: *see* Physics.

Costa Rica.

A republic of Central America. Area, 23,0 sq.mi.; pop. (1941 est.) 668,800. More th three-fourths of the predominantly white population live in t west central highlands; an estimated 3% who are Negroes li in the coastal area, where banana production is importa Capital, San José (78,000). Other cities: Heredia (9,000 Alajuela (8,000); Puerto Limón (8,600); Cartago (8,20 Language: Spanish. President in 1942: Rafael Angel Calder Guardia.

History.—During 1942 Costa Rica continued its policy of e thusiastic co-operation with the United States and the allies. C Jan. 30 the joint declaration of the United Nations was approve and in May diplomatic relations were ended with Hungary a Rumania. The sinking of a vessel within the harbour of Puer Limón by a submarine presumably German caused anti-axis ric and the arrest of suspected persons.

The national emergency brought about a suspension on Mar 5 of the constitutional guarantees for a 60-day period and t state of siege was further extended in June. A National Civili Defense board was early put in charge of defense preparation and problems connected with price and supply of commoditi resulted in the establishment of an Office of Price Investigati and Control on March 27. Under the direction of this authori the re-export of manufactured articles was prohibited and ewise took over the regulation of price and production of such ms as drugs, livestock, metals, oils and fats, corn, beans and e. Fear of a misuse of United States currency by axis agents ulted in the prohibition of both import and export of such rency, and the National Bank of Costa Rica took over superion of all foreign exchange.

Efforts to increase production of rubber and abacá were backed government interests and the fruit corporations, both to courage production of strategic materials and to substitute for 30% loss in revenue caused by reduction of banana exports. ring 1942 the cost of living steadily increased.

Education.—The school system is excellent (671 schools, 594 students in 1941), and the literacy rate (76%) the best in ntral America.

Defense.—In normal times the Costa Rican army is limited to ; in war approx. 50,000 men on the army rolls are available service.

Finance.—The monetary unit is the colón, valued at 17¾ cents S. in 1942. Finances for 1941 indicated revenue: 42,611,000 ones; expenditures: 53,036,000 colones. Notes in circulation 941) were 66,900,000 colones. A bond issue of 1,000,000 ones was authorized in Nov. 1942.

Trade.—Total trade (1941): $27,807,453, up 14% from 1941. ports: $17,754,186; exports: $10,053,257. The U.S. took proximately 80% of all trade. Trade for 1942 declined in antity, banana exports suffering most.

Communication.—External communication by water was tailed by the war, with fruit company boats diverted to other es. Air service increased in 1942, with a new line to Panama thorized. Pioneer roads to connect unfinished portions of the ter-American highway were under construction.

Bibliography.—Dana G. Munro, *The Five Republics of Central America* 18); Chester Lloyd Jones, *The Caribbean since 1900* (1936); C. D. oner, *Social Aspects of the Banana Industry* (1936). (D. Rd.)

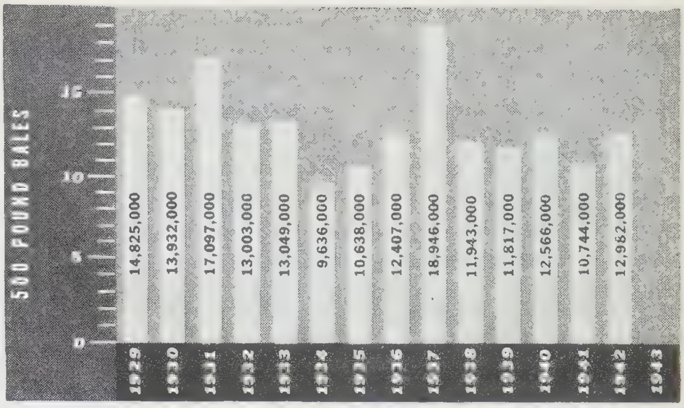
ost of Living: *see* Business Review.

otton.

Cotton Manufacture.—Cotton consumption in 1942 set an all-time high record, with an increase of apoximately 10% over 1941, in which year it passed the 10,000,- bale mark. That this apparently impossible task was accomshed was due primarily to the addition of looms from other nches of the industry to cotton manufacture.

The most conspicuous case was in connection with cotton duck. ght after Pearl Harbor it looked as if the military requirements duck could not possibly be met; the figure was too fantastic. thin a few weeks after the outbreak of the war, however, exng duck manufacturers were bending their energies teaching rpet manufacturers how to convert their looms, rendered uses for their ordinary purpose by shortage of wool, to the proction of cotton duck. So successful was this conversion that fore the end of 1942 not only was the production of duck adeate for the enormous demands, both from the army and from lustry, but the converted plants were producing 38% of the al output of the country.

Another serious bottleneck which threatened the defense and n the war program was in combed yarns. Specified by the artermaster corps for many uses which had hitherto been filled carded yarns, combed yarns became one of the tightest spots the industry. In Aug. 1940 (just prior to the real start of the fense demands for combed yarn) weekly production of combed rn by the member mills of the Southern Combed Yarn Spinrs association averaged 2,008,679 lb. In Aug. 1941 (after one ar's conversion effort) the same spindles averaged a weekly oduction of 3,224,554 lb. of which approximately 45% was going into government work. In May 1942 the same spindles were producing a weekly average of 4,091,618 lb., of which 2,500,000 lb. (or 61%) were being shipped on government work. In other words, in 20 months the same spindles had voluntarily doubled their production capacity and at the end of that period shipments to the government were 125% of normal weekly output.



COTTON CROP in the United States. The figure for 1942 is the department of agriculture's estimate of Dec. 1

Another job done by the cotton industry to meet the war emergency was the conversion of looms previously operating on apparel and household fabrics to the production of bag fabrics, to meet the tremendous demand for sandbags, camouflage cloth, food and agricultural bagging, to fill the gap caused by the interruption of burlap imports. A conversion order was issued for the purpose of raising the annual production rate of osnaburg from 263,500,000 yd. to 660,000,000 yd. and bag sheeting from a rate of 488,000,000 yd. to 855,000,000 yd. The result of this order, and of the military schedules already in effect, was to put the cotton weaving industry about 88% into war, essential industrial and essential civilian production.

The Tire Problem.—Of the many emergencies with which the cotton industry was concerned, none came nearer to home to the average citizen than the tire shortage. Two separate developments, but each involving the use of cotton fabric, pointed toward possible relief through protection of the precious tires still in use. One of these, called a "sandal," was developed jointly by a textile manufacturer and a rubber company, and was made of cotton pile fabric, somewhat resembling a closely stitched bathmat or rug. The "sandals" would be wrapped around tires, with "ears" tucked in between tire and rim. Tests indicated that these "sandals" would give from 2,500 to 3,000 mi. of additional life to tires.

The other development was a "girdle" developed by another rubber company and designed as a protector for the inner tube, by insulating and protecting the tube against the chafing action of broken or otherwise damaged inside plies in the cord body of the tire. The "girdle" was made of cotton cord, contained no rubber, and was shaped in a full circle to fit snugly and neatly around the tube.

At the beginning of 1943 neither of these had reached a commercial stage.

Still another development in the tire field was the new competition from synthetics. In the fall of 1942, the War Production board, with the approval of the army, ordered conversion of viscose rayon facilities to produce an additional 50,000,000 lb. of high-tenacity rayon per year, to be used in aeroplane and special duty truck tires. This precipitated a battle royal between the rayon interests and the cotton manufacturers as to the relative merits of the two for performance in high-duty tires. (*See* also

COTTON replaced silk and wool and other scarce dress materials in U.S. fashions during 1942

Agriculture; Linen and Flax; Rayon; Textile Industry; Wool.) (D. G. Wo.)

Cotton Production.—Returns to planters from marketings of the 1942 cotton crop of the United States, up to mid-Dec. 1942, averaged $63.32 per ac. This was an increase of 27.3% over 1941 and the second highest per-acre return on record. The peak was $69.25 in 1919. If government payments to farmers is added to cash price received, the total per-acre return on the 1942 crop averaged $66.80.

The 1942 cotton crop was estimated by the U.S. department of agriculture at 12,982,000 bales, 500 lb. gross to the bale. Th 1941 crop was 10,744,000 bales. The area planted in 1942 wa 23,310,000 ac., but 650,000 ac. were abandoned. The area ha vested, 22,660,000 ac., produced the highest per-acre yield o record, 275.1 lb. per ac. The yield in 1941 was 231.9 lb. per a For 1943 the department of agriculture asked farmers to reduc planting by 810,000 ac.; that is, the 1943 acreage quota to b planted was placed at 22,500,000 ac. as compared with plantin of 23,310,000 ac. in 1941.

U.S. Production of Cotton by States, 1942 and 1941

State	1942 bales	1941 bales
Texas	3,833,000	3,370,000
Mississippi	1,975,000	1,424,000
Arkansas	1,495,000	1,430,000
Alabama	925,000	720,000
Georgia	860,000	624,000
North Carolina	721,000	552,000
Oklahoma	720,000	718,000
South Carolina	705,000	406,000
Tennessee	625,000	598,000
Louisiana	598,000	313,000
California	432,000	404,000
Missouri	425,000	476,000
Arizona	104,000	181,000
New Mexico	122,000	106,000
Virginia	33,000	28,000
Florida	17,000	17,000
All others	22,000	25,000

In announcing 1943 plans at a meeting of cotton growers i Memphis, Tenn., Secretary Wickard urged that farmers plan more long-staple varieties and less short-staple cotton. The Unite States had on hand in 1942 almost a two-year supply of shor staple cotton (staple under one inch). "Production of shor staple cotton," he declared, "would not count toward defermen of military service." Growing of short-staple cotton had been reduced steadily for 15 years or more, but the need continued fo a larger proportion of long- and medium-staple cotton. In the n years from 1928 to 1937, which is the earliest period such record were kept, short-staple constituted a percentage of the crop ranging from a high of 78.6% to 57%. It was 40.1% in 1940 an 37.7% in 1941. Through Dec. 12, 1942, at which time 11,742,79 bales of the 1942 crop had been ginned, the percentage of sho staple was 37.6. It was urged that the 1943 acreage withdraw from cotton planting be planted to peanuts, soybeans or fee crops, and also that those farmers who raised short-staple cotto should shift to long- or medium-staple or to soybeans, peanuts o feed crops. The farm price for cotton advanced to 19.55 in De 1942, the highest since 1928.

Japan.—The U.S. department of agriculture is authority for report that Japanese officials had announced a five-year (1942 46) plan for developing the Philippine islands, which plan include increasing production of cotton in the Philippines to 415,000 bale a year. Japan is one of the largest manufacturers of cotton clot and before World War II was, with Great Britain, the Unite States' best customer for cotton. In 1940 Japan bought 941,00 bales of United States cotton, compared with 2,007,000 bale bought by Great Britain, 773,000 by France, 577,000 by Ital 432,000 by Canada, 422,000 by China and 20,000 by German But in 1939 Japan bought 896,000 bales of United States cotto while Great Britain bought only 421,000 bales, France 362,00 Germany 345,000, Italy 292,000, Canada 238,000 and China 87 000. The Japanese plan in the Philippines was reported to propose inducing Philippine farmers to divert 1,000,000 ac., chiefl sugar and tobacco land, to cotton and to colonize the sparsel settled areas of Mindanao with Japanese who would grow cotto The Philippines produced very little cotton, an inconsequentia production running about 600 bales a year. American representatives and Philippine officials who investigated Philippine possibil ties in cotton reported conditions that indicated the Philippine were adaptable to the production of about 10% or 15% of th quantity of cotton called for in the Japanese plan. Japan ha tried to develop, with indifferent results, cotton-growing in Chose by offering subsidies to farmers.

Brazil.—Drought delayed cotton planting in Brazil four to si weeks in 1942 and compelled some replanting during the plantin season which is normally September to November. Shortage o gasoline for tractors and trucks also added to difficulties of putting in the new crop. Official forecasts were that the 1943 cotto crop in Brazil would approximate 362,000 bales, as compared wit 744,000 bales picked in 1942.

Egypt.—The first official estimate of the 1942 cotton crop i Egypt was 725,000 bales of 478 lb. to the bale. The 1941 cro was 1,735,000 bales. The Egyptian government has for severa years been granting subsidies to farmers to divert cotton land t production of food crops, and rigidly restricted the acreage 1942, Egypt's normal market for cotton, Great Britain, having n severely limited by the war.

ran also reported a smaller crop, 120,000 bales in 1942 and ,500 in 1941. World production figures on cotton were fragntary in 1942 and there was only a narrowly limited interional trade in the staple because of the war. As a result exting countries further increased the mounting carry-over of ton which, unlike most food crops, can be stored indefinitely hout material loss.

(S. O. R.)

tton-seed Oil: *see* VEGETABLE OILS AND ANIMAL FATS.

untries of the World, Areas and Populations of the: AREAS AND POPULATIONS OF THE COUNTRIES OF THE WORLD.

am, Ralph Adams (1863–1942), U.S. architect, was born at Hampton Falls, N.H., on Dec. 16. was a recognized authority on mediaeval architecture and deed many Gothic churches and structures throughout the ited States. He died in Boston, Sept. 22. (See *Encyclopædia tannica.*)

edit, Consumer: *see* CONSUMER CREDIT.

erar, Henry Duncan Graham (1888–), Canadian army officer, was n April 28 in Hamilton, Ont. Educated at Upper Canada cole and the Royal Military college, Kingston, he was commisned as a lieutenant in 1910. He served in France during World r I, advancing to the rank of lieutenant colonel. After the , he became a general staff officer attached to the British war ce, 1925. An expert on strategy, he later became director of itary operations and intelligence in the department of national ense. After the outbreak of World War II, he went overseas h the rank of a brigadier and, in 1940, he was promoted to jor general. He was subsequently appointed lieutenant general, he voluntarily stepped down to major general in order to e a combat command as head of a Canadian division in Britain. n. Crerar took acting command of the entire Canadian corps Dec. 26, 1941. After Gen. Andrew McNaughton resumed nmand of the First Canadian army on April 6, 1942, Gen. erar was confirmed in his post as corps commander.

ews, Laura Hope (1880–1942), U.S. actress, was born in San Francisco. Daughter of a uper, she was a stage veteran at the age of 18. Her career was errupted for a short two-year period when she attended State rmal school, San José, Calif., in an attempt to satisfy a childod longing to be a school teacher. But she returned to the atre in 1898, playing ingénue roles in a San Francisco stock mpany. She progressed to more important roles, appeared with n Drew and Sir Herbert Beerbohm Tree in Shakespearean ertory in London and solidly established herself as one of the ter U.S. actresses with her excellent performance in *The Silver rd* (1926), in New York. When nearly 50, she made her first pearance in motion pictures and rapidly won fame for her ewd and humourous portrayals of vacuous social butterflies. r last appearance on the stage was in *Arsenic and Old Lace,* she was forced to drop out because of illness a month before death in New York city, Nov. 13.

icket. The circumstances of war—no county championship, no tests, restricted trains, disappearing gasoline, indling supply of bats and balls—only served to make cricketers in England keener than ever. In 1940, 52,555 persons watched cricket at Lord's, headquarters of the game. In 1942, the number rose to 89,612. Club cricket, too, flourished, matches against teams from the armed forces in the neighbourhood replacing those against wandering clubs. Among schoolboys, the England players of the future, the game was more popular than ever.

In June, at Lord's, the royal air force (243 for 3 wickets, C. Washbrook, Lancashire, 102) beat the army (242, S. C. Griffith, Sussex, 81). The army won the second match, and the third was left drawn, fine batting being shown by C. B. Harris, of the army and Nottinghamshire, young Denis Compton, army and England cricketer and soccer-player, and Leslie Ames (R.A.F.), England's famous wicketkeeper-batsman.

Cambridge beat Oxford in a one-day match at Lord's, the last Oxford man, their captain, W. J. C. Butterfield, being bowled by the last but one ball of the day. Eton easily beat Harrow at Harrow. The outstanding school players were T. E. Bailey and A. W. H. Mallett of Dulwich, where C. S. Marriott, the old Kent and England slow bowler, was coach. Mallett hit a ball to leg over the main grandstand at Lord's, a huge blow for a boy of 17.

Sunday afternoon cricket was regularly played at Hove, headquarters of the Sussex Club, with no charge for admission; and Major Maurice Tate, one of the greatest of past England bowlers, at the age of 46, twice bowled there unrelieved for two hours.

On July 11 the army beat the navy, far from fully represented, at Lord's. For the army, Lieutenant J. D. Robertson, of Middlesex, a probable post-war test player, made a brilliant 109. On August Bank Holiday, a two-day match was staged at Lord's, Middlesex and Essex versus Surrey and Kent. Major E. R. T. Holmes, former Surrey captain and England batsman, came out after illness with a grand 114 not out. The match was drawn.

Sir Pelham Warner, former England captain and test selection chairman, in his 70th year and in spite of poor health, performed wonders of organization as war-time secretary of the M.C.C. (Marylebone Cricket Club).

(R. C. R-G.)

Crime. **United States.**—The first six months of 1942 were marked by a 1.7% increase in the number of crimes committed in American cities. As compared with the corresponding period of 1941, rape increased 9.9%; negligent manslaughter 9.4%; robbery 5.2%; aggravated assault 4.7% and larceny 4.2%. Three classes of reportable offenses declined in number: burglaries dropped by 4.3%, auto theft by 1.6% and murder by only 0.2%.

Table I shows for comparable periods of 1941 and 1942, the total of each class of reportable crime in 337 cities over 25,000 population.

Despite the general upward swing, it is to be noted that in those categories showing increases, the rise was less pronounced in the second quarter of 1942 than in the first quarter. Similarly, those crimes showing declines in the first quarter tended to strengthen this tendency during the second quarter of 1942. Hence the record for the entire year might reflect a much more favourable trend in 1942 than is here portrayed.

Crime in Cities, Towns and Villages.—The broadest base for data on the number of criminal acts committed in urban communities appears in *Uniform Crime Reports* in its 13th year in 1942. For the first half of 1942 it covered 2,074 cities, towns and villages having a total population of 63,231,588. In this large and representative group, the generally rising trend of crime during the latter part of the 1930–40 decade was projected into the 1940s and at least to the midyear point of 1942, though there were still many shifts and changes of direction as to particular classes of crimes. Most consistent in this rising trend were rape and aggravated assault, both of which, it will be noted, are crimes against the person.

The geographic distribution of crime continued in 1942 to display wide regional inequalities similar to those reported for preceding years. As indicated in Table II, the northeastern states generally enjoy the most favourable records.

Distribution of crimes according to the size of the community in which the offenses were committed is presented for the first six months of 1942 in Table III. As in previous years, the higher crime rates tend to cluster in the larger cities. Comparing the 1942 record with that for 1941, almost identical patterns appear. In both of these years Group I cities (over 250,000 population) had the highest rates for rape and robbery, Group II cities (100,000 to 250,000 population) led the field in negligent manslaughter, burglary, larceny and auto theft, with Group III cities (50,000 to 100,000) showing the highest rates for aggravated assault. In only one respect was the 1942 pattern notably different from that of 1941; in the latter year Group III cities had the highest rates for murder and non-negligent manslaughter, whereas in 1942, these allied crimes were most numerous in Group II cities. Viewing the trend of these distributions it is apparent that the Grou II cities were gradually, but none the less surely, displa ing Group I cities from first place in the matter of high crim rates.

Table I.—*Crimes in 1941 and 1942*
(In 337 U.S. Cities of over 25,000 population.)

Offense	January to March		April to June		January to June	
	1941	1942	1941	1942	1941	1942
Murder and Non-Negligent Manslaughter	661	634	698	722	1,359	1,356
Negligent Manslaughter*	514	602	456	459	970	1,06
Rape	1,122	1,246	1,219	1,326	2,341	2,57
Robbery	7,425	7,665	5,801	6,253	13,226	13,91
Aggravated Assault	5,236	5,536	6,612	6,863	11,848	12,39
Burglary—Breaking or Entering	39,834	39,308	36,102	33,326	75,936	72,63
Larceny—Theft	99,820	105,466	101,738	104,570	201,558	210,03
Auto Theft	23,739	24,501	22,951	21,454	46,690	45,95

*Based on reports from 336 cities.

Table II.—*Regional Distribution of Crime, January to June, 1942*
(Number per 100,000 inhabitants)

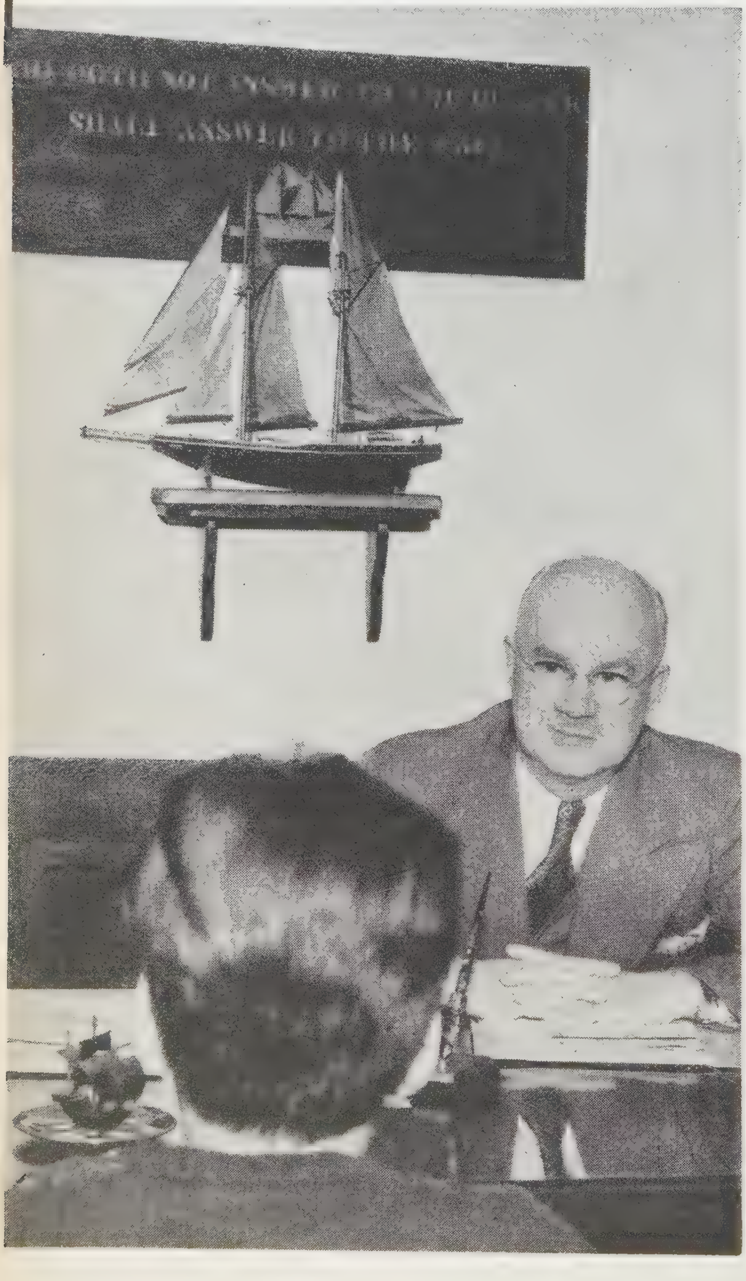
	Murder and Non-Negligent Manslaughter	Robbery	Aggravated Assault	Burglary—Breaking or Entering	Larceny—Theft	Auto Theft.
New England	0.59	6.1	4.7	124.4	295.9	87.2
Middle Atlantic	1.45	11.9	15.4	104.7	235.3	67.0
East North Central	2.07	39.8	18.0	155.2	425.2	66.5
West North Central	1.57	12.1	14.0	112.6	403.8	60.5
South Atlantic	7.24	33.0	84.0	193.1	669.7	126.5
East South Central	8.65	44.4	76.9	219.1	595.7	107.0
West South Central	5.97	25.5	48.7	194.8	709.1	88.0
Mountain	1.71	29.2	12.3	215.0	741.8	94.6
Pacific	1.89	34.7	15.2	226.1	741.9	178.6

Relative frequency of the various reportable offenses, durir the first six months of 1942, showed larceny with 60.8% of t total; burglary 20.4%; auto theft 11.2%; and robbery 3.2 These crimes against the person together accounted for 95.6% all reportable classes, with only 4.4% of the grand total distri uted among crimes against the person (homicide, rape and a gravated assault). Especially notable was the fact that the re tive frequency of larceny showed an increase in 1942, as it had each of the preceding years beginning with 1937. The relati frequency of robbery showed a very slight increase for 19 (3.2% versus 3.1%), though in preceding years since 1937, it h shown relative declines. (*See* also FEDERAL BUREAU OF INVES GATION; JUVENILE DELINQUENCY; KIDNAPPING; LAW; POLIC SECRET SERVICE.)

Table III.—*Distribution of Crime Rates by Size of Cities*
(January to June, 1942)

	Population Groups of Cities (000 omitted)						
	I Over 250	II 100–250	III 50–100	IV 25–50	V 10–25	VI under 10	Tot
Murder and Non-Negligent Manslaughter	2.93	3.46	2.62	2.01	1.47	1.70	2.
Manslaughter by Negligence	2.34	2.53	2.32	1.89	0.98	0.90	2.
Rape	6.28	4.40	4.25	2.83	3.65	3.90	4.
Robbery	35.6	24.0	17.1	14.0	9.6	8.5	24.
Aggravated Assault	26.5	26.0	34.3	29.9	14.1	13.0	24.
Burglary—Breaking or Entering	179.7	195.8	165.3	148.5	114.4	96.8	157
Larceny—Theft	496.3	552.7	547.0	526.9	392.5	265.1	470.
Auto Theft	98.9	109.0	84.4	76.7	60.3	46.6	86.

BIBLIOGRAPHY.—*Uniform Crime Reports* (quarterly) for 1941, and the first half of 1942 (Federal Bureau of Investigation, Washington, D.C *Judicial Criminal Statistics, 1940* (U.S. Bureau of the Census, 1942); P



THE CRIME RATE among U.S. youths increased by an estimated 20% in 19 chiefly because of the war. One of the most effective combating agencies the enlightened juvenile court, typified by the Child Study institute of Tole Ohio. The judge of Toledo's juvenile court, Paul Alexander, is shown here in viewing a young offender ners in State and Federal Prisons and Reformatories, 1939* (U.S. Bureau of he Census, 1941); Thorsten Sellin, *War and Crime: A Research Memoran-um* (Social Science Research Council, 1942). (Br. S.)

Great Britain.—Although no complete official statistics subse-uent to 1938 were available, it is possible to indicate the gen-ral tendencies in certain types of crime. The habitual criminals ere much less in evidence; they could be readily absorbed into he services or employment so that the problem of a workless uture for these men no longer existed. On the other hand, the ar encouraged many classes of new offenders. The postmaster eneral expressed his grave concern about the heavy losses of ostal packets, and supervision at railway stations and other laces was tightened in an attempt to combat the evil. The black-ut greatly facilitated this and other kinds of theft: there were any cases of bag-snatching from women in the darkened streets nd it was comparatively simple for large scale robberies to be ade from warehouses and shop premises during the night. The ear's figures for larceny from shops and stalls, however, showed general drop of about 30% as compared with 1938.

"Black market" activities continued to maintain a high level. he abnormal conditions offered plentiful opportunities for of-enses against the Food acts and board of trade regulations. The inistry of food reported an increase in prosecutions for 1941 of early 300% over the previous year. The figures for 1942 showed further jump of 10%, the total to the end of October being 5,450. Among the huge number of firms engaged on government ontracts there were, similarly, some who took advantage of the tuation to indulge in frauds and false pretenses, in some cases volving very considerable sums of money.

A big-scale traffic in identity cards was disclosed following a mpaign to round up deserters and others contravening the Mili-ry Service acts and National Service regulations and heavy enalties were being inflicted in order to stamp it out.

Motoring offenses were down by about 60% over 1941, but this as obviously accounted for by the motoring restrictions which ad reduced road traffic to a very great extent.

A disturbing increase in juvenile delinquency was attributed to ck of parental control (the fathers serving in the forces or in nployment away from their homes, the mothers in many cases eing engaged on war work) and to the fact of a large number of hools in danger areas having been closed during the period of eavy bombing raids in 1940 and 1941. (*See* also Prisons.)

ripps, Sir (Richard) Stafford

(1889–), British politician and wyer, was born April 24 and was educated at Winchester and niversity college, London. Called to the bar in 1913, he became King's counsel in 1927. He first entered parliament in 1931 as Labour member for East Bristol, having been appointed solici-or-general in the MacDonald cabinet. Later he was a leader of e opposition to the National government formed in 1931, but mporarily parted ways with the other Labour leaders, whose ews he considered too conservative. He was an ardent champion a "united front" with the Communist party.

He was sent in May 1940 to negotiate a trade agreement with e soviet union, but was appointed ambassador while still en ute for Moscow. In this capacity he signed the Anglo-Soviet act of mutual assistance. He relinquished his appointment in an. 1942, and in February was made Lord Privy Seal and leader the house of commons, with a seat in the war cabinet. In arch he volunteered to go to India to try and negotiate an greement between the two countries and was sent out by the overnment with proposals for granting India her independence at e end of the war. He remained in India for three weeks, had iscussions with representatives of all parties, but failed to reach an agreement and returned to London in April. (*See* also India.) In Nov. 1942 he relinquished his seat in the war cabinet to undertake the ministry of aircraft production.

Croatia.

A kingdom formed from former Yugoslavia in the northwestern part of the Balkan peninsula under the impact of German aggression in April 1941. Separatist Croats of the fascist terrorist organization "Ustasha" set up in Zagreb an independent Croat regime with Dr. Ante Pavelitch as fuehrer, or "Poglavnik," and with Marshal Sladko Kvaternik as minister of war. The new state, organized on strictly fascist and authoritarian lines, excelled quickly by the special ruthlessness and cruelty with which it persecuted, and partly exterminated, the large Serb minority and the small Jewish population. On May 17, 1941, the Italian prince Aimone became King Aimone I, yet up to the end of 1942 he had not dared to set foot on the soil of his new kingdom. The permanent disorders and acts of violence in which the discontent of the people expressed itself did not allow a pacification of the country in spite of Italian military occupation.

Croatia has an area of 115,135 sq.km. with about 7,000,000 inhabitants, of whom about 5,000,000 are Catholic Croats. The Mohammedan minority in Bosnia enjoys a privileged position. Their representative, Kulenovitch, was vice-premier in 1942. At the end of Feb. 1942, the Croatian diet, or Sabor, met. In his report the foreign minister, Lorkovitch, declared that Croatia formed the bulwark of occidental civilization against the east and that her foreign policy was firmly founded on the alliance with Italy and friendship with Germany and her membership in the axis.

The most important party in Croatia before 1941 had been the Croat peasant party, which represented the vast majority of the people, under the leadership of Dr. Matchek. After the creation of fascist Croatia, Dr. Matchek had been kept under arrest, but he was released in 1942 and was allowed to return to his farm at Kupinec. Reliable sources reported in October that Marshal Kvaternik had been removed from his position in the cabinet and imprisoned. Premier Pavelitch took over the war ministry and dismissed the chief of staff, General Laxa. Kvaternik's son Eugen, one of the leading terrorists of the Ustasha and police chief of Zagreb, was also removed from office, and all three were accused of graft in army transactions. Yet it was more probable that their dismissal was a result of internal party conflicts. The members of the Orthodox church living in Croatia were organized into an independent church no longer under the jurisdiction of the head of the Serb church.

Peace in Croatia was disturbed again and again by violent internal conflicts. General Mikhailovitch's army and the independent partisan bands extended during the year their operations deep into Croatia. They were supported by parts of the Serb population of Croatia and by many Croatian peasants. The fighting was especially violent in Bosnia, but it was carried even into the vicinity of Zagreb. The cruelty and lawlessness of the Ustasha provoked bitter resentment among the population and brought many recruits to the patriot and partisan armies. The newly formed Croatian army, a small part of which was fighting in the soviet union on the side of the Germans, was entirely unable to cope with the violent internal disorders, which often assumed the character of open, organized warfare. The Italian army of occupation was especially engaged in combatting the patriot army and the uprisings, but the actions of the enemies of the Croatian regime were often accompanied with success, and the Italian losses were reportedly large. (*See* also Dalmatia; Montenegro.)

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Crop Insurance: *see* AGRICULTURE.

Crozier, William (1855–1942), U.S. artillerist and inventor, was born Feb. 19, 1855 at Carrollton, O., and died in Washington, D.C., Nov. 10, 1942. (See *Encyclopædia Britannica.*)

Cruisers: *see* NAVIES OF THE WORLD.
Crushed Stone: *see* STONE.

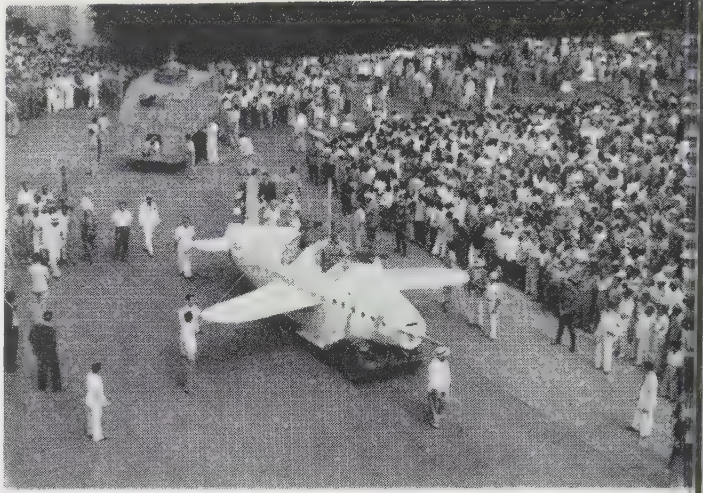
Cruze, James (JAMES CRUZE BOSEN) (1884–1942), U.S. motion picture director and actor, was born in Ogden, Utah, one of 23 children of Mormon parents. An actor in the cinema's infancy, he starred with Pearl White in serial thrillers. He later turned to directing pictures and among his early achievements were *Old Ironsides, The Covered Wagon* and *Merton of the Movies.* With the advent of the talking pictures, Cruze directed many box-office successes, including *Ruggles of Red Gap,* and *Beggar on Horseback.* At the height of his career, he was one of the best-paid and most skilful of Hollywood's directors. He died in Hollywood, Calif., Aug. 3.

Cryolite. After the occupation of Denmark by Germany and of Greenland by the United States there was no information on cryolite beyond the fact that imports into the United States declined from 25,858 long tons in 1940 to 13,329 tons in the first nine months of 1941, but the ships carrying supplies to the United States troops in Greenland should be able to bring back at least a reasonable supply of cryolite, as this is practically the only product available for export. (G. A. Ro.)

Cuba. A republic occupying the largest of the West Indian islands; area, 44,164 sq.mi., including dependent islands; pop. (unofficial 1942 est.) 4,420,700. Capital, Havana (pop. 1938) 568,913. Other large cities are Camagüey (138,295); Santiago (107,125); Santa Clara (99,509); Cienfuegos (92,258). President in 1942: Fulgencio Batista.

History.—Internal politics in Cuba in 1942 were not marked by any serious upheavals, although there were rumours that a coup d'état had been attempted on July 4. The congressional elections in March returned a comfortable majority for the administration's Democratic party; the membership of the Cuban congress, incidentally, was reduced to 138 because of constitutional changes on representation. The cabinet was reshuffled during the year in June and August; it remained largely Democratic although in August, in a "national unity" cabinet, somewhat wider representation to opposition parties was given. One woman, Dr. María Gómez Carbonell, was appointed to the cabinet in June, the first woman to hold such a post. Opposition groups in general did not condemn Pres. Batista's foreign policies but occasionally voiced criticism of method. In July Col. José Pedraza, who had gone into political exile the previous year, was allowed to return.

The Cuban attitude toward Spain remained unfavourable (feeling had been aroused after Dec. 7, 1941, by Spanish pro-fascist propaganda). The Spanish embassy was forbidden the use of code in cable and radio messages because of the feeling that this might facilitate axis activities. Shipment of foodstuffs of all kinds to Spain was forbidden, and a ban was placed on the provisioning of Spanish ships in Cuban ports. The former Spanish representative to Panama, Count Carlos de Bailen, who had been invited to leave that republic because of pro-fascist utterances, was arrested in Cuba and later deported. One nazi spy was captured and sentenced to death in September. Cuba also severed relations with the Vichy French government on Nov. 10, and French funds and goods were frozen by executive order. On th other hand, recognition was accorded the U.S.S.R. on Oct. 11 the soviet ambassador to the United States, Maxim Litvinov was subsequently accredited to Cuba also.



CUBA'S MAY DAY CELEBRATION in 1942 featured a parade of military float and demonstrations against the axis

In December Pres. Batista followed the example of other Latin American presidents and made a visit to Washington. Result were not immediately disclosed, but undoubtedly conversation concerned the purchase of Cuba's 1943 sugar crop, and prioritie for irrigation and refrigeration machinery urgently needed for th Cuban plan to grow more foodstuffs.

Cuba continued to co-operate heartily in hemisphere defense The United States air forces were allowed the use of Cuban fields; a military agreement between the two countries was signed in Sept. further integrating their war effort. Cuba also signed on Oct. 3, a mutual defense pact with Mexico by which join use of facilities was pledged to combat axis submarines in th Caribbean sea and Gulf of Mexico. Control of the movemen of United States currency (difficult where so much was in circulation) was started in June in accordance with general American policy. In spite of an active defense program, United State Ambassador Spruille Braden stated that he was sure that remot spots on Cuba's extensive coast line were being utilized as secre submarine bases.

The Cuban army was greatly strengthened during 1942. At firs augmented on a volunteer basis, it was later decided to institut compulsory military service, and 400,000 Cubans between th ages 18–50 started registration on Aug. 1. Appropriations fo defense were increased to meet new needs, and some air an naval officers were sent to the United States for training. Th usual civilian defense organizations were established, and th government took over news censorship in April, and also ma censorship. In July a Cuban maritime commission was created and in Aug. a census of all boats more than 20 ft. in lengt was ordered.

In the economic field, sweeping powers were granted to th president by an order issued Jan. 21. This placed under hi authority all mineral, agricultural and industrial production, control of imports and exports, arbitration of labour disputes, th right to fix prices and quotas, and to expropriate property of a kinds where necessary for the national defense. The 1942 budge was finally adjusted at more than $89,000,000, an increase c $10,000,000 over 1941. In the early months of the year there wa a shortage of circulating media, and currency had to be imported from the United States. Extensive loans were also mad for various purposes, and a special session of congress was calle in June to consider the founding of a Cuban central bank to ai a financial operations.

In general Cuba was hard hit by the war, largely because of erious shipping shortages. Scarcities resulted in almost every spect of Cuban life—in transportation, with rubber, automobiles, nd gasoline and fuel oils; in power for lighting, and in building aterials and items used in Cuban industry; and finally in foodtuffs, with rice, vegetable oils and lard, and notably meat, lackg. The tourist trade, normally a $12,000,000 industry, had most vanished. Various commissions were created to cope with e problem, and an extensive rationing program was launched. leat exportation was completely halted in April. Reports during e summer indicated that price stabilization and rationing were oorly enforced, however.

Rising costs in living and unemployment caused much concern. Vages on sugar plantations were raised 50% in the spring, and overnment employees had theirs increased 10% to 20%. In pril a law was passed which forbade the eviction of tenants om farms, and a minimum price was set to protect Cuban bacco growers.

Sugar, the backbone of Cuban economy, was in demand but as affected by lack of cargo space. The United States contracted take the entire 1942 crop (some 4,000,000 tons), but by ug. had yet to move 1,700,000 tons.

Education.—In the 1943 budget, education was allotted 17,- 0,000 pesos, a 700,000 peso increase over the 1942 estimate. imary schools: approx. 5,000, with an enrolment of 500,000.

Defense.—Military service was placed on a compulsory basis ug. 1, 1942, avowedly for duty only in Cuba. Estimated army rength: 35,000–40,000.

Finance.—The Cuban monetary unit is the peso, officially ual to the U.S. dollar; shortage of circulating media caused e peso to sell at a premium in the early months of 1942. evenue for the period Jan. 1–Dec. 5, 1942, was 89,608,000 sos; expenditures: 95,330,000 pesos (1941 rev.: 75,945,000 sos; exp.: 77,549,000 pesos). The budget for 1943 presumably lanced revenues and expenditures at 89,993,595 pesos. The pub- debt (June 30, 1942) was 120,995,000 pesos (external: 113,- 8,000; internal: 7,367,000).

Trade.—The foreign trade for Cuba for 1941 amounted to 45,397,728 (imports: $133,890,137; exports: $211,507,591). Of imports, 87.5% were from the U.S.; 85.6% of all exports nt to the U.S.

Communication.—Transportation by sea to Cuba was affected the war; air services by Pan American Airways increased. e new shipping service with Canada was announced. The uban government had under consideration a plan to build in uba a number of smaller wooden vessels to aid in sugar transrtation. Lack of motor fuels affected local transportation; 500 ses were removed from service in Havana alone. A registration radios listed 349 radio telegraph and telephone stations in rvice (Jan. 1942). The railway system was 3,850 mi. in length 1942, and 2,500 mi. of highway supplied internal communican; $5,000,000 of a larger Export-Import Bank loan was earrked in 1942 for further highway construction.

Agriculture.—The greatest Cuban crop is sugar (with derivaes, three-fourths to four-fifths of total exports). The 1942 op was first set at 3,600,000 long tons, but quotas were later sed and the total production was estimated at 4,000.000 tons. e entire crop was sold to the U.S. with the exception of 200,000 ns retained for domestic use. Price per lb. averaged 2.65 cents. ntative estimate for the 1943 crop was 3,000,000 tons. Tobacco ports for 1941 were valued at $1,137,316. The government anned extensive production of peanuts, sisal and oil-bearing eds, but found it difficult to secure tools and machinery.

Mining.—Mineral production in Cuba was of growing significance. Export values for the first half of 1941 were: copper $751,874; iron $57,212; barytes $141,608; gold $455,943; manganese $2,801,133; silica $77,700. It was estimated that production for 1942 would be 40% higher. U.S. loans (through the Defense Plant Corp. and the Metals Reserve Co. to the Nicaro Nickel Co.) amounted in Aug. to $20,000,000 for development of a new supply of nickel. (*See* also WEST INDIES.)

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(D. RD.)

Cunningham, Sir Andrew Browne (1883–), British naval officer, commander of the British Mediterranean fleet after 1939, was born in Bishop's Waltham, Hants., England. He entered the royal navy in 1898. During World War I, Sir Andrew commanded the destroyer "Scorpion" and staged daring raids against enemy shipping in the Mediterranean. He was a rear admiral in 1933–36, and was made a vice-admiral commanding a battle cruiser squadron in 1937. He was also lord commissioner of the admiralty and deputy chief of the naval staff, 1938–39. In April 1940 Sir Andrew, aboard his flagship "Warspite," led a destroyer flotilla into Narvik fjord and sank seven German destroyers. Except for the Narvik battle, he had most of his naval experience in the Mediterranean, of which he is said to know every bay and inlet. In Nov. 1940 Sir Andrew's fleet raided the Italian naval base at Taranto, and crippled three Italian battleships. He commanded the victorious British fleet at the battle of Cape Matapan March 28, 1941. Sir Andrew was in command of the huge British naval force that convoyed U.S. and British troops to North Africa beach-heads on Nov. 8, 1942. His warships protected the ensuing landings with heavy bombardments.

Curaçao, a Netherlands Caribbean colony embracing the islands of Curaçao (210 sq.mi.), Bonaire (95 sq.mi.) and Aruba (69 sq.mi.) in the Leeward group off the Venezuela coast approximately 700 mi. air line from the Panama canal, and St. Eustatius (7 sq.mi.), Saba (.5 sq.mi.), and the southern part of St. Martins (17 sq.mi.) in the Windwards. Total area, 436 sq.mi.; pop. (1941 official est.) Curaçao colony 109,592; Curaçao island 68,217; Aruba 31,522; Bonaire 5,556; St. Martins 1,938; St. Eustatius 1,146; Saba 1,213. Religion: predominantly Roman Catholic; language, officially Dutch. The capital is Willemstad (pop. 30,453), on Curaçao. Government is in the hands of an appointed governor, and a majority-elected council. In Dec. 1942 a formal pledge of greater postwar autonomy was given by Queen Wilhelmina. Governor: Dr. Piet Kasteel (succeeded G. J. J. Wouters on July 16, 1942).

History.—Throughout 1942 Curaçao, as a major world oil-refining centre, continued to play an important war role. Curaçao and Aruba were both subjected to direct enemy attacks early in the year, and stringent defense precautions were maintained. The entire colony felt the pinch of shipping shortage as a result of submarine warfare in the Caribbean and of diversion of ships to war needs.

Education.—In 1938 there were 49 elementary schools with 11,044 enrolment.

Finance.—The monetary unit is the guilder (value approx. 53 cents U.S.).

Trade and Resources.—The backbone of the colony's economy is the refining of crude petroleum (primarily of Venezuelan origin) on Curaçao and Aruba, where two of the world's largest oil refineries are located. In peacetime this industry accounts for a full 99% of the colony's export values, with a single refinery employing over 5.000 persons.

GERMAN TORPEDO on the beach of Aruba in the Dutch West Indies after it had missed its mark during an attack by nazi submarines on the harbour of this important petroleum centre Feb. 16, 1942. Shortly after the photograph was taken the torpedo exploded, killing four men

Under war conditions statistics of petroleum trade and refining were not made public. In 1938, however, petroleum products accounted for 151,026,135 of a total of 153,026,135 guilders export values, and 138,740,326 of 179,945,850 guilders total import values. In 1940, exclusive of petroleum products (not reported), exports and imports were 14,278,385 and 27,459,989 guilders, respectively. Imports other than crude petroleum were foodstuffs, textiles, and other manufactured goods; the miscellaneous exports were largely items for re-export.

In the larger islands the principal resource of domestic origin is phosphate. Some cattle-raising and small agriculture is also carried on in Bonaire. Saba and the other islands of the Windward group are of negligible economic consequence, although they produce some fancy textiles and miscellaneous agricultural products.

Communication.—External and interisland communication is by steamer and small boat. Curaçao and Aruba have good air connections to the mainland and with the Pan American Airways hemisphere network. Both islands are important as refuelling centres for motor ships. In 1941, 10,177 ships touched at Curaçao and Aruba, compared with 8,871 in 1940. (*See* also HISPANIC AMERICA AND WORLD WAR II; WEST INDIES.)

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Curling.

Having become more of a national than an international event because of the war, 1942 curling witnessed the conquests of Schenectady, N.Y., in the Gordon Grand National and the New York City Caledonians in the Richard S. Emmet Memorial competition. The Royal Montreal rink, skipped by Willie Brown, featured Canadian curling.

Schenectady won its fourth straight Gordon Grand National in defeating Utica, 13–10, in the final. It marked the sixth time Bevis P. Coulson has skipped a rink to the Gordon medal. The Caledonians, led by William Cuthbertson, won the Emmet Memorial medal with an 18–7 victory over Winchester, Mass., in the final. Saranac Lake added further honours to New York curling by taking the W. Fred Allen Memorial medal under the leadership of Carl Hall. Saranac out-stoned Farmington, Conn., 20–19, in the final. (M. P. W.)

Currency: *see* COINAGE.

Currie, Lauchlin

(1902–), U.S. economist, was born Oct. 8 in West Dublin, Nova Scotia, and became a naturalized U.S. citizen in 1934. A graduate of the London School of Economics, 1925, he received his Ph.D. degree from Harvard, 1931. He left the Harvard faculty in 1934 to become senior analyst for the U.S. treasury and later was associated with the Federal Reserve board. In 1939, President Roosevelt made him his administrative assistant and counsel on economic affairs. In that capacity he made two trips to China, the first in 1941 to study Chungking's war needs with regard to securing lend-lease aid, and the second in July 1942, to consult with General Chiang Kai-shek on speeding U.S. war supplies to China's armies. During the latter trip, he assured Chiang that Washington would not let war operations in Europe prevent it from increasing the flow of material aid to China. In Aug. 1942, he went to India to confer with Lord Linlithgow, British viceroy.

Curtin, John

(1885–), Australian statesman, born Jan 8 at Creswick, Victoria, Australia. Educated in the state schools, Curtin later became actively engaged in politics and labour journalism. As general secretary of the Victorian Timber Workers' union, 1911–15, and editor of the *Westralian Worker,* 1917–28, he became an exponent of the Australian Labour party's dual traditions of nationalism and theoretical socialism. During World War I, he was secretary of the anti-conscription campaign. He was a member of the Australian house of representatives, serving from 1928 to 1931, and again from 1934 to 1941. During the latter period he was leader of the Federa Labour party and the parliamentary opposition. He succeeded Arthur Fadden as prime minister of Australia Oct. 3, 194 Curtin, in a message sent Dec. 24, 1941 to the Roosevelt-Church l war parleys in Washington, blamed Allied reverses in the far ist on the Anglo-U.S. tendency to underestimate the power of ie Japanese. On Dec. 27, 1941, he further declared that Aus- alia relied chiefly on the United States in the war against Japan. On Dec. 10, 1942, Curtin told the Australian house that as llied strategy called first for the defeat of Hitler, Australia had remain on the defensive until the maximum Allied strength ould be concentrated against Japan. As 1942 came to a close, urtin was ready to stake the life of his government on a contro- ersial issue, the conscription of Australian soldiers for over- as duty.

urtis, Heber Doust (1872–1942), U.S. astronomer, was born June 27 in Muskegon, Mich., id received his Ph.D. from the University of Virginia in 1902. e taught mathematics and astronomy at the Leander McCormick oservatory at the University of Virginia, 1900–02. While assist- t astronomer at Lick observatory in California, he was named tronomer in charge of the D. O. Mills expedition to the southern misphere, 1906–09, and upon his return became astronomer at e observatory, 1909–20. He was director of the Allegheny oservatory, Pittsburgh, Pa., 1920–30, and chairman of the as- onomy department at the University of Michigan and director the school's observatory, 1930–42. He died in Ann Arbor, ich., Jan. 8.

ycling. One of the most popular and important international sports events held annually in New York was missing r the third consecutive year when the six-day bicycle race failed appear because of the war. Likewise, there was no competition r world titles, and in the U.S. even the Amateur Bicycle League America, the National Cycling association, and the Century oad Club of America stood pat.

Therefore, cycling circles kept on the books for the duration e 1941 winners as the existing champions. A summary of these 41 winners follows:

The N.C.A. sprint championship was won by Tom Saetta of Brooklyn, ile Mike DeFilipo of Newark won the paced title. The A.B.L. senior id championship was won by Marvin Thompson of Chicago, and the ior title went to Andrew Bernadsky of San Francisco. The girls' cham- n was Jean Michels of Chicago.

The track championships of the A.B.L. were won by Bob Stauffacher of n Francisco, who triumphed in the senior class, and Chuck Edwards of icago, winner among the juniors. Stauffacher also captured the Century ad club's senior title.

The A.B.L. of America selected an all-American cycling group as shown the table.

Name	*City*	*Points*
orge Hurlburt, Jr.	Buffalo	275
rman Kugler	Somerville, N.J.	195
ry Kandler	Milwaukee	190
y Gronkowski, Jr.	Buffalo	115
orge Woof	San Francisco	98
nny Weber	Milwaukee	85
nes Dolle	Irvington, Ind.	84
mer Fiyuyama	Honolulu	79
orge Edge	Philadelphia	74
rry Naismyth	Somerville, N.J.	67
ice Burgess	Irvington, Ind.	65
ncis DeCabe	Honolulu	64

Other events in 1941, the last of their kind to be held for the ration, included an international bike race over the Inter- nerican highway from Tegucigalpa, Honduras, to Guatemala ty. The Guatemala team won with Fraterno Vila, 18-year-old r, pedalling at the rate of 15 m.p.h. Tommy Hayes of Dallas, xas, won the seventh annual national 100-mi. motorcycling ampionship, winning in the amazing time of 1:15:46.51. Also, six-day bike race which was held in Montreal, Canada, was n by the team of Angelo DeBacco of Newark, N.J., and Rene r of Montreal. Second place was taken by the popular team of les Audy of Montreal and Cecil Yates of Chicago.

(T. J. D.)

C.Y.O.: *see* CATHOLIC YOUTH ORGANIZATION.

Cyprus: *see* MEDITERRANEAN, BRITISH POSSESSIONS IN THE.

Czechoslovakia. Czechoslovakia, a republic in central Europe, was totally dismembered in 1938–39 as a result of German aggression. The western part of Czechoslovakia, by far the largest, passed under German domination, either as an integral part of Germany like the Sudetenland or as a "protectorate" (*see* BOHEMIA AND MORAVIA). Of the eastern part, a smaller section to the east and south became part of Hungary (especially Ruthenia), while the part inhabited mainly by Slovaks was established as a nominally independent state in alliance with and under the tutelage of Germany (*see* SLOVAKIA). The area of Czechoslovakia had been 54,244 sq.mi., with a population of 14,729,536 in 1930.

History.—The Czechoslovaks continued to hope and work for their national liberation in 1942. The ruthless oppression in Czechoslovakia and the thousands of executions only strengthened the movement of resistance. The Czechoslovak government, which had been formed in 1940 in London under Dr. Eduard Beneš, comprised Czechs and Slovaks and representatives of all parties.

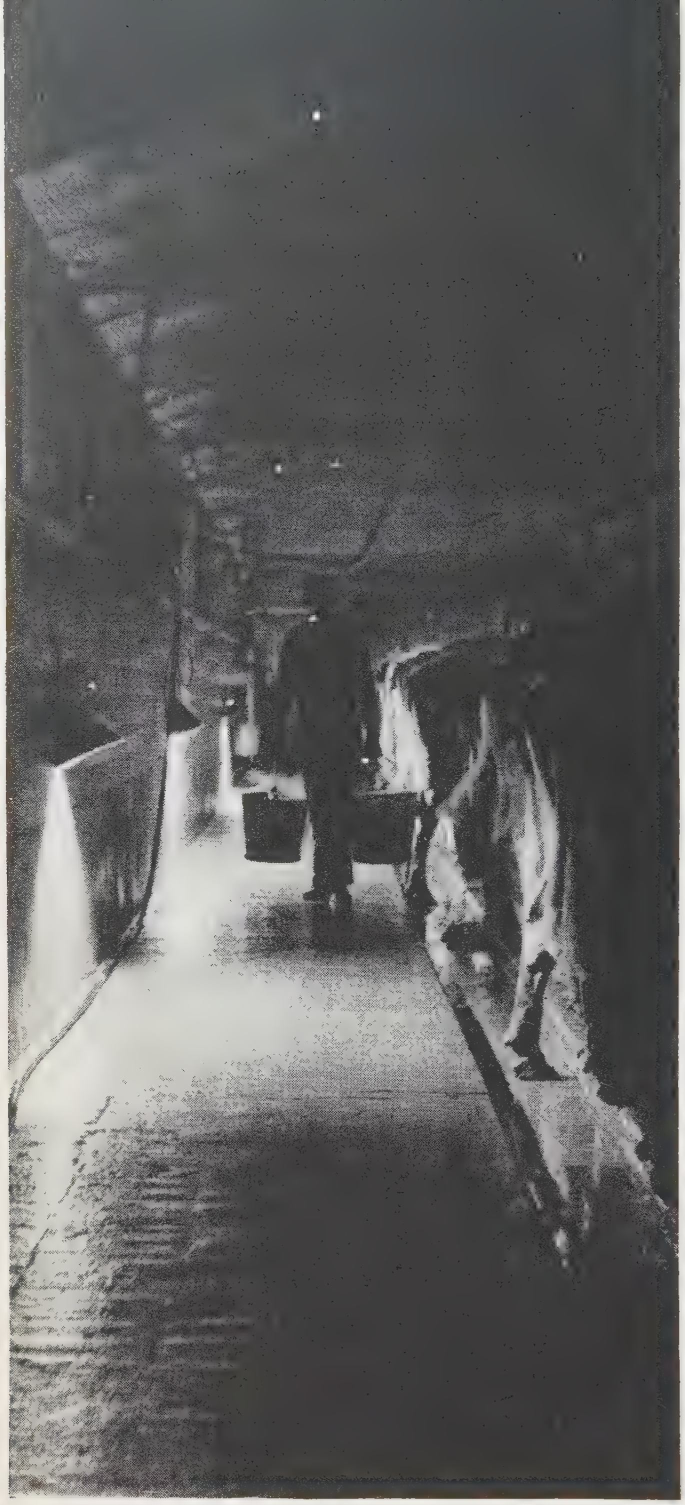
It maintained close contact with the underground movement in Czechoslovakia.

The British government published on Aug. 5 a White Paper according to which the final settlement of Czechoslovak frontiers would not be influenced by any changes effected in and after 1938. By this agreement between Great Britain and Czechoslovakia, the so-called Munich pact of Sept. 1938 was repudiated. It was held that Germany by her aggression against Czechoslovakia in March 1939 had deliberately destroyed the Munich agreement. Thus the British government did not recognize Germany's claim to the Sudetenland or Slovakia's separation from the Czech lands.

The resurrection of Czechoslovakia in her pre-1938 frontiers was made possible.

Another important step was taken by the Polish and Czechoslovak governments in their joint declaration of Jan. 23, 1942, in which they expressed their agreement with regard to the principles of the projected confederation of the two states, foreseen in their declaration of Nov. 11, 1940. It was now declared that the new confederation should embrace also other states with which Polish and Czechoslovak vital interests were linked. The confederation was to have a common policy with regard to foreign affairs, defense, economic and financial matters, social questions, transport, posts and telegraphs. It was to have a joint general staff and in the event of war a unified supreme command. It would co-ordinate the foreign trade policy and the custom tariffs of the member states and agree on a common monetary policy. The development and administration of all systems of transportation and communication was to be carried out according to a common plan. It was of importance that the agreement contained what might be regarded as a federal bill of rights, according to which the constitution of each member state would guarantee to its citizens freedom of conscience and of the spoken and written word, freedom of organization and association, freedom from arrest, freedom of learning, equality of all citizens before the law, admission of all citizens to the performance of all state functions, an independent judiciary and finally the control of government by representative assemblies elected in free elections.

The governments of Czechoslovakia and Poland, "united in their set determination to form a confederation of states in central Europe, based upon close political, military and economic collaboration," adopted on Jan. 24, 1942 a resolution expressing their



HOW TO MILK COWS IN BLACKOUTS was demonstrated throughout California in 1942 by the farm extension service of the University of California after army aviators found that farm lights tended to nullify blackouts in nearby cities

satisfaction with the conclusion of a similar agreement between Greece and Yugoslavia on Jan. 15, 1942. Thus the basis for the reconstruction of central Europe began to take shape in the actions of the Czechoslovak government.

The government in London represented not only Czechs and Slovaks but also the Carpatho-Russians of Ruthenia. Their representative, Dr. Pavel Cibere, and the Carpatho-Russian organizations in the United States worked for "the liberation of Carpathian Russia from the enforced occupation of the Hungarians and its reunion with Czechoslovakia as an autonomous self-governing state." (H. Ko.)

Dahomey: *see* French Colonial Empire.

Purchases of Dairy Products by the U.S. Department of Agriculture under the General Commodities Program

Product	Jan.–Nov. 1942 lb.	March 5–Dec. 31, 1941 lb.
American cheese	242,089,000	166,639,000
Processed cheese	24,312,000	1,000,000
Evaporated milk	1,094,636,000	765,264,000
Dried skim milk		
Roller-processed	161,768,000	23,459,000
Spray-dried	73,791,000	15,318,000
Butter	23,206,000	150,000
Dried whole milk	1,969,000	2,576,000
Dried milk powder, mixture	34,000	.
Condensed milk	5,061,000	.
Dried buttermilk	440,000	.

Dairying.

Civilian consumption of all dairy products in the United States in 1942 was announced by the department of agriculture as probably 110,000,000,000 lb. (milk equivalent basis). Consumption in 1941 was 107,000,000,000 lb. the five-year (1936–40) average, 104,500,000,000 lb. Production of milk was 120,000,000,000 lb. (*See* also Milk.) During 1942 the dairy industry was subjected to unusual government orders in connection with assuring large supplies of dairy products for military and lend-lease needs. On Nov. 3 manufacturers were required to set aside for government use 90% of spray-dried and roller-processed skim milk. On Nov. 20 the WPB froze 50% of the cold storage butter in the 35 principal cold storage centres On Nov. 25 the sale of cream having more than 19% butter fat was restricted. On Dec. 4 the quantity used in the manufacture of ice cream and other frozen desserts was limited. Ceilings were established at which the government would support various dairy prices, including butter, cheese and dried milk. The apparent requirements for civilian, military and lend-lease dairy products in 1943 called for production of 140,000,000,000 lb. of milk during the year. This goal was unattainable, the department of agriculture announced, in pointing out that an expected increase in milk production in 1943 could not exceed by much more than 2,000,000,000 lb. the 1942 production of 110,000,000,000 lb. As means of furthering this increase, the department urged that cows be milked three times a day instead of twice a day. Additional feeding of grain, however, would be required.

The number of cows on United States farms in 1942 was 26 000,000. On Oct. 20, 1942, control over the slaughter, movement and sales of livestock was authorized for the secretary of agriculture. This provided authority for prevention of possible reduction in milking herds. (*See* also Butter; Cheese; Milk.)

(S. O. R.)

Dakar.

A French port, naval base, and administrative centre of enormous strategic importance. The city, which is the capital of French West Africa (Pierre Boisson, governor general in 1942), is situated in 14°40′ N., 17°24′ W., on the eastern side of the peninsula of Cape Verde. It is only 1,62 nautical miles from Natal, Brazil. The population in 1939 was 33,673, of whom 2,939 were Europeans; its population in 194 was perhaps as high as 150,000.

The harbour, the best between Casablanca and the Cape of Good Hope, is formed by two jetties, 6,840 and 1,968 ft. long respectively. The entrance is 720 ft. wide. The inside harbour was dredged to a depth of 33 ft. in 1936. There is a drydock 656 ft. long by 92 ft. broad, which will accommodate vessels of 10,000 tons. There is also a naval arsenal, and a torpedo-boat basin. During 1941–42 covering fortresses on Cap Manuel and the isle of Gorée were greatly strengthened, and the garrison heavily re-enforced, is said to have reached a strength of 50,000 composed mainly of native troops with good mechanized equipment.

On Sept. 23–25, 1940, a combined British-Free French attack upon Dakar failed. Thereafter the possibility that it might be p at the disposal of the axis remained a constant source of acu

xiety to the United Nations. Only a few days before the
.S.-British occupation of North Africa in Nov. 1942, rumours
ntinued to circulate that German submarines were being per-
itted to refuel at Dakar or in its vicinity, although such alle-
tions were always officially and emphatically denied. The an-
uncement by Admiral Jean Darlan on Nov. 23 that Dakar and
ench West Africa would join the United Nations was therefore
iled with great relief. Previously, considerable numbers of U.S.
oops had been stationed in Liberia and elsewhere in the general
ighbourhood of French West Africa. On Dec. 24 it was an-
unced that a detachment of U.S. troops had arrived in Dakar,
d as the year ended a U.S. army and navy mission, headed by
ce Admiral Wm. A. Glassford, was in Dakar making arrange-
ents for the use of air fields and port facilities.

Valuable French naval units based at Dakar also came within
e terms of the announcement of Nov. 23. These included the
w 35,000-ton battleship "Richelieu," damaged by the British
July, 1940; the cruisers "Georges Leygues," "Montcalm" and
loire"; besides 3 destroyers and 13 submarines. (*See* also
ENCH COLONIAL EMPIRE.)

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almatia.

A Yugoslav province on the northeastern shore of the Adriatic sea, inhabited by Croats. After World
ar I the Italians had raised claims to Dalmatia, though ethno-
aphically the country was without doubt Yugoslav, and the
pulation had expressed its firm rejection of Italy's claim. World
ar II seemed to fulfil the Italian aspirations. When Yugoslavia
llapsed under German aggression in April 1941, the Dalmatian
ast was largely annexed to Italy, especially the important naval
rts of Cattaro and Spalato. Only a small part of the coast,
cluding the city of Ragusa, became part of Croatia, yet this
rt too was occupied by Italians and put under Italian military
ntrol. Thus the whole of Dalmatia had become, directly or
directly, part of Italy.

But Italian control of Dalmatia was in no way secure in 1942.
ough little authentic news could be gathered from the hermeti-
lly sealed occupied parts of the Balkans, it was nevertheless
ar that Croat and Serb patriots were waging incessant warfare
ainst the Italian army of occupation. From neighbouring Bosnia
d Herzegovina the army of General Mihailovitch supported the local patriots in their steadfast resistance. (*See* also CROATIA; MONTENEGRO.) (H. Ko.)

Dams.

The table below includes 20 of the many important dams of the world completed or under construction during 1942.

Water spilled over the world's largest concrete dam, Grand Coulee, for the first time on June 1, 1942. The spillway, 1,500 ft. long, discharged 1,500,000 gal. per second, creating a waterfall as great as Niagara falls and three times as high. The reservoir behind the dam covered 82,000 ac. and was 151 mi. long. With the dam completed, work was concentrated on the 2,000,000-kw. hydro-electric plants at the base of the dam. This power was expected to pump water into a reservoir at an elevation 280 ft. higher, whence it would flow by gravity to irrigate more than 1,000,000 ac. of barren land.

At the Central Valley project in California, construction proceeded on Shasta, second largest concrete dam, at the rate of 200,000 cu.yd. per month. With its 3,000,000th cu.yd. of concrete in place in April, it was well past the halfway mark. Friant dam, other major feature of this project and world's fourth largest concrete dam, was completed June 16. Its construction equipment was transferred to the Dale Hollow dam, a hydro-electric project on the Obey river in Tennessee.

At Boulder dam, third largest concrete dam, the tenth 82,500-kw. generator was installed, bringing the capacity of the plant to 952,300 kw. of its eventual total of 1,322,300 kw.

A number of dams for hydro-electric developments in the Tennessee valley were completed during 1942. Others, near completion, were already storing water. Cherokee dam on the Holston river was completed in 20 months, 4 months ahead of schedule. Its construction equipment was transferred to Douglas dam on the French Broad river, an almost exact duplicate of the concrete section of Cherokee dam. Nantahala dam, a 270-ft.-high rockfill, was completed well ahead of schedule. It provided storage for a 1,005-ft.-head hydro-electric plant, second highest in eastern United States.

Construction was commenced on a 2,200-ft.-long submerged dam to preserve the natural beauty of Niagara falls. It was being built just above the Horseshoe falls and would compensate for the reduced flow due to increased diversion of water for the gen-

Chief Dams Completed or Under Construction During 1942

Name of Dam	River	Place	Type	Maximum Height, Feet	Crest Length, Feet	Volume (Cu. yds.)	Purpose*	Built by	Progress*
nderson Ranch	Boise, S. Fork	Idaho, U.S.	Earthfill	330	1,350	9,500,000	I, F, P	U.S. Reclamation Bureau	U
rkabutla	Cold Water	Mississippi, U.S.	Earthfill	70	10,000	4,200,000	F	Mississippi River Commission	C
luestone	New	West Virginia, U.S.	Concrete, gravity	180	2,060	950,000	F	U.S. Army Engineers	U
herokee	Holston	Tennessee, U.S.	Earthfill and concrete gravity	212	6,860	3,379,000 (earth) 700,000 (conc.)	P	Tennessee Valley Authority	C
avis	Colorado	Arizona, U.S.	Earth and rock fill	138	1,600	4,230,000	P	U.S. Reclamation Bureau	U
enison	Red	Texas, U.S.	Earthfill	165	14,000	17,370,000	F, P	U.S. Army Engineers	U
ique la Vina	. . . .	Argentina	Concrete arch	345	.	223,000	I, P	Province of Córdoba	U
l Azucar	San Juan	Mexico	Earthfill	142	18,900	5,677,031	I	Mexican National Commission of Irrigation	U
l Palmito	Nazas	Mexico	Earthfill	295	1,005	6,632,348	I, P	Mexican National Commission of Irrigation	U
riant	San Joaquin	California, U.S.	Concrete, straight gravity	300	3,430	2,200,000	I	U.S. Reclamation Bureau	C
uihodo	Yalu	Manchoukuo	. . . .	298	2,730	3,530,000	P	Yalu River Hydro-Electric Co.	U
rand Coulee	Columbia	Washington, U.S.	Concrete, straight gravity	550	4,300	10,200,000	I, F, P	U.S. Reclamation Bureau	C
reen Mountain	Blue	Colorado, U.S.	Earth and rock fill	285	1,300	4,861,000	I, P	U.S. Reclamation Bureau	U
ohn Martin	Arkansas	Colorado, U.S.	Earthfill and concrete gravity	130	14,000	5,915,000 (earth) 220,000 (conc.)	F	U.S. Army Engineers	U
Kanopolis	Smoky Hill	Kansas, U.S.	Earthfill	120	15,100	14,700,000	F	U.S. Army Engineers	U
Merriman	Rondout	New York, U.S.	Earthfill	200	2,500	6,600,000	W	N.Y. Board of Water Supply	U
Norfolk	North Fork	Arkansas, U.S.	Concrete, straight gravity	220	2,624	1,470,000	F, P	U.S. Army Engineers	U
anta Fe	San Gabriel	California, U.S.	Earthfill	92	24,100	12,000,000	F, W	U.S. Army Engineers	U
hasta	Sacramento	California, U.S.	Concrete, straight gravity	560	3,500	5,400,000	I, F, P	U.S. Reclamation Bureau	U
olf Creek	Cumberland	Kentucky, U.S.	Earthfill and concrete gravity	242	5,730	11,500,000 (earth) 1,250,000 (conc.)	F, P	U.S. Army Engineers	U

—Irrigation, C—Completed in 1942, U—Under construction, F—Flood control, W—Water supply, P—Power.

THREE 8-HOUR SHIFTS worked daily on the Douglas dam of the TVA on the French Broad river, Tenn., in 1942 to complete the structure in the scheduled 12 months

eration of hydro-electric power. It would also serve to avoid a power shortage in case of ice jams. A 2,600-ft. cableway, formerly used on the construction of Conchas dam and then on Denison dam, was erected to facilitate construction.

In Canada a number of hydro-electric projects were rushed to completion to produce power for the manufacture of aluminum and other vital war materials. The Shand dam on the Grand river in Ontario was also completed. Built by the Grand River conservation commission, it is 2,100 ft. long and 75 ft. high, of rolled earthfill with a concrete spillway.

A number of projects of the Mexican national commission of irrigation were nearing completion. The Dique la Vina dam for an irrigation project in Argentina was reported to be the highest arch dam in South America. Irrigation dams on the Caledon and Orange rivers were also announced by the irrigation division of the Union of South Africa. However, two irrigation dams on the Sand and Vet rivers in South Africa were held up for the duration of the war. Work on storage and irrigation dams in India had not been held up. The Mysore government continued construction of the Jog falls scheme on the Sharavati river to develop 120,000 kw. Construction by the Afghan government of a large flood control and irrigation dam in western Afghanistan was also reported. (*See* also AQUEDUCTS; IRRIGATION.) (B. O. M.)

Dance. Participation dances of various types set the pace for the year 1942. "Participations" are especially recommended for the encouragement of mixing. A bashful boy or a shy maiden cannot long resist the group movement when everyone joins hands and begins a rhythmic march around the dance floor. For this reason, participation dances were especially popular at functions where service men were invited guests, like the various canteens, recreation centres, and other such patriotic gatherings.

The Polka continued to head the participation parade. This old-time folk dance, which had been enjoying some degree of renewed popularity, was further spurred on its way in 1942 by several extremely popular dance band recordings in its idiom "The Beer Barrel Polka," introduced in 1939, carried over into 1942, and such newcomers as "Strip Polka," and the more recent "Pennsylvania Polka," dancing out of a million juke boxes across the land, hurried the success of the polka as a social dance form in 1942.

The South American dances, spotlighted by this era of Pan Americanism, also enjoyed a wholesome acceptance in the United States during 1942. Most popular of these, in point of actual gain, was the samba, a comparative newcomer from Brazil More involved than the rumba, the samba depends for its popularity on the entrancing rhythm which backgrounds its performance on the ballroom floor. Its sudden popularity in the United States may be due to the wave of Brazilian music and songs featured in several Broadway musicals and in the films. Also the samba is a bit more spirited than the rumba—another indication of the faster tempo of the times.

The rumba itself continued to improve its hold on the fancy of the American dancing public. Called by many the aristocrat of Latin American rhythms, the rumba continued to challenge the smooth technique of the truly accomplished dancers.

The rapidity with which a novelty dance will fade was vividly demonstrated in 1942 by the quick decline of the conga. One of the biggest dances in American ballrooms, in 1940 and 1941 the conga hit its peak before 1942 began, and witnessed a steady drop throughout the year. It was a great dance while it lasted but the conga was too simple for sustained popularity such as the rumba enjoyed.

In the native American dance field, the fox trot continued its grasp on top position. Most of Tin Pan Alley's musical output is written in fox trot tempo, which greatly influences the type of dance performed on ballroom and cabaret floors. The waltz too, remained high on the list of dance favourites, due undoubtedly to its inherent grace, charm and ease of performance e Peabody, which had been declining, continued to decline in 2, due, perhaps, to the growing lack of floor space for this le-striding dance.

Two new dances, introduced in 1942, show signs of rising in ularity during the coming year. They were the victory walk, roduced by Arthur Murray following a request by the Office War Information for a dance to be performed in marching po; and the dance, also created by Arthur Murray, called raise the Lord and Pass the Ammunition," written for execu- n with the popular song of the same name. (A. Mu.)

Ballet.—As Russia put up her mighty fight against aggression, let entertainment behind the lines refreshed the men at the nt. The ballet theatres of Moscow and Leningrad moved to temporary capital of Kuibyshev, where new works were duced, and a revival of *Don Quixote* with new dances by leizovsky and new settings by Zacharov.

n England, ballets on *The Birds* (to Respighi's score, no con- tion with Aristophanes), *Comus, Hamlet,* were created by bert Helpmann for the Sadler's Wells ballet, which toured provinces and played good seasons at the New theatre, Lon- . Andrée Howard choreographed *Twelfth Night* for the Inter- ional ballet, which like Allied ballets and the Ballet guild, was ive. The *Dancing Times,* reduced in size and circulation, was lished regularly.

n Australia the Kirsova ballet, founded in Sydney by Hélène rsova, former Ballet Russe dancer, in 1941, presented mainly rks from the standard repertoire. In Switzerland an evening ballet, conducted by Ernest Ansermet, figured in the Zurich eatre festival.

n China, where dance is an integer of the theatre (and part a soldier's training, too), groups of players gave performances n village to village, from regiment to regiment.

Between the Americas the flow of traffic was somewhat cur- ed, but Col. W. de Basil's Original Ballet Russe finally arrived South America, after a Mexican sojourn, and was said to end touring that continent for the duration of the war. Balan- ne spent two months of the northern summer staging ballets the Colon, Buenos Aires, Arg.

Among major companies in the United States, Ballet Theater e to top level, while the older Ballet Russe de Monte Carlo k second place. S. Hurok managed both companies until vember, when the latter company came under the aegis of umbia Concerts. A New York spring "Season of Ballet" the Metropolitan Opera House combined the two in succes- e weeks, when for Ballet Theater, Antony Tudor's *Pillar of* won a succès d'estime, and Fokine's *Russian Soldier* proved be a pièce d'occasion. The Monte Carlo company revived ssine's *St. Francis,* but presented no new works at that time.

Ballet Theater spent six summer months in Mexico City. dquartered at the Palacio de las Bellas Artes by invitation the Mexican ministry of education. Baronova and other mbers of the company made the Spanish-language film, *Yo- da,* for Promesa Films, S.A. Massine, who in November joined company, went with them as guest choreographer, as did maestro, Michel Fokine, to work on his *Helen of Troy,* de- ed from Offenbach's *La Belle Hélène.* The passing of the great re of Russian ballet, late in the summer, marked the close of epoch in ballet history.

Helen of Troy, Massine's *Aleko* and *Don Domingo,* were tried in Mexico City without conspicuous success, and the latter fared little better in their New York premieres at the Metro- itan in October, when Hurok staged a joint fall "Season of let." Since Fokine did not live to make necessary revisions *Helen of Troy,* David Lichine made a completely new version ich received its world premiere in Detroit in December. Other Ballet Theater premieres were Dolin's *Romantic Age* and Semenoff's restaging of *Coppélia* in one act and two scenes. A Fokine Memorial program, consisting of *Les Sylphides, Petrouchka* and *Bluebeard* was given. Fall premieres by the Monte Carlo company were: Bronislava Nijinska's *Chopin Concerto* and *Snow Maiden,* and Agnes de Mille's *Rodeo* (with score by Aaron Copland), the latter a decided hit.

The Jooss ballet, after a difficult co-season with the Boston Light Opera company, offering ballet curtain-raisers to Gilbert and Sullivan operettas at the St. James theatre, N.Y. finally returned practically en masse to rejoin their director, Kurt Jooss, in England. Among those remaining in the U.S. were Elsa Kahl and her husband, the former music director, Frederic Cohen, Jack Gansert, who became a soloist in the Metropolitan Opera ballet, and Lucas Hovinga, who later became a U.S. soldier.

The Graff ballet made its Broadway debut at the Concert theatre in January, lost at least two men to the armed forces of the U.S. but carried on touring and summering at Newfane, Vt. as usual. A new group composition, *Phoebe's Fall,* was added to the repertoire. By December all but Kurt Graff, of the men, were in service.

Dance Players, headed by Eugene Loring, made their N.Y. debut at the National theatre in April, after a brief tour, with premieres of Loring's *Prairie* and *The Man from Midian,* and Lew Christensen's *Jinx.* Loring's *The Duke of Sacramento* was produced during a summer session at New Hope, Pa. Christensen later went into the army. After a few fall appearances in the east, the company suspended performances until Jan. 1943, when a full western tour was booked. The Negro Dance company, headed by Wilson Williams, went into rehearsal in the fall in preparation for a Jan. 1943 season.

Lincoln Kirstein's Ballet Caravan, was quiescent during the greater part of the year, until some of their members appeared in the New Opera productions at the Forty-Fourth Street theatre in the fall, including Balanchine's *Ballet Imperial,* presented in conjunction with *The Fair at Sorochinsk.*

Ballet took to roller-skates for the first time in the *Skating Vanities of 1942,* a roller-skating extravaganza. Other developments in the amusement field, in addition to the popular *Ice-Capades* and *Stars on Ice,* were an elephant ballet staged by Balanchine (to music of Stravinsky) for Ringling Brothers-Barnum & Bailey's annual circus, and an aerial ballet.

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Concert Dance in 1942 was confined by global war largely to the U.S., but retained a certain amount of international flavour. Here, as in ballet, change was the constant, travel increasingly restricted, and imminence of draft calls perpetuated uncertainty. There was much dancing for service men in U.S.O. centres.

Among the war-bound were Devi Dja and her Bali-Java dancers and musicians, whose farewell tour on the Pacific coast became perforce an extended American engagement. While in Hollywood they did the native dances for the Somerset Maugham film, *The Moon and Sixpence,* under Devi Dja's direction.

La Meri, American exponent of the Hindu dance and other Oriental forms, became affiliated with the East and West association, appearing with her Natya dancers in curtain raisers to the society's meetings for improving relations between the occidental and oriental peoples (chiefly of India and China), playing other engagements also and continuing her school of Natya and the fortnightly "reunions."

Another English-speaking dancer of Oriental predilection, devoting herself to the court dances of the far east—Seiko Sarina—appeared at the Jacob's Pillow Dance festival and in Ruth St.

SCENE from Martha Graham's dance comedy "Punch and The Judy," a ballet hit of 1942

CARMEN AMAYA, Spanish gypsy dancer, made her concert debut with her troupe at New York city in 1942

"LA FILLE MAL GARDÉE" was a successful presentation of the Ballet Theatre in New York city in April 1942

EUGENE LORING, choreographer and first dancer of the n Dance Players in 1942

HELEN TAMIRIS and Daniel Nagrin in "Liberty Song," a bal of 1942 based on songs of the American Revolution, with mu arranged by Genevieve Pitot

enis' studio before setting out in December for a South Amer-
n tour. Miss St. Denis continued her work in religious dances
d oriental impressions. Other Hindu dancers, native and other-
se, appeared from time to time.

Argentinita, who had been indisposed for almost a year, made
brilliant comeback with her Spanish ensemble in New York,
d later appeared in the musical, *Top-Notchers* and in the
riety-revue, *Priorities of 1942.* She withdrew from the latter
tour in December when her partner, Federico Rey, a Holland-
nerican, was called to the colours, and was obliged to postpone
r concert tour until 1943.

Carmen Amaya, the flamenco dancer, with Antonio Triana
ormerly Argentinita's partner) and a large company of Amayas,
ade her concert debut in Carnegie hall, N.Y. in January, ap-
ared later in Boston's Symphony hall, made the screen musical,
nama Hattie, returned for a single concert in Carnegie hall
December, and then reverted to the supper club scene.

Carmelita Maracci, Spanish-American, with her company, again
ssed the continent in a station wagon, returning to California
er a single New York appearance (at the Young Men's Hebrew
sociation) by a heavily booked route early in the year. Angna
ters, dance-mime, toured extensively the U.S. and Canada,
lding simultaneous exhibitions of her paintings in several
ies; resumed her Christmas week sojourn at the Alvin theatre,
Y. (omitted in 1941) with new works. Huapala, American
ecialist in the Hawaiian dance, assisted by a group of eight
ncers and William Kalama and his Hawaiian musicians, gave
elevision program in January. Gladys and Reginald Laubin
ntinued to interpret the American Indian dance.

Much was made of modern dance as part of the physical fitness
ogram in war work, Steffi Nossen, among others, specializing
this.

There was no Bennington festival in 1942, but a feature of
summer session was a Forum on the War and the Future.
asses in dance were held, however, with Martha Graham and
company in residence, teaching and preparing a new work
later production, and private concerts were given.

At the Studio theatre Doris Humphrey and Charles Weidman
esented Mr. Weidman's *Flickers* in January, and revived Miss
mphrey's *With My Red Fires* in an April post-season. The
42–43 repertory season opened late in December in New York
h an all-Bach program by Miss Humphrey, with José Limon,
t dancer in the New Opera's *Rosalinda,* as guest artist.

Hanya Holm made no formal presentation of new works in
w York, but experimentally produced at Colorado college
ring the summer, with Arch Lauterer, former stage designer
many notable Bennington productions, and composer Roy
rris, as artistic collaborators.

The big festival of the year was the ten-week summer session
Jacob's Pillow, near Lee, Mass., with Ted Shawn managing
ector and occasional dancer, his former estate now owned and
erated by the Jacob's Pillow Dance Festival, Inc. A new dance
eatre was opened with the first festival performance in July,
the Berkshire Folk Dancers and their fiddling caller, Sammy
ring. A different guest artist each week taught and, with group
company, gave four performances each.

There was a resurgence of Duncanism, with Maria-Theresa
ne of the six "Isadorables") and her Heliconiades appearing
Carnegie hall and elsewhere; Anna Duncan (another) at the
cob's Pillow Dance festival; and most of the contemporary
ncan students and disciples joining in a Duncan Dance con-
ess at the Y.M.H.A. in November. *Dance Index* devoted its
st issue to a monograph on Isadora.

Britain and her commonwealth of nations, preferring ballet
d ballroom in any case, had little desire, if opportunity, to sample other forms. But according to the *Dancing Times,* Rafiq Anwar and his company of Indian dancers played a short London engagement in October. (M. L.)

Dandurand, Raoul (1861–1942), Canadian lawyer and statesman, was born Nov. 4 in Montreal, Que. He was minister without portfolio and leader of the government in the senate from 1921 to 1930 and from 1935 until his death. Dandurand represented Canada at the League of Nations assembly in 1924. He was elected president of the assembly in 1925 and was appointed delegate to the league council in 1927. In June 1941, he was made imperial privy counsellor. He died in Ottawa, Ont., March 11. (See *Encyclopædia Britannica.*)

Darlan, Jean Louis Xavier Francois (1881–1942), French naval officer and statesman, was born Aug. 7 at Nérac, France. He entered the navy in 1899 and during World War I commanded a battery of naval guns on the western front and participated in operations on the Balkan front. In July 1918 he returned to the sea as captain of a warship. After the war, he advanced through the grades to vice admiral and was commander in chief of French naval forces, 1939–40. With the fall of France in June 1940, Darlan was named navy minister in the Pétain government.

An ambitious politician, he rose swiftly in the Vichy cabinet, becoming vice premier and heir apparent to Pétain's mantle as chief of state in Feb. 1941. Darlan held as many as six portfolios at one time, instituted many fascist laws and collaborated closely with Hitler's agents. When Laval returned to nazi favour, Darlan relinquished all his posts save that of defense minister. Darlan was on an "inspection tour" of French North Africa when U.S. troops landed in Algeria and Morocco, Nov. 8, 1942. "Held in custody" by U.S. commanders, he ordered French forces to cease fire, joined the Allied cause and by Dec 1, he assumed office, with U.S. approval, as French chief of state in North Africa. President Roosevelt called Darlan's regime a "temporary expedient." Fighting French authorities nevertheless branded him as an untrustworthy opportunist and traitor. Darlan himself said that his sole purpose was to "save French Africa, help free France and retire from public life." The Darlan controversy was permanently settled when a young unidentified Frenchman shot and killed him as he was entering his office in Algiers on Dec. 24.

Dartmouth College. An institution almost wholly undergraduate, for men, at Hanover, N.H. In line with plans formed and announced immediately after Pearl Harbor, Dartmouth operated on a continuous, three semester-per-year basis in 1942 which resulted in advancing graduation for the class of '43 from June to Dec. 12, 1942. Acceleration was not, however, accomplished at the expense of standards held prerequisite to the baccalaureate degree. Eight semesters of work were still required for the degree and admission was granted only to high standing secondary school students who had completed their full four years of college preparation. A certificate of merit is awarded undergraduates who have completed a considerable portion of their college work but are forced to leave for military service.

President Hopkins stated that Dartmouth would continue to operate even though there were "only a dozen" regularly enrolled students. Beginning in July 1942, part of the plant was used for a U.S. naval training school (indoctrination) of 1,000 commissioned officers. For statistics of enrolment, faculty, endowment, library volumes, etc. *see* Universities and Colleges. (S. C. Ha.)

Daudet, Léon (1867–1942), French writer and politician, was born Nov. 16, the son of the great novelist, Alphonse Daudet. A talented polemicist and master of invective, he joined the French royalist party in 1906 and spent nearly 40 years pouring vituperative epithets on the French republic from the editorial columns of *L'Action Française,* royalist organ. He accused Premier Raymond Poincaré and President Alexandre Millerand of engineering a plot which resulted in the death of his son, who was killed under mysterious circumstances in 1923. He also accused a taxi chauffeur of complicity in the "republican" plot; the chauffeur sued Daudet for criminal libel, and Daudet was sentenced to five months in prison. The French authorities, however, were reluctant to carry out the sentence, fearing to make a political martyr out of the royalist leader. Finally in 1927, they called on him to surrender. Freed after 13 days by a ruse, Daudet fled to Belgium. Two years later, he was pardoned and allowed to return to Paris.

When *L'Action Française* adopted a pro-British stand at the start of World War II, Daudet ceased to become a regular contributor. He lived in virtual obscurity after the nazi occupation in 1940 and died at Saint-Rémy de Provence, July 1. (See *Encyclopædia Britannica.*)

Daughters of the American Revolution.

Organized Oct. 11, 1890, the D.A.R. makes eligibility for membership dependent upon direct descent from a patriot who aided in securing American independence. Membership in 1942 was approximately 145,000 in 2,569 chapters in every state and in many countries. President general: Mrs. William H. Pouch. Headquarters: Memorial Continental hall, Washington, D.C.

In 1942 the organization made gifts of $110,000 to 14 approved schools for foreign born and southern mountaineers. Other activities for the year included instruction in the right use of leisure and respect for rights of others to 245,000 children in Junior American Citizens clubs; and distribution of about 340,000 manuals for citizenship, in 16 languages, to aid in naturalization. The society maintains a student loan fund to assist worthy you people in the pursuit of education. About 55,000 copies of t *National Defense News,* designed to promote confidence in fund mentals of the American form of government, were distribute Distribution of Flag Codes and other patriotic literature reach into hundreds of thousands. The society publishes the *Natio Historical Magazine.* Through some 400 clubs the society fu thered its educational endeavours through training in hom making. Through the medium of radio the society furthered objectives to perpetuate the memory and spirit of the men a women who achieved American independence, to develop an e lightened public opinion—to foster true patriotism and love country. By use of a national catalogue, papers of histori import were lent to the some 2,500 chapters. Through t conservation committee a program was launched in all 2,5 chapters to procure scrap metal for the U.S. government.

THE PRESIDENT-GENERAL of the Daughters of the American Revolution, Mrs. William H. Pouch, at the D.A.R.'s 51st continental congress in May 1942 at Chicago. Never before had the annual congress been held outside Washington, D.C.

The society adopted as its principal war project the D.A. War Project Fund, resulting from voluntary contributions of or more from members to be used to further the U.S. blo plasma program and to purchase surgical and medical equipme In Oct. 1942 two blood donor centres were purchased at $2,o each for the American Red Cross: also ten blood plasma mob units at $2,350 each. (H. R. P.)

Davis, Elmer (1890–), U.S. journalist, radio news an lyst and government official, was born Jan. in Aurora, Ind. A graduate of Franklin college, he was a Rhod scholar at Queens college, Oxford university, completing h studies there in 1912. Davis was a reporter and editorial writ on the *New York Times,* 1914–24, wrote a dozen books, inclu ing essays, short stories and satires, and reached the top ru of radio fame in 1939 as a news analyst for the Columbia Broa casting system. On June 13, 1942, President Roosevelt announc his decision to fuse the various overlapping government inf mation services into a single centralized organization and a pointed Davis to head the new organization, known as the O (Office of War Information, *q.v.*). Davis had the delicate ta of co-ordinating the government's war publicity, keeping t public informed on war news and conducting short-wave d sertations on democracy to people throughout the world. H work was complicated by army and navy censorship, although several occasions in 1942 the OWI defended the naval poli of delaying publication of losses on grounds that the immedi publication would be of value to the enemy. Under his dir tion, the OWI took a frank view of the war, consistently wa ing the American people that the conflict would be long and ha

Davis, Robert Hobart (1869–1942), U.S. editor a writer, was born March 23 Brownville, Neb. He attended school in Carson City, Nev., wh he later became compositor on a local newspaper. While work in San Francisco on a similar job, he was made a reporter on t strength of a humorous baseball story he wrote when the origi piece of copy he was to set in type was lost. In 1904 he beca managing editor of the *New York Sunday News.* He was la an editor in the Frank A. Munsey organization and associ editor of *Munsey's Magazine.* From 1926 to 1942, he wrote column in the *New York Sun* entitled "Bob Davis Reveals," a his globe-trotting experiences provided him with the stories a anecdotes that filled his column and books. He wrote a ser of Bob Davis books and was co-author of *The Caliph of Bagda Life of O. Henry* (1931). Among his other works are *Man Ma His Own Mask* (1932), *People, People Everywhere* (193 *Canada Cavalcade, Oriental Odyssey* (1937) and *Hawaii, U.S* (1941). He died in Montreal, Oct. 11.

afness.

Hearing Aids.—Individuals having difficulty in hearing conversation at a distance of five feet less in relatively quiet places such as the office or the home y be helped by wearing a hearing aid. Routine medical exami- ions of hard-of-hearing persons should include audiometric ts and will usually indicate to the otologist whether the patients l be benefited sufficiently to warrant the expense of purchasing aid. The so-called vacuum tube hearing aid utilizing a crystal rophone was the prevailing type being marketed in 1942. ctrical and acoustical research and development have greatly proved the modern hearing aid.

The vacuum tube hearing aid complete weighs somewhat less n a pound and consists of a small crystal microphone and a iature vacuum tube amplifier built in a wearable case (2 oz.), nd B batteries (7 to 9 oz.), a receiver (1 oz.) and wire con- tions. The receiver may be of two types: air conduction, a ll button which fits closely in the external meatus of the ter ear; or bone conduction, a receiver which rests on the stoid and is held in place by a spring headband. An otologist's mination generally determines which type of receiver will give most satisfaction to the patient.

The operating expense of an aid depends largely on the number hours the aid is in use—roughly speaking, it costs $3.00 to 00 per month for battery upkeep.

There are methods and instruments designed to assist the fitter he selection of an aid, and to a limited extent they do help, these procedures have not been perfected. Thus the final ision rests in a large measure on the satisfaction obtained by user after the hearing aid has been tried out for a few weeks. A list of accepted hearing aids and requirements on which eptance is based may be obtained from the Council on Physical rapy of the American Medical Association. (H. A. C.)

aths (of prominent persons in 1942): *see* OBITUARIES.

ath Statistics.

Provisional reports indicated that health conditions among the civilian population the United States, Canada and England and Wales were ex- tionally good during 1942, despite the disruptions to normal induced by the war. In the United States, there were 3.4% er deaths reported for the first eight months of 1942 than the like period of 1941, which was itself a record health r with a total of 1,395,907 deaths and a death rate of 10.5 per 00 total population. Canadian communities of 10,000 or more population experienced a drop of 1.6% in the number of ths during the first eight months of 1942 as compared to the e period in 1941. For all of Canada, deaths in 1941 totalled ,427 and the death rate was 10.0 per 1,000 population. During 1 there were 535,180 deaths from all causes in England and les, with a corresponding death rate of 12.9 per 1,000 popu- on. The great towns of England and Wales reported a de- ase of 15.4% in deaths from 1941 to 1942, the period of com- ison ending in August of each year. A good part of this rease may be attributed to the marked reduction in the scale of ial bombardment by the enemy. Since the outbreak of war in t. 1939 up to the end of Aug. 1942, there were 45,792 civilian raid deaths in Great Britain; of this total, 2,563 were in 1942.

The European population of New Zealand had a death rate 9.8 per 1,000 in 1941. Other countries reporting death rates 1941 were: Bulgaria, 12.5; Denmark, 10.3; Hungary, 13.2; y, 13.9; Netherlands, 10.0; Portugal, 17.6; Sweden, 11.2; tzerland, 11.1; Germany, 12.3; Eire, 16.3; Chile, 19.8; Ven- ela, 17.1; Salvador, 16.9. Death rates reported for the war- countries of continental Europe must be interpreted cau- isly since the unsettled conditions affect their reliability. Health conditions in the prewar years of Japan were about the level of those in the United States of about 1900. In the period 1936 to 1938 Japan had a death rate of 17.4 per 1,000, not far removed from that of 17.6 per 1,000 in the United States of 1900.

In 1941 death rates varying from 8.3 to 8.9 per 1,000 were found in eight states—Arkansas, Idaho, North Carolina, North Dakota, Oklahoma, South Dakota, Utah and Wyoming. In contrast to these states with low death rates, another eight had rates varying from 12.0 to a maximum of 12.6 per 1,000; they were Arizona, Delaware, Florida, Maine, Maryland, Nevada, New Hampshire and Vermont. In many of these states the rates are high because the state contained a large proportion of persons of advanced ages, where mortality is high, or because they contained large numbers of Negro persons, among whom the death rate is high.

When deaths in 1940 were allocated according to the residence of the decedent, it was found that cities of 100,000 and over had a death rate of 11.3 per 1,000; cities of 10,000 to 100,000, a rate of 11.4; cities of 2,500 to 10,000, a rate of 12.4; and the rural area, a rate of 9.8.

There is a marked variation in the death rates among the races in the United States. In 1940, the latest year of complete record, white persons had a death rate per 1,000 population of 10.4; Negroes, 13.9; Indians, 14.3; and Chinese, 15.3. White males had a death rate of 11.6 per 1,000, while for white females, it was only 9.2. Among the other races as a whole, principally Negro, the rates were 15.1 for males and 12.6 for females. The variation in mortality with age during 1940 was as follows; in the first year of life there were 47 deaths per 1,000 live births. At the remaining ages, the death rates per 1,000 persons within the specified age groups were: for ages 1 to 4 years, 2.9; 5 to 14 years, 1.0; 15 to 24 years, 2.0; 25 to 34 years, 3.1; 35 to 44 years, 5.2; 45 to 54 years, 10.6; 55 to 64 years, 22.3; 65 to 74 years, 48.0; and 75 years and over, 129.1. In 1940 the death rate was at a minimum of 9.4 per 1,000 in August and at a maximum of 12.6 per 1,000 in January and February.

The death rates per 100,000 population for the leading causes of death in 1941, as compiled from the provisional records for 32 states were: diseases of the heart, 295.4; cancer and other malignant tumours, 121.2; cerebral haemorrhage, embolism and thrombosis, 90.1; total accidents, 72.7, in which is included automobile accidents, 27.5; nephritis of all forms, 72.2; diseases of the digestive system, 53.5; pneumonia, all forms, 46.6; tuberculosis, 42.2; diabetes mellitus, 26.6; and influenza, 15.1.

The most current picture of mortality from the more important causes of death is provided by the records of the millions of policyholders carrying industrial insurance in the Metropolitan Life Insurance company. The report for the first nine months of 1942 showed that mortality from influenza and pneumonia was not far from one quarter of its level in 1917, the year of the United States entry into World War I. A substantial part of this improvement was made in the last few years by the introduction of serum treatment and the sulpha drugs. The mortality from tuberculosis in the first nine months of 1942 was the lowest on record and indicated that the death rate for the year might be only one quarter of that 25 years previously. However, it seemed necessary to guard against a setback which might result from overcrowding in centres of defense industries, and from inadequate medical attention and hospital care arising from the demands of the army and navy for physicians and nurses. Scarlet fever, whooping cough and diphtheria also established new low records. Mortality from cerebral haemorrhage, chronic heart disease and chronic nephritis was lower in 1942 than in 1941, while cancer and diabetes showed practically no change. Diseases of the coronary arteries showed an increase in mortality. The suicide death rate was very favourable, a situation usually observed in time of war. Accident fatalities increased somewhat from 1941 to 1942, despite a 15% decrease in motor vehicle accidents. The decrease in the latter may be attributed largely to the restrictions in automobile travel.

The increase in other forms of accidents may be traced principally to industrial accidents resulting from the speed-up of industrial activities because of the war.

An analysis of deaths according to age in the United States during 1940 showed that in the first year of life premature birth accounted for 29.1% of the deaths and influenza and pneumonia for another 15.8%. For the remaining ages, the leading causes of death, and the percentages of total deaths within the specified age groups were: ages 1 to 4, influenza and pneumonia (21.6%), diarrhoea and enteritis (10.4%); ages 5 to 14, motor vehicle accidents (11.1%), influenza and pneumonia (8.7%); ages 15 to 24, tuberculosis (18.6%), motor vehicle accidents (14.0%); ages 25 to 44, diseases of the heart (14.4%), tuberculosis (14.3%); ages 45 to 64, diseases of the heart (29.7%), cancer (16.3%); ages 65 and over, diseases of the heart (36.6%), intracranial lesions of vascular origin (12.2%).

According to mortality statistics for the general population of the United States in 1940, the latest year of complete record, the average length of life (expectation of life at birth) was 63.77 years, compared to 49.24 years in 1901. The average person 19 years old in 1940 had as many years of life remaining as a newborn baby in 1900 had on the basis of health conditions then prevailing. White males in 1940 had an average length of life of 62.94 years, and in 1901, an average of 48.23 years. For white females, the corresponding figures are 67.31 years and 51.08 years. Among the Negroes, the average length of life in 1940 was 53.04 years for males and 56.01 years for females, while in 1901, the corresponding figures were 32.54 years and 35.04 years. The current figures for the Negroes compare well with the recent record for some countries of Europe. Thus, Italy in 1930–32 had an average length of life of 53.76 years for males and 56.00 years for females.

(*See* also ACCIDENTS; CENSUS, 1940; INFANT MORTALITY; SUICIDE STATISTICS.)

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(A. J. Lo.)

De Beck, William

(1890–1942), U.S. cartoonist, was born April 16 in Chicago. He studied art there and drew illustrations for a theatrical weekly. He was editorial cartoonist on the Pittsburgh *Gazette-Times* and then did a series of cartoons for the Chicago *Herald.* De Beck was hired by King Features syndicate in New York in 1919 and there created the famous comic strip characters, Barney Google and Spark Plug, who enriched U.S. slang with such expressions as "heebie-jeebies," "horse feathers" and "jeepers creepers," and were popularized by toys and souvenirs. De Beck died in New York city, Nov. 11.

Debts, Government: *see* NATIONAL DEBTS.
Defense, Civilian: *see* CIVILIAN DEFENSE.
Defense, National (U.S.): *see* AIR FORCES OF THE WORLD; NAVIES OF THE WORLD; WAR PRODUCTION, U.S.

Defense Board, Economic: *see* ECONOMIC WARFARE, BOA
OF.
Defense Bonds: *see* BANKING.
Defense Communications Board: *see* RADIO; WAR CO
MUNICATIONS, BOARD OF.

Defense Health and Welfare Services, Office o

Concerted effort to meet major health and welfare problems gro
ing out of World War II was facilitated in 1942 through t
Office of Defense Health and Welfare Services. This agen
guided the war programs of the Federal Security agency and c
ordinated the activities of other organizations, public and privat
in meeting critical wartime problems of health, welfare, educ
tion and recreation.

In more than 1,000 U.S. defense communities where local c
ganizations had been unable to provide sufficient health and w
fare services, the ODHWS helped in surveying the needs, develo
ing local resources and securing federal funds.

Recreation field representatives assisted in developing effecti
community recreation programs. A division of physical fitne
worked on the special problem of interesting individuals in t
improvement of their health and physical condition.

The Family Security committee, advisory to the director, c
ordinated activities of governmental and voluntary agencies
war-created welfare problems. The problem of providing servic
for the children of mothers in wartime employment was made t
special responsibility of the day care section of the ODHWS.

Protecting service men and industrial workers from the spre
of venereal disease was the concern of the social protection se
tion, which stimulated the work of law enforcement officers du
ing 1942 in the repression of prostitution.

The co-ordination of wartime health and medical progra
was the work of the Health and Medical committee. Its su
committee on nursing was especially active in 1942 in helping
the recruitment of nurses throughout the U.S. to meet the sho
age of nursing personnel.

The promotion of better nutritional standards and the improv
ment of food habits was the responsibility of the nutrition di
sion. National campaigns in 1942 gave emphasis to populariz
enriched flour and bread, more efficient home food practices, a
improved provision for feeding families of industrial workers.

(P. V. M.)

Defense Research Committee, National: *see* SCIENTI
RESEARCH AND DEVELOPMENT, OFFICE OF.

Defense Transportation, Office of.

Joseph B. Ea
man, chairm
of the Interstate Commerce commission, was appointed by Pre
dent Roosevelt, Jan. 2, 1942, as director of the Office of Defe
Transportation. The office had been created by executive ord
on Dec. 18, 1941, to "assure maximum utilization of the domes
transportation facilities of the nation for the successful prose
tion of the war."

The executive order delegated to the Office of Defense Tra
portation broad supervisory powers over railroad, motor, inla
waterway, coastwise and intercoastal shipping, pipe line and
transport. Additional responsibilities relating to rubber-bo
transportation facilities were assigned to the office by executi
order on May 2, 1942. On Aug. 5, 1942, another executive or
subjected to the agency's authority domestic transportation fac
ties in territories and possessions of the United States.

Director Eastman set up within the Office of Defense Tra
portation 12 principal divisions: railway transport; motor tra
port; local transport; waterways transport; petroleum and ot

quid transport; materials and equipment; rates; storage; transort conservation; transport personnel; traffic movement; and w.

During 1942 the Office of Defense Transportation issued more an 30 general orders, imposing restrictions of various kinds on il, water and motor carriers, for the purpose of improving oprating efficiency, co-ordinating services, conserving equipment or ccomplishing other objectives related to the general purpose of chieving maximum utilization of domestic transportation facilies in the war emergency. Numerous special orders, limited in pplication to particular transportation companies or services, lso were issued.

Office of Defense Transportation orders requiring heavier loadng of freight cars resulted in more intensive use of railroad car quipment, motive power and terminal facilities. The office acted o avert freight-traffic congestion in port areas by subjecting ovements of export freight to a permit system, by exerting ose supervision over all rail traffic movement, and by making rovision for adequate storage space at port areas and at inland oints. Various regulations pertaining to tank cars and wateraft carrying liquid cargo were issued to expedite movement of etroleum to the eastern seaboard. Controls were established ver Great Lakes shipping to expand the preferential movement f iron ore, which attained a record high volume in the 1942 ason.

To conserve railroad passenger equipment and assure an adeuate reserve of such equipment for troop movements, the Office f Defense Transportation issued a general order freezing all assenger-train schedules as of Sept. 26, 1942, and prohibiting, ith certain exceptions, operation of additional trains or extra ctions. A phenomenal rise in railroad and bus passenger traffic used the Office of Defense Transportation, in co-operation with e carriers, to initiate an extensive campaign to discourage unecessary travel by civilians. All intercity bus operations were bjected to regulation of the office on July 1. Consolidation of merous intercity bus services also was effected.

During 1942 the office established loading and routing requireents for intercity motor trucks, initiated an extensive truck nservation program, and curtailed local delivery services. Virually all trucks, buses, taxicabs and similar commercial vehicles ere obligated to obtain certificates of war necessity, prescribing ileage and load restrictions, under regulations which became fective Dec. 1, 1942. In the field of local transportation, the ffice of Defense Transportation promoted staggered-hours plans, oup riding, rerouting of buses and streetcars, and other measures conserve rubber and equipment and obtain maximum use from blic transit facilities and private automobiles. A nation-wide 5-mile-an-hour speed limit was established in Oct. 1942 by der of the agency. (*See* also ELECTRIC TRANSPORTATION; LAW; OTOR TRANSPORTATION; RAILROADS.) (J. B. E.)

e Gaulle, Charles: *see* GAULLE, CHARLES DE.

elaware. A state of the middle Atlantic seaboard, first to ratify the federal constitution (Dec. 7, 1787), opularly called the "Diamond state." Area, 2,057 sq.mi. (land, 978; inland water, 79). Pop. (1940), 266,505, of which 9,432 were urban and 127,073 rural. Native white numered 215,695; foreign, 14,913; Negro, 35,820. Capital, Dover, 517. The only larger city is Wilmington (112,504).

History.—At the end of 1942, 14,000 Delawareans were under ms, 91,000 had been registered for selective service, and 100,000 ere engaged in civilian defense. Factories in the vital Wilmingn area swarmed with workers building ships, planes and other ar products. Dimout areas and military zones were established, military vehicles replaced much civilian traffic, which declined 36.4%, and rationing of gasoline, tires, fuel oil, sugar and coffee became effective. Living costs increased; business was up 10%, food prices were up 25%, clothing 21.5%, house furnishings 13.5%, fuel and light 1.5% and housing 1.5% over the figures for 1941. Representing only .2% of the nation's population, Delawareans paid 1.6% of the total revenue collected by the U.S. treasury. Marriages in the state were 8,328 in 1942 and 6,332 in 1941.

The November election resulted in a victory for the Republican party in Delaware. C. Douglass Buck, with a majority of 7,888, replaced Senator James H. Hughes, and Earle D. Willey defeated Dr. Philip A. Traynor for representative by a majority of 6,585. Senator James M. Tunnell, Sr. (Democrat), a holdover, completed Delaware's congressional delegation. The state offices of attorney-general, insurance commissioner, auditor of accounts, and state treasurer as well as nearly all of the county offices were won by the Republicans. A Republican legislature (senate 10–7, house 24–11) was elected. The governor in 1942 was Walter W. Bacon (Republican) elected for a 4-year term in 1940.

Education.—In 1942 there were 170 elementary and 44 secondary schools with a total enrolment of 43,098 and a teaching staff of 1,714. The majority of the dislocations in the educational system caused by the war were adjusted.

Communications.—There were 3,930 mi. of highways in 1942, all under state control. Because of the war new construction was halted and all efforts were toward maintenance. During 1942, highway expenditures were $4,088,515.85, of which federal aid amounted to $708,532.52. Railroad mileage (1938) 297. Waterborne commerce (1941) 433,823 tons. Nearly all of the 10 airfields in the state had been federalized, and no statistics were available in 1942. Number of telephones (Oct. 31, 1942) 62,365.

Banking and Finance.—The 30 state banks in 1942 had resources of $303,263,875.32 and deposits of $254,699,055.04. The 14 national banks had resources of $27,649,556.92 and deposits of $21,839,587.57; the resources of the 43 building and loan associations were $14,125,309.34. The state budget (fiscal year 1941–42) was $11,465,839.08, the receipts $19,338,698.70, and the expenditures $17,644,479.96. The state's gross debt was $5,048,000 and the net debt $5,010,204.16.

Agriculture.—All crops in 1942 were valued at $14,422,000. Cash income in 1942 from crops was $9,202,000 (Jan.–Sept.); from livestock $29,540,000 (Jan.–Sept.); from government payments $660,000 (Jan.–June).

Table I.—*Leading Agricultural Products of Delaware, 1942 and 1941*

Crop	1942	1941
Corn, bu.	4,384,000	3,925,000
Apples, bu.	928,000	1,794,000
Hay, tons	93,000	90,000
Wheat, bu.	1,281,000	1,332,000
Tomatoes, tons	55,500	39,000
Strawberries, crates	110,000	110,000
Lima beans, tons	9,320	8,680

Manufacturing.—The total estimated value of manufactures as of Oct. 31, 1942 was $224,436,999.53. Earnings of 46,779 persons engaged in manufacturing was $97,045,532 (year ending Sept. 1942).

Table II.—*Principal Industries of Delaware, 1942 and 1941*

Industry	Value of Products	
	1942	1941
Chemicals	$17,627,502.30	$9,772,637.00
Shipbuilding	17,652,483.42	4,429,668.00
Foundries, machine shops, tools	38,759,988.04	13,509,034.00
Leather	7,469,668.74	9,710,129.00
Fibre	16,362,262.83	11,836,083.00
Textiles	15,641,112.39	12,800,915.00
Canning and packing	2,842,834.80	5,065,134.00

Mineral Production.—The chief products are granite, building stone, brick and clay products with a total value of $325,673.19 (year ending Oct. 31, 1942).

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De Lee, Joseph Bolivar (1869–1942), U.S. physician, was born Oct. 28 at Cold Springs, N.Y. He studied at the Chicago Medical college and at schools in Vienna, Berlin and Paris, where he specialized in obstetrics and gynaecology. In 1895, Dr. De Lee established a maternity hospital in a Chicago slums area. This centre, the Chicago Lying-in hospital, became world famous, and by 1942 was caring for more than 3,000 expectant mothers each year and training 300 medical students annually in obstetrics. The great $2,000,000 Chicago Maternity centre, also founded by Dr. De Lee in 1932, had its inception in the obstetrician's earlier charity service. Dr. De Lee, who taught obstetrics at Northwestern university, 1897–1929, was chairman of the obstetrics department of the University of Chicago, 1929–32 and continued at the latter school as a professor until 1934, when he retired. His contributions to operative method, obstetrical instruments and hygiene were widely adopted throughout the United States. He also produced a number of motion pictures illustrating approved procedure in obstetrics and gynaecology.

Among his works are *Obstetrics for Nurses* (1904) and *The Principles and Practice of Obstetrics* (1913). Dr. De Lee died in Chicago on April 2.

Deming, Edwin Willard (1860–1942), U.S. artist and sculptor, was born Aug. 26 in Ashland, Ohio. He went to Chicago in his youth to study business law, but left after three months, and later went to study at the Art Students' League in New York. From there he went on to Paris to work under Boulanger and Le Favre at the Julien academy. Upon his return to the United States, he went west to live and study among the Indians. His oil paintings and bronze sculptures of Indian and animal life won many honours and were hung in various museums throughout the country, including the Metropolitan in New York and the National museum in Washington. His "Landfall of Jean Nicholet" was selected by Wisconsin as the design for a federal postage stamp to commemorate Wisconsin's tercentennial. He died at his home in New York city, Oct. 15.

Democracy is not only a technique of government, based upon freely elected representative institutions, and upon an executive responsible to the people; it is based upon the belief of the equality of all individuals and of the equal right of all to life, liberty (including the liberty of thought and expression) and the pursuit of happiness. The denial of this equality and of individual liberty, the proclamation of authoritarianism and of the inequality of men and races as a "new order," is characteristic of fascism, which arose as a conscious and aggressive world-wide opponent of democracy.

This world-wide threat to democratic freedoms and institutions led to a widespread reappraisal of the principles of democracy and a reassertion of faith in them. The war aims of the United Nations stress the need for maintaining and spreading democratic principles. While the initial successes of fascist Germany in 1939–40 and of fascist Japan in 1941–42 had produced a growing conviction of the weakness of democracy, especially in the field of military efficiency, the turn of events at the close of 1942 made it clear that this alleged superiority was only due to more protracted preparedness of the fascist powers and that the democracies were able in an astonishingly short time to catch up wit the fascist powers and to prove their equals in the field of warfare. At the same time democratic liberties were everywher maintained in democratic countries in spite of the pressure o war exigencies. It may be said that the war acted as an activ agency for greater democratization in removing class barriers i Great Britain and racial disabilities in the United States. I countries under German domination resistance was everywher on the increase. This was brought about not only by the sufferin and starvation which the occupation brought in its wake, and b the ruthless policy of persecution, humiliation and exterminatio followed by the Germans; it was also the result of the growin faith in democracy and its final victory. The same faith could b noticed in all Latin American republics with the exception o Argentina and Chile.

4-14
Reg. U. S. Pat. Off.:
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A NEAT DEFINITION OF DEMOCRACY in terms of baseball, by George Clar of News Syndicate Co. Inc. The private to the captain: "Whatta ya mean, he' out? He was safe a mile!"

The trend was even more marked in the few remaining neutra countries of Europe. Elections held in Sweden during 1942 resulted in the elimination of the insignificant national socialis party and in the complete triumph of strong democratic partie The German propaganda minister protested again and again a the outspoken democratic sympathies of the Swiss and th Swedish press, which were the more remarkable for the fact tha the two countries were on all sides surrounded by the ove whelming power of national socialist Germany. Turkey, to reasserted in 1942 her loyalty to democratic principles in a mor emphatic way than she had done in 1941. (*See* also Communism Education; Fascism; Great Britain; United States; Unio of Soviet Socialist Republics.)

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emocratic Party. As it entered 1942, the Democratic party continued in control of the ecutive and legislative branches of the national government. 7hen the 77th congress convened for its second session on Janu y 5, the Democrats held 66 senate and 262 house seats. Edward Flynn of New York remained as chairman of the Democratic ational committee throughout the year. In the house, Repre ntative Sam Rayburn of Texas held office as speaker, with Rep sentative John W. McCormack of Massachusetts as floor leader. the senate, Alben W. Barkley of Kentucky continued as ajority leader.

Responsibility for directing U.S. participation in World War II, in World War I, rested with a Democratic administration. Fol wing Pearl Harbor, a unified congress began the job of shaping e greatest military program in U.S. history. Republicans co erated with the Democrats in securing the speedy enactment of e war measures through which the nation gave its answer to e challenge of the axis.

In January congress passed the Price Control act, one of a ries of measures aimed to put the national economy on a war ne basis. On March 27, in the Second War Powers act, it rein rced the unprecedented emergency powers vested in the presi nt on Dec. 16, 1941, and on March 28 it raised the national bt limit from $65,000,000,000 to $125,000,000,000. On June 5 approved declarations of war against three axis satellites, Ru ania, Hungary and Bulgaria. Other important measures ap oved were the 1942 Revenue act, providing a $9,000,000,000 in ease in taxes; legislation creating new women's corps in the med services; a bill lowering the draft age from 20 to 18; and e emergency anti-inflation act of Oct. 2, giving the president eeping authority to control wages and salaries and combat infla on through economic stabilization.

A bill vesting in the chief executive the power to suspend, for e duration of the war, certain provisions of the tariff and immi ation statutes was the only major administration measure that iled of enactment during the 1942 session. Action on this legis ion was postponed until the next congress. A senate filibuster evented enactment of a house-approved bill outlawing poll taxes southern states.

Though prosecution of the war was the chief concern of the ministration, the year saw a good deal of activity on the politi l front at home. On Feb. 2, Chairman Flynn of the Democratic ational committee declared, "No misfortune except a major litary defeat could befall this country to the extent involved in e election of a congress hostile to the president." Mr. Roose lt, four days later explained that what the country needed when war was congressmen irrespective of party, who would support e government, and had a record of supporting it in the emer ncy. Unlike Woodrow Wilson, who warned the country in 1918 at a Republican majority in congress would be interpreted as a udiation of his leadership. President Roosevelt, in the 1942 mpaign made no direct plea for the election of Democratic ngressmen.

The president, however, intervened in New York State, by an uncing his support of Senator James M. Mead for the Demo atic gubernatorial nomination. Attorney General John J. Ben tt, Jr., who had the backing of State Chairman James A. Far , won the party's nomination, after a bitter preconvention fight at further widened the cleavage, among New York Democrats, tween New Dealers and Anti-New Dealers. Bennett was de ated by Thomas E. Dewey, the Republican candidate for gov nor, by more than 600,000 votes.

Reflecting popular dissatisfaction with the administration's conduct of the war, and some of its domestic policies, the national elections on Nov. 3 reduced the Democratic majorities in congress to the lowest point since President Roosevelt entered the White House in 1933. In the new house the Democrats held 222, and in the new senate 57 seats. (*See* also ELECTIONS.)

Charles Michelson, director of public relations for the Democratic National committee since 1929, resigned his post soon after the November elections. The committee took steps to curtail its headquarters organization, explaining to its employees that in view of the fact that there would be no national election until 1944 "it is not deemed wise nor patriotic to continue our efforts to raise substantial sums of money."

The Republicans scored the bulk of their 1942 gains in the mid-western states. Democratic leaders from 10 of these states met at Omaha, Neb., on Dec. 11, and following the meeting announced formation of a permanent organization whose declared purpose was "to assist our great commander in chief in winning this war, and also to strengthen and better serve the middle western agriculture states."

Though the Democrats, in the new congress, still commanded a majority in both houses, their control, particularly in the lower chamber was only nominal, for the Republicans, with a few Democratic votes, could exercise a veto over administration measures.

(O. McK.)

Denmark. A monarchy of north central Europe. Area, 16,575 sq.mi.; pop. (est. 1940) 3,844,312. Capital: Copenhagen (890,130). Other principal cities: Aarhus (99,881); Odense (85,521); Aalborg (55,652). Religion: Lutheran Christian. Ruler in 1942: King Christian X (*q.v.*); prime minister: from 1929 to May 3, 1942, Thorvald Stauning (*q.v.*); May 3–Nov. 2, Vilhelm Buhl; after Nov. 8, Erik Scavenius. On April 9, 1940, Denmark submitted to German military occupation.

History.—Encouraged by the opposition to Germany in Norway, by the growing strength of Britain, by the heroic resistance of the Russians, by the entry of the United States into the war, the peace-minded Danes had become implacable and effective foes of their nazi masters by 1942.

The repeated illnesses of King Christian and the death of Premier Thorvald Stauning (May 3) intensified the uncertainties of Danish politics. The king, fortunately for Denmark, lived to stimulate hope in the future, and to resist successive encroachments on Danish sovereignty. On the death of Stauning, a man too popular to be removed, the Germans undoubtedly hoped to capture the administration. But the Danish ministry moved too swiftly, and made their own choice of a man who would follow a truly Danish policy—Vilhelm Buhl. Under the Buhl administration, opposition to Germany continued to grow. Christmas Möller, whom the nazis had forced from the Cabinet late in 1940, had just escaped from Denmark to England, where he soon became chairman of the Council of Free Danes. Sabotage developed, illegal papers such as *Frit Danmark, Land og Folk, De Frie Danske,* began to flourish, and the would-be nazi movement led by Frits Clausen made no headway. Danish exiles claimed 98% of their countrymen were anti-nazi. A widespread movement of democratic nationalism among the youth of the country was inspired by the young theology professor, Hal Koch.

On Sept. 29, the "too humane" German commandant, Gen. Luedtke, was recalled to Berlin and Gen. Hermann von Hanneken, a man supposedly trained in German "war economy," was sent to Denmark. Likewise, the gestapo-trained Dr. Werner Best was sent as the new minister to Copenhagen. Toward the end of October the nazis decided to go still farther; they called to Berlin the collaborationist minister of foreign affairs, Erik Scavenius—he who a year before had angered the Danes by signing the anti-Comintern pact. Scavenius was told that by Nov. 8 Denmark must form a new ministry in which Germany "could have confidence." After consultation with a special parliamentary commission, the government decided late on Nov. 7 to yield, and the king, from his sickbed, agreed. Buhl resigned, and Scavenius became head of a new ministry which promised co-operation but in whose formation the Danish nazis had no part. Among other German demands were: 150,000 workers to go to Germany; all the remaining small ships to be given up; anti-Semitic laws on the German model to be introduced. About Dec. 1 it was reported that the Germans demanded the disarming of the Danish army, partly so that they could use some 100,000 rifles and 3,000 horses.

Outside Denmark the nationals of the country became increasingly active in 1942. No government-in-exile had been formed, but the Danish council in London, acting with the Danish envoy Count Reventlow, and the National America Denmark association in the United States, acting with the Danish Minister H. de Kauffmann, represented Free Danish interests. Among other things, de Kauffmann maintained interest payments on Denmark's dollar loans.

Education.—In 1940 there were 407,355 students in the elementary schools and 67,064 in the middle and secondary schools. In the two Danish universities 6,474 students were enrolled.

Defense.—Budgets for purely military expenses were as follows: 1938–39, 33,635,000 kr.; 1939–40, 84,494,000 kr.; 1940–41, 62,663,000 kr.; 1941–42, (est.) 28,855,000 kr.

Economic and Financial Conditions.—Denmark, a rich agricultural country, was not starving in 1942. In fact, several thousand German women and youth were sent there to gain health. Yet conditions were bad. Tuberculosis, normally 1.7% among school children, was reported by the Danish radio to be 3.98%. No textiles could be manufactured with more than 20% wool. Milk production was down 37% by April 1942. Railroad rolling stock was taken to help supply the eastern front. Fue shortage was so great that some smelters had to close down, an local peat and lignite production increased elevenfold to try t meet part of the need.

Most significant of all in the deterioration of Danish econom was the reduction of livestock by slaughter, due to lack of fodde and "other reasons": 15–20% decline in cattle; 60–65% declin in hogs; 65–70% decline in chickens.

Danish economy was of course yoked to nazi requirements i 1942; 80% of the exports went to Germany.

Payment was in kind and in promises; it is noteworthy tha the German debt to Denmark, about 38,000,000 kr. before th war, had risen to 1,700,000,000 kr. by the beginning of 1942.

(F. D. S.)

PLAN FOR A "GREATER GERMANY"
DENMARK
ALEXANDER

"SOMETHING ROTTEN." Denmark, no less than the other parts of nazi-occupied Europe, did not relish the odour of the new order in 1942, according to Alexander of the Philadelphia *Evening Bulletin*

Dentistry.

By Dec. 1942, more than 15% of all dentists engaged in private practice, in hospital service or i teaching were on duty with the armed forces. This dislocation o dentists from civilian activities naturally necessitated many read justments, particularly in the faculties of dental schools. Ne courses in war surgery had to be developed with reduced staffs In addition, the accelerated program of dental education, in whic the four-academic-year course was reduced to three calenda years, by giving up the summer vacations, required importan readjustments in the curriculum.

Readjustments in private practice also became necessary, i order that the civilian population, including industrial workers might have at least the dental care necessary to enable them t keep at work.

In May 1942 a group of research workers and clinicians met t analyze the knowledge of the causes and methods of control o dental caries. The discussions emphasized both the importance o early care and treatment and of nutrition, especially the reduction in the diet of carbohydrates, including the fermentabl sugars. But standing out somewhat in bold relief, as a possibl mass means of reducing the prevalence of dental caries, was th part that fluorine and the fluorides in drinking water play in developing immunity to this disease.

Interesting reports were made during the year by dental officer in the United States public health service, regarding their examinations of large numbers of school children in areas wher there was no fluorine in the drinking water, and in areas where th drinking water contained more than .5 parts per million. In th towns and cities examined where the water contained less than . parts per million, the usual prevalence of dental caries was foun —that is, 98% of all the children. In communities with .5 part per million up to 2.5 parts per million, only 25% of the childre were found to have any dental caries. These findings were o tremendous significance.

In round figures the evidence suggests that in quantities belo .5 parts per million, fluorine apparently has no inhibitory actio Above 2 or 2.5 parts per million, it produces changes known a mottled enamel and hypoplasia of the tooth structure. Suc mottling and hypoplasia were produced experimentally in teeth o rats by feeding of potassium fluoride. MacKay showed that thi mottling does not increase the susceptibility to caries, but it doe influence unfavourably the appearance of the teeth. In one community where there had been an increase of the fluorine conten from .2 parts per million to .7 parts per million, over a two-yea period, there was no reduction in the prevalence of dental carie in school children whose teeth had already been formed, althoug one group of investigators concluded that small additions c fluorides to the drinking water delay the onset of caries to greater extent than improvements in the diet. It appeared to b necessary to have the child use the drinking water in the ver arly periods of life, during the calcification of the teeth, to have his immunizing effect to caries.

Two contributions to the therapy of dental infections were enicillin and gramicidin. Penicillin, produced by a mould (*Peni-illium notatum*), appears to be a potent bactericidal agent—ore potent even than the sulphonamides. It completely inhibits acterial growth and is not inhibited by tissue autolysates. It was sed successfully in osteomyelitis, which made this remedy of articular interest to dentists, for osteomyelitis of the jaw is a rious and obstinate disease. Its value was further suggested by e fact that it proved valuable in infection which did not respond the sulphonamide treatment or to surgery.

Gramicidin, derived from an earth bacillus (*Bacillus brevis*), peared to be equally potent as a bactericidal agent, but, except r the *Streptococcus faecalis,* penicillin seemed to be the more tive, especially in pyogenic conditions. Both have an advantage ver the sulpha drugs, in that they are much less toxic in their tion.

In the treatment of war injuries of the face and jaws, which ere becoming numerous, two books were of considerable value. manual developed by a committee from the division of medical iences of the National Research council, entitled, *Manual of andard Practice of Plastic and Maxillofacial Surgery,* is designed meet the needs of modern warfare, and a *Synopsis of Trauma- Injuries of the Face and Jaws,* by Douglas Parker of Colum- a university, presented by the author as "a concise text that ould deal with the early first-aid treatment of face and jaw in- ries at the site of injury."

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(L. M. S. M.)

eposit Insurance Corporation, Federal: *see* Federal eposit Insurance Corporation.

ermatology. Pardo-Castello and Ferrer wrote an excellent summary of the current conception of pinta, sed on the discovery of the causative spirochaete, and the work Leon Blanco, who demonstrated the presence of primary and condary lesions (previously unrecognized). Pinta can be inoculed in man. It is a separate disease from syphilis. Pinta is obably transmitted by personal contact, the existence of a ctor being doubtful.

Dostrovsky and Sagher, in Palestine, used grenz rays with cellent results in the treatment of 72 cases of oriental sore. In cases, the disease was of the unusual, recurrent type, which d previously been considered entirely rebellious to treatment.

The occurrence of oriental sore in the United States and Canada s discussed by Dwork, who collected 28 cases from the litera- re and described 4 additional ones. In no case was the disease ntracted in the western hemisphere.

Chromoblastomycosis in Cuba was discussed by Pardo-Castello, o Leon and Trespalacios on the basis of a study of 32 cases. ve clinical types were described. The difference in their appearance was apparently due to difference in allergic reactivity, as the same organism, Fonsacae pedroisi, was found in 11 cases. Roentgen therapy was recommended for the superficial type and electrocoagulation for the extensive, unfiltered types.

In an exhaustive article with innumerable illustrations, Sutton, Jr., discussed cutaneous epithelioma, its manner of growth and a histologic study of whole tumour sections. "Progressive cancerization" at the edges of the lesion was considered a misinterpretation of histologic data, which reveal abnormal cells only in juxtaposition to normal ones, undermining, replacing and engulfing them. He found no evidence of conversion of normal into cancerous cells. Malignancy was considered to be intimately related to cohesion of cells and their rate of growth. Each spontaneous epithelioma behaves like a colony of cells of a new type. Perhaps, he thought, this comprises the homogeneous progeny of one mutant cell.

Balog described a hitherto unreported dermatosis, observed in Egypt under the title of "benign embolic pyemid." It is an acute staphylococcic infection, in which a primary focus is followed by repeated pyogenic metastases. The lesions are semiglobular, with an umbilicated necrotic centre. They appear in crops, and heal within one or two weeks, indicating their benign nature.

So-called nummular eczema was considered by Gross to be an entity. He attempted to show that dryness of the skin was a predisposing cause. As this is an early sign of vitamin A deficiency, therapeutic studies with vitamin A were made and showed favourable results.

In a study of hyposensitization to poison ivy, Shelmire treated 20 patients sensitive to the plant, by ingestion for several months, with dilutions of poison ivy oleoresin in corn oil. Quantitative patch tests before and after treatment showed varying degrees of reduction of sensitivity. There was no reduction in untreated controls.

A preparation of sulphonated oil was used by Lane and Blank for a year, in 183 patients in a dermatologic ward. This remedy was non-irritating for the great majority of patients for whom soap was contraindicated. It proved to be a more satisfactory detergent than liquid petrolatum, olive oil or colloid baths. Only one patient showed an apparent hypersensitivity to the oil.

Jolliffe, Rosenblum and Sawhill found that the oral administration of pyridoxin (vitamin B) improved the skin of some patients with postadolescent acne vulgaris. Many patients showed a decided reduction in the oiliness of the skin to the point of actual drying and scaling.

In the treatment of senile pruritis with androgens and oestrogens, Feldman, Pollock and Abarbanel found that these hormones acted specifically in each sex. The treatment was not curative, but exerted favourable effects by maintenance doses in persons with a deficiency of the endocrine factors. (*See* also Industrial Health; Medicine.)

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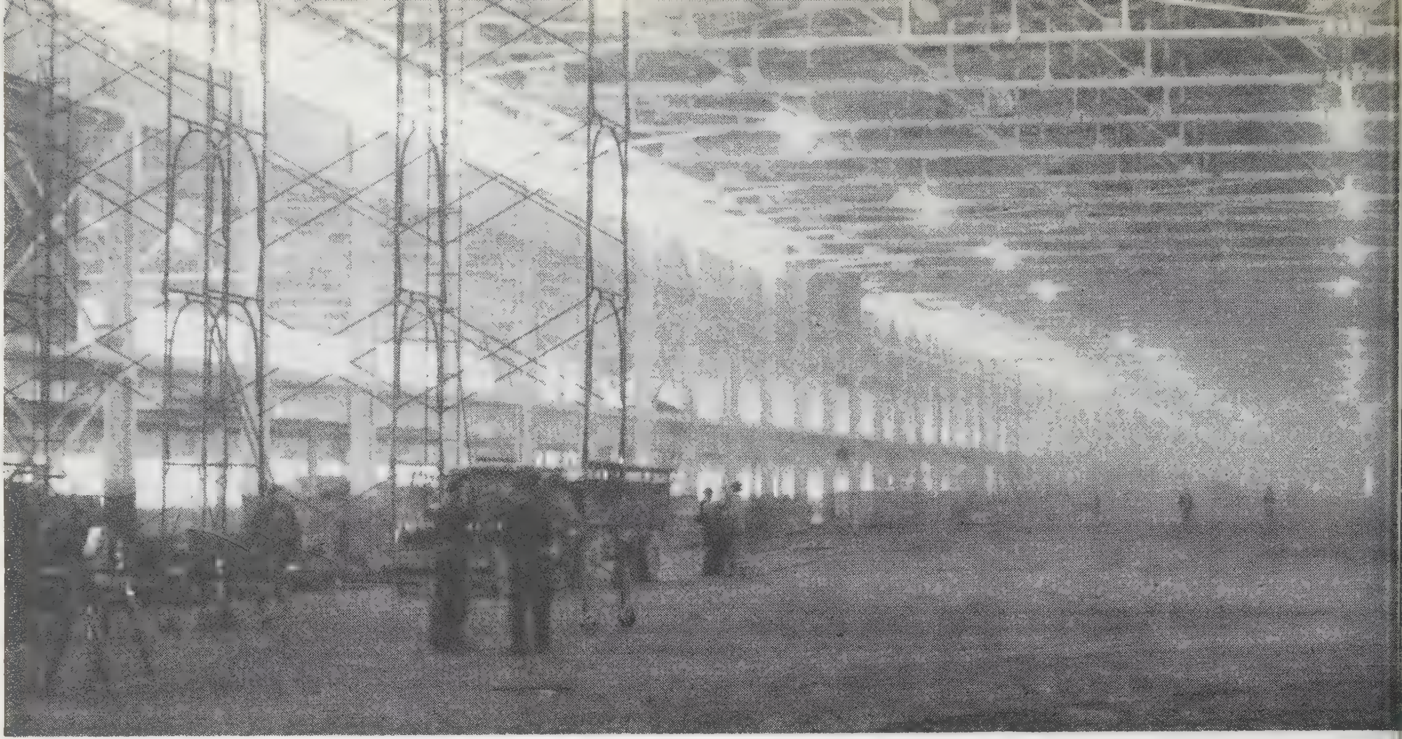
(H. Fx.)



ASSEMBLY BAY of Willow Run, Henry Ford's huge bomber plant in Detroit, completed in 1942. In this bay is an assembly line half a mile long

D'Espérey, Franchet: *see* ESPÉREY, FRANCHET D'.

Detroit. Fourth largest city of the U.S.A., in Wayne county, Detroit is the centre of the large industrial area of southeastern Michigan. Area, 137.9 sq.mi.; pop. (1940) 1,623,452; estimated (July 1, 1942), 1,807,000. Foreign-born white, 320,664, of whom 110,698 were British and Canadian; 52,235 Polish, ranking second. Assessed value as of July 1, 1942, $2,724,495,430; gross bonded debt as of Dec. 31, 1941, $354,056,239, which included $117,652,739 of utility debt; net debt, $230,900,152 excluding all utilities; gross city appropriation, fiscal year ending June 30, 1943, $159,698,051 including utilities; tax levy, city and school purposes, $78,944,980; combined tax rate $28.98. Mayor, Jan. 1, 1943, Edward J. Jeffries, Jr.

The difficulties anticipated in the curtailment of automobile production and the change-over to defense activities during 1941–42 did not materialize to any serious extent. The rapid conversion of existing plants and the construction of new ones in Detroit and its environs devoted almost exclusively to war work made the Detroit area the most important arsenal of America. Volume, dollar production and numbers employed, though totals were not announced, evidently greatly exceeded any previous records. Unemployment ceased to exist, and relief rolls reached a low for the decade.

Increased population in the industrial area (336,000) created acute housing problems for Detroit and adjacent cities which were scarcely affected by the several federal housing projects. Transportation difficulties were complicated by the lack of any system of rapid transit and the corresponding reliance of Detroit workmen on private automobiles. The municipal transportation system in 1942 was struggling against inadequate equipment and scarcity of manpower.

No major labour difficulties occurred during 1942, but numerous "wildcat" strikes on a small scale continuously persisted, one for three days in the transportation system. Threatened strikes of other public employees were cancelled after the U.S. declaration of war in 1941.

In the political field, the investigation of public graft, begun in 1941, continued, particularly in the county government, and resulted in the conviction of two members of the principal executive board and the removal of the third. Several convicted city councilmen and numerous police officers were serving sentence but the convicted mayor, sheriff and prosecutor were still at liberty on appeals in 1942. Attention centred on Circuit Court Judge Homer Ferguson, in charge of the investigation, and resulted in his election to the U.S. senate replacing Democratic Senator Prentiss M. Brown. However, efforts to completely reorganize the county government failed in a state-wide vote on the necessary amendment to the constitution.

The financial condition of the city continued to improve in 1942. All outstanding bonds were refunded at much reduced rates of interest. The long standing operating deficit was eliminated and the city concluded its fiscal year with a substantial surplus.

(L. D. U.)

Dewey, Davis Rich (1858–1942), U.S. economist and educator, and brother of John Dewey was born April 7 in Burlington, Vt. Prof. Davis, a member of the faculty of the Massachusetts Institute of Technology for nearly 50 years, was head of the department of economics and statistics from 1930 until his retirement as professor emeritus in 1933. He died in Cambridge, Mass., Dec. 13. (See *Encyclopædia Britannica.*)

Diabetes. Diabetes in the year 1900 was 27th as a cause of death in the United States, but in 1940 it was eighth, with 26.6 per 100,000, 35,015 cases, which represented the peak figure up to that year. The rates for 8 of the 10 larges cities in the United States in 1941 were still higher, the exceptions being Detroit and Los Angeles, and ranged per 100,000 from 31.1 (Chicago) to 40.7 (New York). Between 1935 and 1940 the United States rate rose both actually and proportionally less than that of these cities. Therefore it was good news to learn that in the year 1941 a halt took place in the rising city incidence and in 13 of the 15 larger cities in the United States the diabetes death rate was actually lower than in 1940. Figures for the Metropolitan Life Insurance company likewise fell in 1941 from their peak in 1940 and were still below that peak for the first ten months of 1942.

The duration of the disease in fatal cases in one large clinic advanced from 4.9 years between 1898 and 1914 to 14.3 years for 1940 to mid-1942 and the percentage surviving the disease 20 years rose correspondingly from 1.8% to 19.2%.

The causes of death of diabetics altered. Up to the year 1914 betic coma (acidosis) ultimately claimed 64% of those with the ease but after 1940 only 3.3%. Recovery from actual diabetic na was almost unknown before the discovery of insulin but, h its use, gradually declined and in one series of 73 successive tances, based on values of CO_2 20 volumes per cent or below, re was no fatality. Diabetics succumbed most frequently to eriosclerosis in its various forms, in the arteries of the legs, in and kidneys. Although it remained a major complication diabetes, the meticulous training of the patient reduced the rtality from gangrene, due to hardening of the arteries in the s, from 8.5% for the years 1922–29 to 4.7% during 1937–40 pite the average age of the patients having risen fully five rs and their exposure to the disease having been half again as g. Studies upon diabetic children who had withstood diabetes or more years indicated that 30% of those examined roentgeno- ically had peripheral arteriosclerosis and 55% had moderate to anced ocular arteriosclerosis. As these children developed dia- es before the discovery of insulin, future series of cases should r a more hopeful outcome.

The sulphonamides proved to be as helpful and lifesaving in ctions in diabetics as in nondiabetics. Insulin is capable of ducing anti-insulin antibodies and insulins derived from vari- animal sources are immunologically identical. Allergy to in- in can exist in the absence of resistance to insulin and re- ance can exist in the absence of allergy. Desensitization to ulin is feasible but as yet no cure to insulin resistance is known, fortunately it is self-limiting. For the first time, in 1942, s with radioactive insulin made it plain that in some cases resistance to insulin the subcutaneous tissues do not permit normally rapid absorption.

Diabetes was considered a cause for a rejection of men for the ny and navy and wisely so. The difficulty of selection of those betics physically capable, the possibility of increase in se- ity of the disease, the difficulty of always assuring proper diet, necessity for a soldier's restudy whenever transferred from np to camp or when hospitalized even for a trivial ailment. pled with the necessity for the government to provide for ir future, justified their rejection. Moreover, statistical esti- tions and a clinical survey placed the number suitable for the ned forces as relatively insignificant, with 4,500 men as the up- limit and 1,800 as the lower.

The exceptional value of the contributions of the Argentine siologist Houssay to the relation of the anterior portion of pituitary gland to the pancreas during the decade still bore it by opening up the way to many fresh discoveries. Of first ortance was Young's production of diabetes by repeated injec- ns of extracts of the anterior pituitary gland of beeves into a , thereby causing destruction of the islands of Langerhans of pancreas in which insulin is produced. This was confirmed, ticularly in Toronto. Later Lukens and Dohan in the Cox tabolic institute in Philadelphia demonstrated that in the cat s experimental type of diabetes could be cured. They con- ded, ". . . we have noted the fact that pancreatic lesions are duced by partial pancreatectomy or pituitary extract only in ociation with hyperglycaemia. In like manner, the recovery of islands is coincident with the return of the blood sugar to mal levels prior to irreversible damage to the islands, whether s is accomplished by insulin, dietary treatment or phlorhizin. ese findings support the hypothesis that the level of blood cose is not only an index of the regulation of carbohydrate tabolism but also that it has, directly or indirectly, an influence the islands of Langerhans. This influence is pathogenic when blood sugar is high and beneficial when hyperglycaemia is trolled, provided the lesions are not irreversible."

The above experimental evidence confirmed Naunyn's clinical view published soon after the turn of the century, "that the diabetes immediately at its first appearance be so energetically treated that, if possible, the glycosuria will be abolished."

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(E. P. Jo.)

Diamonds.

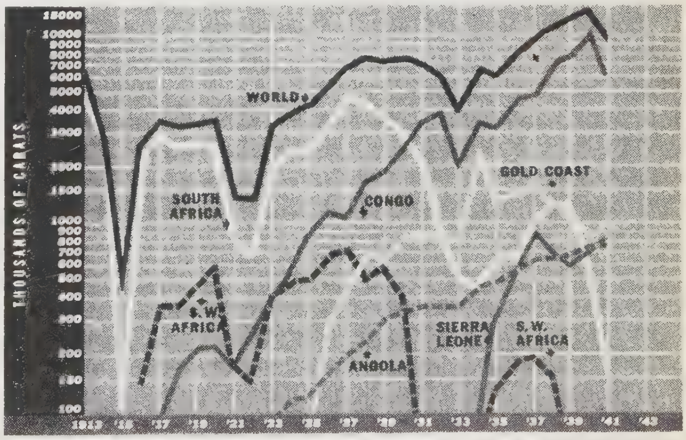
The world production of diamonds from 1937 to 1941 is shown in the table on p. 236; few official reports of output were made during 1940 and 1941, and many of the figures used in the table are the estimates of S. H. Ball in *Minerals Yearbook*.

Operation of the South African mines was discontinued after Sept. 1940, but alluvial workings both there and in South-West Africa were continued, though on a reduced scale. In general, operations were restricted in areas where gem stones predominate in the output, but where industrial stones are in the lead, production was maintained as high as circumstances would permit.

Following the disruption of the European cutting trade, with the German occupation of Belgium and Netherlands, the smaller cutting centres in other countries were enlarged, especially in the United States, South Africa, Great Britain and Palestine. Hence, as a by-product of the war, we now find New York city the chief diamond cutting centre of the world.

Imports of diamonds into the United States were reported only for the first nine months of 1941, but it is evident that the amounts of all types of stones decreased materially; for figures, see the article on GEMS AND PRECIOUS STONES. Rough stones were received only from South Africa and Brazil, the former decreasing heavily, and the latter increasing. Receipts of cut stones credited to European sources were somewhat higher than might have been expected under the circumstances, but this may possibly be explained by the fact that many of the stones evacuated from the occupied areas were sent to Bermuda, and it is from this stock that much of the recent United States imports have been drawn; that being the case, under customs regulations, Bermuda would be considered a port of trans-shipment, presumably, and the country from which the stones came would be credited with their origin.

Receipts of industrial diamonds were at a rate somewhat less than the average of 1940, though this may have been offset by larger shipments in the last quarter. Most of these came from South Africa, but receipts from Belgian Congo were expected to increase, since shipment and sales of these stones were again



DIAMOND PRODUCTION OF THE WORLD and the major producing countries as computed by *The Mineral Industry*

World Production of Diamonds
(Thousands of carats)

	1937	1938	1939	1940	1941
Angola	626	651	690	784	787
Belgian Congo	4,925	7,206	8,345	10,900	6,106
Gold Coast	1,578	1,297	1,088	825	743
Sierra Leone	913	690	600	750	850
South Africa	1,030	1,238	1,250	543	150
South West Africa	197	155	35	30	47
Brazil	238	235	350	325	325
Others	107	148	127	143	92
Total	9,614	11,620	12,485	14,300	9,100

arranged, after having been discontinued for about a year after the occupation of Belgium. (G. A. Ro.)

Diatomite. The diatomite production of the United States was estimated to have been about 114,300 long tons in 1941; this is about one-third of the total world output, and Denmark is the second largest producer, with an output somewhat less than that of the United States. The remaining output comes from a large number of minor producers, only a few with outputs over 10,000 tons. (G. A. Ro.)

Dictatorships: *see* COMMUNISM; FASCISM; GERMANY; ITALY; JAPAN; RUMANIA; SPAIN; UNION OF SOVIET SOCIALIST REPUBLICS.

Dietetics. In time of war, governments become aware that health and vitality are weapons and that food research aids the war effort.

Experience in food controls in the warring countries makes possible some evaluation of war diets.

Anaemia, which appears dietary in origin, was reported increasing in Great Britain, among hospital nurses at base hospitals in the country and among children in residential nurseries. Greater watchfulness over the adequacy of institution diets was suggested. Results on the growth of children were conflicting, with London 14-year-olds applying for post office positions, being at least as heavy as those in 1938, whereas Milligan's comparison of four groups of Glossop schoolboys showed significant reduction in rate of weight increase and probably of height as well, which became most noticeable following strict rationing.

Studies of vitamin C in 1941 indicated that boys living in good institutions had lower reserves on unsupplemented wartime diets than in 1938 and the same was true, in the winter, for schoolboys living at home, research workers and medical students.

Investigators suggested more use of potatoes and greens in winter.

Potatoes can be grown locally and yield half again as many calories per acre as wheat. One pound of potatoes daily, before midwinter, contains at least 10% of the calories, 25% iron, 50% thiamin and almost double the vitamin C requirement of a man. A nutritionally desirable food in the United States was the white flour which was enriched by the addition of thiamin, niacin (nicotinic acid) and iron.

Fewer complications of pregnancy, lower infant mortality and better babies at six months reward the women who have good diets, according to Ebbs. Such diets were obtained by most of the women in his clinic who received special nutrition instruction or dietary supplements and their advantage over the poor diet group was clear-cut.

Breese reported that vitamin A is not readily absorbed by tuberculous patients, which observation supports the practice of increased vitamin A for them.

The sensitiveness of vitamin C to oxidation made it a major problem in wartime food supply. With shortages of the conventional sources, man ferreted out others, such as rose hips, black currants, edible peppers, and parsley all much richer than citrus fruits.

Thiamin has long been called the antineuritic vitamin, yet Wintrobe reported no nerve lesions in a pig suffering from thiamin deficiency. Instead, in this animal, anorexia and vomiting terminated in sudden death, with the autopsy showing focal necrosis of the heart muscle the only characteristic lesion. Wintrobe and his associates reported nerve degeneration, in these experiments in the animals deprived of both calcium pantothenate and pyridoxin. In addition to abnormal gait the pyridoxin-deficient animals developed epileptiform convulsions and anaemia; when th pantothenate alone was lacking the added condition was subacute inflammation of the colon. The similarity of thes symptoms and those of Wilder's thiamin deficient human subjects suggest the nerve symptoms previously attributed to thiami may be associated with other B vitamins in man also.

Many people need to change their eating habits in order t obtain a diet adequate for buoyant health. Recognizing that, i addition to the economic problem, the traditional food pattern o a group determines food intake, the Committee on Food Habits o the National Research council was organized to suggest method of modifying food habits in order to raise the nutritional statu of people in the United States. (*See* also VITAMINS.)

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Scientific Nutrition in Great Britain.—Work done before th war on the broad relationships between health, food, agricultur and economic policy under the auspices of the League of Nation prepared the way for the scientific food plan which became essential in Great Britain under the threat of acute general shortag

Britain's food policy which resulted in the level of nutrition o the whole being better than before the war, was planned wit regard, on the one hand, to the most recent knowledge of nutritional requirements and, on the other, to the organization o food production and distribution, and to the regulation of import with prices adjusted so that even the poorest should be able t obtain at least their minimum nutritional requirements. At th end of 1942 there was much evidence of the operation of thes plans. For security reasons details could not then be disclosed an the outline of the steps which led up to the system of nationa housekeeping at the beginning of the fourth year of war must b regarded as a personal interpretation of the course of events.

The various main nutrients required for all sections of the population first had to be worked out on a per head per day basis, th primary aim being to supply sufficient food to protect the consumer in ordinary circumstances against the development of nutritional deficiency disease. The nutritional requirements generall accepted in Great Britain were those agreed on by the technica commission on nutrition of the League of Nations health organization which are lower than those of the food and nutrition boar of the National Research Council of America. The first call o any supplies available in excess of reasonable requirements wa

Foodstuffs in the Wartime Dietary of Great Britain Arranged in Order of the Importance of their Contribution to the Supply of Various Nutrients (Cols. 1 to 8) and of their Menu Value (Col. 9)

Energy	Protein	Vitamins				Minerals		Value in the presentation of meals
		B-group	C	A and D	Pro-vitamin A	Calcium	Iron	
ational flour ereals (other than wheat) ats and oils otatoes gar	National flour Milk (all forms) Pulses Meat Cheese Fish Vegetables	National flour Milk (all forms) Potatoes Cheese Meat Pulses	Greenstuffs Potatoes Homegrown fruit	Margarine (fortified) Butter and milk fat Milk (except skimmed) Cheese Animal livers Concentrates (for children)	Greenstuffs and carrots	National flour Milk (all forms) Vegetables Cheese	National flour Greenstuffs and potatoes	Meat Sugar Fats Milk Beverages Cheese Vegetables Eggs Fish Fruit (including dried)

en to infants and children, pregnant and lactating women and
er special classes. The individual's requirements of nutrients
n had to be translated into terms of actual foodstuffs taking
o account the seasonal supplies, food preferences and the need
variety in the diet.

The extent to which the food required could be supplied from
ne production was necessarily the first consideration. Foodstuffs
direct human consumption, *i.e.* cereals, root crops and vegeta-
s, require less land and labour to produce than animal food
ducts such as meat, milk and eggs. In 1938 37,000,000 tons
"dry matter" were fed to the livestock of Britain; they pro-
ed only 1,500,000 tons of food for human consumption—an
r-all efficiency of only 4.1%. Competition for food between
estock and the human population had therefore to be avoided
l the numbers of livestock adjusted so that they were comple-
ntary, *e.g.*, pigs and hens should only be maintained as scaven-
s; cattle which utilize foodstuffs not suitable for man can be
ported to some extent and of these dairy cows should have pri-
y because of the special nutritional value of milk and the
tively high efficiency of milk production.

The second step was to decide on the most suitable foods for
port having regard to supplies, shipping and routes available,
gth of haul and the need for refrigerated shipping. For ex-
ple, before World War II Great Britain's imported food-
ffs included some 3,000,000 tons of water, chiefly in fresh
it; but vegetables, especially greenstuffs and potatoes, can sup-
nutrients previously obtained from imported fruits. It ap-
red that there might be insufficient supplies of vitamin A or
precursors owing to lack of butter and the effect of the war at
on the production of fish liver oils; but carrots are a good
rce of vitamin A precursor yielding per acre ten to 100 times
much as greenstuffs of various kinds. Furthermore, carrots can
stored and are relatively immune from damage. The home pro-
tion of carrots as well as of green vegetables and potatoes
s therefore considerably increased as the import of butter was
uced and of fresh fruits virtually stopped.

The lack of necessary good quality protein and members of the
complex of vitamins likely through reduced supplies of animal
d products was made good by the substitutions of national flour
white flour. The national flour was milled by methods de-
ned to extract the maximum amount of nutrients directly avail-
e for man from the wheat berry, leaving indigestible material
cattle fodder.

The inefficiency of animals in converting feeding stuffs into
ducts for human consumption clearly pointed to the desirabil-
of importing meat, dried milk and eggs instead of importing or
ducing animal feeding stuffs. The value of drying food prod-
s and its effect on national dietetics deserves special mention in
connection; thus, for example, the ministry of food was
e in 1942 to arrange for the importation of 80,000 tons of dried
powder in place of its equivalent 2,100,000 tons of poultry
ding stuffs. Improved methods of packing—boning of meat
and telescoping of carcasses—resulted in considerable saving in shipping space. Other important developments were to be expected, *e.g.*, the importation of dehydrated butter.

Before World War II Great Britain imported about 11,000,000 tons of food for man and 9,000,000 tons for animals; the total consumption of food by the human population was approximately 27,500,000 tons. According to official statements British farmers had produced 63% of the food required for 1942–43 and private gardeners and allotment holders had increased their production of vegetables by 1,000,000 tons and of potatoes by 500,000 tons. From the efforts which farmers had had to make towards becoming self-supporting in regard to animal feeding stuffs it would appear that imports of these had been reduced to the offal from wheat and the presscake from oil seeds. If this were so and if the total weight of food consumed was unchanged from prewar days then, on a rough estimate, the total import of human food and animal feeding stuffs must have been reduced to little more than half the prewar level.

To make the best use of the food supplies made available according to this carefully planned policy, distribution was controlled by rationing, collective civilian feeding in factory and office canteens, schools and municipal "British" restaurants were organized and widespread publicity through press, radio and cinema drew attention to the importance of various methods of processing, including cooking, in conserving food values; perhaps the best known example is in relation to vitamin C, which is so easily lost or destroyed in the cooking of vegetables; as much as 400 tons of ascorbic acid per annum are lost or destroyed in Great Britain in the course of cooking.

The British dietary was thus very much simpler than before World War II; much less meat was available; shell eggs were scarce and imported fresh fruits rarely seen. Milk was much more evenly distributed throughout the population. The results of these changes are seen in the contribution of various foodstuffs to the dietary as set out in the table. (B. S. Pt.)

Dimension Stone: *see* STONE.

Diplomatic Services: *see* AMBASSADORS AND ENVOYS.

Disasters.

During 1942 loss of life and property in accidents included the following:

Aviation

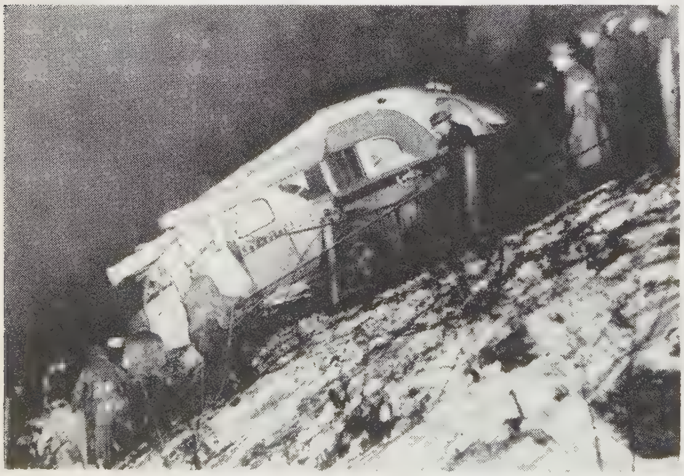
(The aviation disasters listed below include only those in which 10 or more lives were lost.)

Jan. 16	Las Vegas, Nev. Fifteen army ferry pilots, Carole Lombard, movie actress, her mother, two other passengers and crew of three were killed in crash of transport plane on Table Rock mountain.
March 14	China. Maj. Gen. Lancelot Dennys, head of British air mission to China, and 12 others were killed in crash of transport plane flying from Kunming to Chungking.
March 16	Pendleton, Ore. U.S. Army bomber crashed on peak 20 mi. from Pendleton, killing 10 airmen.
May 1	Near Salt Lake City, Utah. Seventeen persons died when passenger plane crashed into Ensign Peak.

June 4	Near San Francisco, Calif. Nine soldiers and 5 civilians were killed when army bomber crashed at Hamilton field in attempted emergency landing.
June 5	Pensacola, Fla. Navy patrol plane with 10 men aboard was lost in Gulf of Mexico.
July 1	Near Welch, W.Va. Twenty-one officers and enlisted men were killed in crash of army transport plane.
July 30	Minneapolis, Minn. Ten persons aboard army ferry command plane were killed when plane crashed in take-off from Wold-Chamberlain airport.
Aug. 15	Near Peru, Mass. Sixteen of 18 men were burned to death when big army transport plane crashed on Peru mountain in Berkshire hills.
Aug. 23	Near Dahlgren, Va. Ten and possibly 11 men were killed when navy flying boat crashed in field.
Aug. 25	London, England. Duke of Kent and all passengers and crew (number not announced) were killed when British flying boat crashed in Scotland.
Aug. 25	Washington, D.C. Navy announced that 14 officers and men were missing on flight aboard navy plane from Alaska to Seattle, Wash.
Sept. 10	Tucson, Ariz. Entire crew of 10 men and officers were killed when army plane flew into mountain slope in eastern Arizona.
Sept. 11	Buffalo, N.Y. Twelve workers were killed and 35 were injured when a flaming plane, whose pilot had bailed out, dived nose first through Curtiss-Wright aeroplane factory in East Buffalo.
Sept. 27	Near Algiers, Algeria. French civilian plane crashed; all 25 occupants were burned to death.
Sept. 28	Near São Paulo, Brazil. Crash of Brazilian plane killed all 15 aboard.
Oct. 1	Near Coamo, P.R. Twenty-two were killed in crash of army transport plane on mountain.
Oct. 3	Off Botwood, N.F. Eleven persons were killed and nine others injured when plane carrying 37 persons fell into Atlantic ocean.
Oct. 17	Des Moines, N.M. Eleven were killed when bomber crashed atop Sierra Grande Peak.
Oct. 23	Palm Springs, Calif. Nine passengers and three crew members of big airliner died when plane crashed and burned on slope of Mt. San Jacinto.
Oct. 26	Montreal, Canada. Ferry command plane crashed in flames on Montreal island, killing all 16 occupants.
Dec. 2	Soda Springs, Ida. Four-motored army bomber crashed in mountain canyon, killing all 10 occupants aboard.
Dec. 15	Near Fairfield, Utah. Seventeen of 19 persons aboard airliner were killed when plane crashed in desert.
Dec. 30	Near Musselshell, Mont. Twelve army fliers were killed when flying fortress crashed.

Fires and Explosions

Jan. 1	Burslem, Staffordshire, England. Fifty-eight miners died in colliery blast.
Jan. 28	Mount Harris, Colo. Thirty-four miners died in explosion in coal mine.
Feb. 10	New York city. Transport ship "Lafayette" (former liner "Normandie"), toppled over at Hudson river pier after 12-hour fire in superstructure. One was killed and 128 injured in fire caused by spark from worker's acetylene torch.
March 4	Burlington, Ia. Fifteen munitions workers were killed, 51 others were injured and 5 were missing in blast in ordnance works.
March 26	Easton, Pa. Premature explosion of 21 tons of gelatinite in quarry killed 31 persons.
April 29	Tessenderloo, Belgium. Explosion in chemical plant killed 250 workers and injured more than 1,000 others, according to official D.N.B. (German) news agency dispatch received in Berne, Switz.
May 12	Osage, W.Va. Forty-five miners were killed by blast in coal mine.
June 5	Near Joliet, Ill. Explosion in Elwood ordnance plant killed 21 and injured 41; 33 were listed as missing.
Aug. 4	Cleveland, O. Fifty animals in Ringling circus were burned to death in fire that swept through the menagerie tent.
Nov. 28	Boston, Mass. Fire that started in night club when match w dropped on gauze-like draperies took lives of at least 493 perso and injured at least 172, many critically; high death toll was la to panic of patrons who rushed into lounge and piled up befo narrow revolving door.
Dec. 12	St. John's, N.F. At least 100 persons were burned to death wh fire swept through hostel where servicemen were attending ba dance.



TWENTY-TWO DEFENSE WORKERS were killed Dec. 22, 1942, when the bus in which they were riding was demolished by an avalanche near Aliquippa, Pa.

Marine

Jan. 24	Off Panama. U.S. submarine "S-26" was sunk in collision w naval vessel; 32 of crew of 35 were lost.
Feb. 22	Newport, Ky. Thirteen men and 3 women were feared drown when towboat sank after striking Ohio river bridge pier.
Feb. 24	Near Lawrence, N.F. U.S. navy dep't revealed that 1,193-t destroyer "Truxtun" and 6,085-ton naval transport "Pollux" we wrecked in gale at mouth of St. Lawrence river; 189 lives were lo
Sept. 21	Midland, Ont., Canada. Launch carrying party of picnickers sa in Georgian bay; 25 drowned.
Dec. 2	Cleveland, O. Tug and big oil-tanker barge both sank in Lake Er entire crews of both ships, totalling 34, were lost.
Dec. 2	Newport, R.I. Fifteen out of 17 sailors were drowned when sm 30-ft. boat capsized in gale.

Motor Traffic

(For statistics on U.S. traffic deaths in 1942, *see* ACCIDENTS.)

Feb. 26	Enid, Okla. Seven U.S. air corps servicemen were killed and others were injured when freight train crashed through bus.
July 8	Norristown, Pa. Eight persons were killed and 23 injured wh trolley and freight car crashed head on at Washington Squa Gardens.
Aug. 5	Crystal Springs, Miss. Thirteen persons were killed and 53 injur when a crowded bus and train collided at mid-town crossing.
Aug. 11	Titusville, Fla. Six soldiers were drowned when an army tru crashed through bridge guard and plunged into Indian river.
Oct. 28	Detroit, Mich. Sixteen were killed and more than 20 others we injured when a speeding passenger train ripped into motor jammed with school children and factory workers at grade crossi

Natural Disasters

Jan. 6	Rio de Janeiro, Brazil. Twenty-eight were killed and many oth injured in cloudburst over Rio de Janeiro.
March 15–16	Midwest and southern U.S. One hundred and thirty-six perso were believed killed in tornado that swept through Mississip Alabama, Tennessee, Kentucky, Indiana and Illinois.
April 27	Pryor, Okla. Tornado killed nearly 100 persons, injured betwe 150 and 300, and caused damage estimated at $1,000,000.
May 13	Western Ecuador. About 200 persons were killed and more th $2,500,000 in property damaged when severe earthquake roc provinces of Guayas, Manabi, Esmeraldas, Imbabura and Boliv
May 23	Eastern Pennsylvania. Floodwaters caused by torrential rains to toll of at least 30 lives and caused property damage estimated millions of dollars.
May 31	Northeastern Ohio. Huge wall of water swept along a 60-mi. stre of Lake Erie, drowning 7 persons and injuring at least 7 others.
June 12	Oklahoma City, Okla. Two tornadoes caused death of 29 perso and injuries to 25 others.
Oct. 16	Bombay, India. Cyclone rising from Bay of Bengal swept inla devastating vast area in two Bengal districts, and killing an e mated 40,000.
Oct. 16	Maryland, Virginia and West Virginia. Floodwaters of Poton river threatened to inundate Washington, D.C., as rain-swol streams caused 4 deaths and left 2,000 people homeless in th states.
Oct. 29	Berryville, Ark. At least 28 were killed and more than 200 oth were injured in tornado.
Dec. 19	Anatolia, Turkey. Four hundred and seventy-four persons w killed and 605 injured in severe earthquake.
Dec. 22	Aliquippa, Pa. Avalanche buried motorbus loaded with defe workers, killing 22.

Railroads

Jan. 16	Perla, Ark. Five persons, 4 of whom were soldiers, were killed 27 others were injured in head-on crash between switch engine passenger train.
March 7	Granby, Mo. Six were killed and 45 injured in head-on collis of two passenger trains near Granby depot.
April 11	Savage, Minn. Five were killed and 30 injured when passen train rammed local which had been stalled after hitting automo at crossing.
April 26	Jersey City, N.J. Train wreck in Hudson tube near Excha Place station caused death of 5 persons and injuries to 222 oth
June 14	Kittrell, N.C. Eight passengers were killed when freight tr rammed into observation car of flyer.
Sept. 24	Dickerson, Md. Passenger train telescoped into stalled night press and tossed rear pullman into path of freight; toll of known d was about 30.[1]
Dec. 27	Almonte, Ont., Canada. Thirty-five were killed and 118 oth injured when 3 rear cars of local train were telescoped by tr train.

(*See* also ACCIDENTS.)

per left: NEARLY 30 PERSONS were killed and 100 injured when a passenger in crashed into the rear of a preceding train Sept. 24, 1942, near Dickerson, l. The rear Pullman of the first train, shown here, was thrown into the path of freight train on the adjoining track

per right: WRECKAGE of the transport in which Carole Lombard, motion picre actress, and 21 others died Jan. 16, 1942, when the plane hit a mountain ar Las Vegas, Nev.

ove, left: ONE OF THE MOST DISASTROUS FIRES in U.S. history took the es of about 500 men and women trapped in a blazing Boston night club Nov. , 1942

ove, right: AN EARTHQUAKE which shook Guayaquil, Ecuador, and several er towns took a toll of about 200 lives May 13, 1942

ght: A HEAVILY LOADED BUS was demolished by a speeding troop train at ystal Springs, Miss., Aug. 5, 1942; 13 were killed and 53 injured

Disciples of Christ. Statistics as of June 30, 1942, showed a total membership of 1,664,943 in the United States and Canada (Canada 9,363). This was a net loss of 107,023 for the year. The reported loss might indicate a closer scrutiny of church rolls, for the number of additions was about normal—50,046 by baptism and 43,402 otherwise. There were 8,002 churches in the United States and Canada (a loss of ten), and 7,693 ministers (a gain of 113). Chaplains in service numbered 203. The Disciples had churches in 39 other countries, most of which were not mission fields. In Great Britain there were 172 churches with 13,445 members; in Australia, 338 churches with 31,060 members; in New Zealand, 57 churches with 4,531 members. There was no report from Poland, which was listed as having 65 churches and (estimated) 40,000 members. The world membership in 1942 was 1,826,434, or 8,128 less than one year earlier. Expenditures for local church maintenance in the United States and Canada were $13,480,374 (a gain of $1,640,809), and for missions and benevolences $2,023,614 (gain $66,196). The debt which burdened the United Christian Missionary society for 20 years, and which amounted to $589,794 on July 1, 1941, was liquidated. The Emergency Million not only extinguished this debt but provided funds for special wartime activities in the interest of servicemen and religious and social work in the vicinity of camps and in the new communities of industrial workers near the great new war plants. The foreign missionary agency was able to continue in contact with and support its work in all fields except Japan and the Philippines.

The missionary magazine, *World Call,* had a monthly circulation of 39,550, a gain of 3,953.

The international convention of the Disciples of Christ for 1942 met at Grand Rapids, Mich., July 28–Aug. 2. The next was scheduled for May 1944.

(W. E. GA.)

District of Columbia: *see* WASHINGTON, D.C.

Ditmars, Raymond Lee (1876–1942), U.S. naturalist, was born June 20 at Newark, N.J. He was graduated from Barnard Military academy in 1891 and was then employed as assistant curator at the American Museum of Natural History. He left in 1898 to become a reporter for the *New York Times,* but he never lost interest in his chief hobby: collecting snakes. His collection, started when he was a boy and sheltered in the top floor of his home, became so famous that naturalists in the tropic jungles sent him rare—and dangerous—specimens. In 1899, he joined the newly organized New York Zoological park (Bronx zoo) as curator of reptiles and presented his entire collection to the zoo. Dr. Ditmars, who wrote entertainingly about insects, snakes and reptiles, frequently explored the tropics in search of new specimens. In 1941, he trapped several giant spectral vampires in Trinidad and on his return organized an insect museum stocked with ghost bugs, robber flies, ant lions, umbrella ants and other rare species. He did research on tuberculosis among monkeys and on treatment of human ailments with snake venom. He was curator in chief of the department of reptiles and mammals at the Bronx zoo, 1910–42. He was the author of *The Reptile Book* (1907), *Reptiles of the World* (1909), *Snakes of the World* (1931), *Strange Animals I Have Known* (1931), *Thrills of a Naturalist's Quest* (1932), *Forest of Adventure* (1933), *Confessions of a Scientist* (1934), *The Book of Zoography* (1934), *The Book of Prehistoric Animals* (1935), *The Book of Living Reptiles* (1936), *The Making of a Scientist* (1937) and *The Book of Insect Oddities* (1938). He died in New York city, May 12.

Divorce: *see* MARRIAGE AND DIVORCE.

Dodge, Raymond (1871–1942), U.S. psychologist, was bor February 20 in Woburn, Mass. He graduated from Williams college in 1893 and went to Germany, wher he took his doctorate at the University of Halle. While in Germany, Dr. Dodge studied the human eye in the action of readin and subsequently discovered that the eye, far from glidin smoothly along a line of printed matter, proceeded in jerky movements. His findings in this field were an important contributio in the teaching of reading in schools. He was professor of psychology at Wesleyan, 1898–1924, and at the Institute of Psychology, Yale university, 1924–29, and was one of the three origina founders of the Institute of Human Relations, also at Yale, wher he perfected his theories on visual perception. During Worl War I he was consulting psychologist in the chemical warfare service and in the navy bureau of navigation; in the latter post, h helped select potential candidates for gunners and devised a gun pointing recorder which simplified selection of competent gunners Dr. Dodge died in Tryon, N.C., April 8.

Dog Racing. Dog racing met with varying successes durin 1942. Boston experienced one of its best seasons in history, both in attendance and pari-mutuel handle, whil Florida had one of its poorest because of gasoline curtailment an dimmed lights due to wartime precautions. A dozen tracks operated during 1942, ranging from Phoenix, Ariz., on the west t Boston on the north and Miami on the south. Never Roll prove

NEVER ROLL (no. 5) was the outstanding greyhound racing dog of 1942. the summer races in Boston he set four world's records, tied another, and w 17 out of 24 starts be the outstanding greyhound of the year, setting four world ords; tying another; winning 17 out of 24 races, and ending season with a "79" rating. (M. P. W.)

g Shows: *see* SHOWS: *Dogs.*

minica: *see* WEST INDIES, BRITISH.

minican Republic,

a republic occupying the eastern two-thirds of the West Indian island Hispaniola. Area: 19,326 sq.mi.; pop. (1939 est.) 1,656,219. least three-fourths of the population, largely concentrated in areas—around Ciudad Trujillo in the south, and in the Cibao lands in the north—is of mixed blood. Capital city: Ciudad ijillo (108,070). Second city in size is Santiago de los Cabal- os (34,000); Puerto Plata (12,000) is the largest city in the th. Language: Spanish. President (elected May 1942): Gen. ael Leónidas Trujillo.

History.—The political event drawing greatest attention during year was the national election in May. Former president and ong man" of the republic, Gen. Rafael Leónidas Trujillo, was pposed for the office of chief executive, and was elected for a -year term. This was the first national election in which nen were allowed to vote; one woman senator was elected, and e others became representatives. Because of the world situa- , Gen. Trujillo assumed office immediately.

he Dominican government took action early in 1942 to pre- t subversive action within its boundaries, the strategic location Hispaniola making it unusually important in hemisphere de- se. Property owned by alien enemies was taken over, and axis onals were forbidden to acquire motor vehicles. All boats in onal waters were placed under government jurisdiction, and ular inspections of the coast were ordered to prevent the ene- from establishing secret bases on Dominican territory for sup- of submarines. The need for control of the movement of ted States currency was given emphasis when a Spanish ship- ter was reportedly seized with $220,000 in "hot" money in his session. The necessary legislation to prevent the export and ort of such currency was enacted in July.

he Dominican economy was seriously affected by the disrup- of shipping facilities caused by World War II. All stocks of omobiles, both new and used, were taken over by the govern- nt, also all rubber stocks, and both gasoline rationing and traf- control were undertaken. Shortages in food supplies resulted in formation of national commissions to set price ceilings, en- rage rice production, and to regulate trade. The export of stock, meat, eggs and some other foodstuffs was prohibited y in May.

ducation.—Official statistics (1940) listed a total of 951 ools; enrolment 116,574. The education budget for the year 1,377,000 pesos.

inance.—The monetary unit is the peso, equal in value to the . dollar. The budget for 1942 estimated revenue as $12,839,- ; expenditures as $12,820,000.

rade.—Figures for the first half of 1941 (trade with the U.S.) showed exports of $5,024,000 and imports of $3,627,000 11%).

ommunication.—The republic is connected with the outside ld by sea and air, with the former curtailed by the war. Air ice increased in 1942; a new contract was granted during the r to British West Indian Airways. In 1940 there were 268 km. ublic railroads, and 3,000 mi. of highway, less than one-third which was improved motor road.

IBLIOGRAPHY.—Melvin Moses Knight, *The Americans in Santo Domingo* 8); Chester Lloyd Jones, *The Caribbean since 1900* (1936); Sumner es, *Naboth's Vineyard* (1928). (D. RD.)

Donations and Bequests.

More than $734,643,000 was reported as having been contributed for U.S. philanthropic purposes during the year 1940 by persons filing income tax returns for that calendar year, the latest for which such information was available in 1942. This was an increase of $239,853,000 over the $494,790,000 reported in income tax returns for 1939. Sixty-seven per cent of the contributions reported for 1940, or $493,486,000, came from persons reporting incomes of $5,000 or less. Charitable bequests for 1939, the latest year for which information was available in 1942, were $143,365,000.

Six of the larger U.S. foundations and three community trusts dispensed funds of $18,155,000 in 1941, bringing the total of disbursements by them since 1920 to $722,404,000.

Gifts to 52 educational institutions of higher learning for the fiscal year 1941–42 amounted to $22,207,844 and bequests to these same institutions were $8,821,738, making a grand total of $31,029,582. These same institutions for the fiscal year 1940–41 received a total of $37,980,514 in gifts and bequests.

A continuing study by the John Price Jones corporation of publicly announced gifts and bequests in seven large cities (New York, Chicago, Washington, Philadelphia, Baltimore, St. Louis and Boston) presented an up-to-date trend of U.S. philanthropy for 1942. While these figures were far from complete, as they included only these cities, they nevertheless indicated in what direction the U.S. philanthropic dollar was going.

The total of gifts in these cities for 1942 was $78,269,358, of which $33,820,208 went to U.S. war organizations, such as the Red Cross and U.S.O.; $11,138,320 to community chests, many of which included in their quotas funds for war emergency work; and $5,633,269 for foreign relief. All other types of philanthropy suffered losses in these cities for 1942. Bequests in the seven cities amounted to $47,619,917 in 1942, with $25,779,522 being bequeathed to educational institutions. An outstanding bequest of the year was that of Walter P. Murphy—approximately $20,000,000 for the technological institute he had established by a prior gift at Northwestern university, Evanston, Ill.

New York led the seven cities with gifts of $34,340,138 and bequests of $17,330,269.

(*See* also CARNEGIE TRUSTS; COMMONWEALTH FUND, THE COMMUNITY CHEST; COMMUNITY TRUSTS; FALK FOUNDATION, THE MAURICE AND LAURA; ROCKEFELLER FOUNDATION; ROSENWALD FUND, THE JULIUS; RUSSELL SAGE FOUNDATION; WAR RELIEF CONTRIBUTIONS.) (J. P. J.)

Doolittle, James

(1896–), U.S. army air officer, was born Dec. 14 at Alameda, Calif. He joined the army as a flying cadet during World War I and became an officer, but the army refused to let him go overseas, declaring he was too valuable as an instructor. After the war, he studied engineering, graduating from Massachusetts Institute of Technology in 1925 with a doctor of science degree. An expert pilot, he toured European and South American capitals, thrilling crowds with stunt flights. In 1930, he won the Harmon trophy for his experimental flights; in 1931, he won the Bendix trophy race from Burbank to Cleveland; in 1933, he won the Thompson trophy. He then retired from racing to join the army board studying reorganization of the air corps. In July 1940, he was ordered back to active duty as a major in the air corps reserve and in Jan. 1942, he was promoted to lieutenant colonel in the air corps. On April 18, 1942, Doolittle electrified the world by leading a U.S. bomber squadron in a spectacular daylight raid over Tokyo. For this exploit, he was awarded the congressional medal of honour by President Roosevelt and was promoted to the rank of a brigadier general. He then was in command of the

12th U.S. air force with General Eisenhower's armies during the North African campaign and was named for promotion to the rank of a major general, Nov. 21, 1942.

Draft: *see* Selective Service.
Drama: *see* Theatre.
Dress: *see* Fashion and Dress.

Drew, George Alexander (1894–), Canadian soldier and politician, leader of the Conservative party in Ontario and official leader of the Conservative opposition in the legislature at Toronto. He was born at Guelph, Ont., May 7, and received his education at the Collegiate Institute of Guelph, Upper Canada college and the University of Toronto. His military career began with his joining the 16th battery of Canadian artillery at Guelph in 1910. He enlisted in the C.E.F. in 1914, went overseas in 1915 and distinguished himself on active service. Wounded in 1916, he was invalided home to Canada in 1917, but not finally discharged until June 1919. Admitted to the bar in 1920, he practised in Guelph until 1925 and then in Toronto. Entering the provincial legislature, he became leader of the Conservative opposition. Among his writings are *Canada's Fighting Airmen, The Truth about the War,* etc. Col. Drew attracted wide attention by his denunciation in 1942 of the government's action in regard to the Canadian expedition to Hongkong. Proceedings were initiated against him but were later dropped.

Drought. Long periods of moisture deficiency such as occurred in the interior of North America in the 1930s had a far-reaching influence on the agricultural economy of the affected region, leading in many cases to important social readjustments. Such drought conditions generally were characteristic of the outer portions of the humid climates where near-by arid conditions sometimes were transported by shifts in the prevailing atmospheric circulation pattern. The year 1942 was characterized by drought conditions in several areas of normally humid climates where the drought risk is relatively small.

The 1941 fall drought in portions of the normally humid southeastern United States continued through the winter and spring of 1942. The situation was most serious in Georgia. Except for the month of November, the period from Aug. 1941 to June 1942 was uniformly deficient in rainfall. The amount was the least on record for the state. The Carolinas and northern Alabama also were affected. The situation in Georgia reached a crucial stage during a hot, dry period in late May and early June when in 11 days there was a 61% reduction in the available hydroelectric power in Lake Burton, largest water-power system in the state. All growing crops were badly affected and the poor condition of the pastures necessitated considerable stall feeding of livestock at a time when pasturage should be the most ample. Finally, adequate rains in June ended the drought.

In Argentina, serious winter drought conditions were experienced in July and August, spreading over much of the cereal-producing area. Cold weather and severe frosts combined with dryness in checking the winter seedings. Relief came in September.

South Africa had a continuation of the 1941 drought through the growing season into 1942. The corn crop was reduced to the extent that there was none available for export. Forage crops were also affected, producing a shortage of meats and dairy products. Heavy drains on the food supply by war refugees, prisoners and ship movements combined with the drought conditions to produce shortages.

Most continents received adequate rains in agricultural areas during 1942. In Asia, dryness caused a one-third reduction of the rice crop in Korea and a midsummer drought reached serio proportions in the upper Yangtse valley. India had ample rai except in the early part of the year in wheat-growing region Turkey and Iran had a short, early summer drought.

In Australia, the great drought of 1940–41 was ended, a 1942 was a very favourable year for agriculture.

In Africa, other than South Africa, minor droughts occurre in French North Africa and in Uganda. In the latter distri the cotton crop was hindered by dryness during most of t planting season (May to August). (*See* also Agriculture; Irr gation; Soil Erosion and Soil Conservation.) (H. R. B.)

Drugs and Drug Traffic. Immediately upon the e trance of the United Stat into war, the Food and Drug administration placed at the servi of the war agencies its staff of experts trained to examine and conduct laboratory investigations of drugs. Wartime dislocatio imposed increased responsibilities in maintaining the purity a quality of drugs, whether they were used by the armed forces by civilians.

Seizures of violative drugs and prosecutions of responsib shippers increased in the fiscal year 1942; violative device sei ures declined. Fewer dangerous drugs and fewer products bea ing inadequate directions and warnings were encountered by t inspectors, who found also that comparatively few druggists a selling without prescriptions drugs dangerous for use in se medication. The number of medicines removed from the mark because of false and misleading therapeutic claims remained abo the same as in the previous year; permanent injunctions we issued to prohibit the shipment of such misbranded medicines a number of cases in which seizures had not resulted in corre tion. Deviation from standard strength and purity was respon ble for a slightly higher percentage of the seizures than in 1941.

Seven hundred and eight (708) new-drug applications were pe mitted to become effective. The first seizure and the first pros cution case under the new-drug provisions were instituted in 194 The seizure libel charged that the article was a new drug f which no application was effective. The prosecution case involv the falsification of an application.

An amendment to the Food, Drug and Cosmetic act giving t Food and Drug administration complete control over insulin a insulin-containing drugs was enacted in December 1941, just b fore the expiration of patents previously providing such cont by the Insulin Committee of the University of Toronto.

(W. G. Ca.)

League of Nations.—During the third war year, Sept. 19 to Aug. 1942, the activity of the three international control orga —The Opium Advisory committee (O.A.C.), the Permanent Ce tral Opium board (P.C.O.B.), and the Drug Supervisory bo (D.S.B.)—was maintained in its essential parts.

The international drug supervision is based on informati supplied by governments under existing treaties and on the ports issued by the three international control bodies. During t period under review, the exchange of information stipulated in t Conventions continued. Although impaired by gaps, by the i perfection of data, and by the delay and dislocation caused war, the essential measures of control continued uninterrupted National administrations collaborated closely with the int national organs.

Governments transmitted their annual reports on the traffic opium and other dangerous drugs, reports on seizures in the illi traffic and texts of laws and regulations.

On Dec. 1, 1941, the D.S.B. transmitted to governments "Statement of Estimated World Requirements of Dangerc Drugs in 1942" (Document C.61.M.58.1941.XI). This ann atement, which contains drug estimates for 177 states and territories, indicates the legitimate limits of the manufacture of and e trade in drugs. The limits of the world manufacture and ade for 1942 with regard to the five principal drugs were estiated at 49.7 tons for morphine, 32.8 tons for codeine, 4.7 tons r cocaine, 3.1 tons for dionine and 0.8 ton for diacetylmorphine.

The 1931 convention placed upon the D.S.B. the duty of esblishing estimates itself for those countries and territories which l to furnish them. Accordingly, the D.S.B. framed estimates r 1942 in respect of 17 countries and 33 territories, including untries where political and administrative conditions have anged on account of war.

For 1942, governments themselves submitted estimates in reect of 54 countries and 73 territories, a total of 127, which repented 72% of all the countries and territories of the world. is was the first time after the coming into force of the 1931 nvention that estimates were furnished by all sovereign couns in the western hemisphere.

Although, due to the cessation or stricter control of interional communications, the international illicit traffic dimined, the latent danger from traffic and drug addiction might inase as war spreads in the far east and in Europe. There were ny indications that in all parts of China under Japanese miliy occupation and in other territories occupied by Japan after c. 1941 conditions were getting steadily worse.

ibliography.—League of Nations document C.61.M.58.1941.XI (D.S.B. tement 1942); League of Nations document C.62.M.59.1941.XI; Ret to Congress on the Traffic in Opium and Other Dangerous Drugs for 1. (H. J. A.)

unkenness: *see* Intoxication, Alcoholic.

st Storms: *see* Drought.

tch Borneo: *see* Dutch East Indies; Netherlands lonial Empire.

tch Colonial Empire: *see* Dutch East Indies; Netherds Colonial Empire.

tch East Indies. The largest Netherlands colonial possession, under Japanese military occuion in 1942. The Dutch East Indies is a huge archipelago, with eral very large islands, Java, Sumatra, Celebes, Borneo and w Guinea (part of Borneo is British and part of New Guinea is ler Australian administration), and many smaller ones. The hipelago is located near the equator, from 6° N. to 10° S. tude. It is south of the Philippines, southeast, east and west the Malay peninsula and north of Australia. Area, 733,681 mi.; pop. (census of 1930), 60,731,025; estimate (end of 0), 70,476,000, of whom 48,416,000 live in densely settled a and the adjacent small island of Madura, while 22,060,000 in the so-called Outer Islands, the less settled and developed ions of the archipelago. Capital, Batavia (437,000). Other ge cities: Surabaya (313,000); Bandung (167,000). The at majority of the natives are of the Moslem faith, although admixture of Hindu and pagan practices is found in some rens. There are about 2,500,000 Christians, about 1,000,000 ddhists and a number of Animists. Governor general (apnted in 1936), until the Japanese occupation: Jonkheer A. L. Tjarda van Starkenborgh-Stachouwer.

istory.—The year 1942 witnessed a temporary eclipse of Dutch e in the East Indies after three centuries of colonial empire. Jan. 11, 1942, there were Japanese landings at Tarakan, cen of a rich oil district in Borneo, and at three places in Celebes. fierce naval battle took place in the Straits of Macassar from 1. 22 until Jan. 26; the Japanese forced their way southward spite of losses. By early February Japanese air raids on the ncipal naval base at Surabaya and on other towns in Java became increasingly frequent. The overrunning of Malaya paved the way for the invasion of Sumatra, where Palembang fell on Feb. 16. The Japanese invaded Bali and landed on Timor Island on Feb. 20. After the battle of the Java sea, on Feb. 27–28, the Japanese, in the climactic phase of the operation, landed at various points in Java during the first week of March and gained complete mastery of the air. Batavia, Buitenzorg and other towns fell. By March 9 Bandung, the inland mountain town, had surrendered and the Japanese claimed the capture of 93,000 Dutch and colonial and 5,000 British troops. This marked the end of organized resistance. Some guerrilla warfare continued in Borneo, Sumatra and Celebes; but there was little evidence to show that it was widespread or successful.

OIL TANKS AND CARS were fired by the Dutch as they evacuated petroleum centres in Java during the Japanese invasion of March 1942. This picture, taken by a Jap photographer, reached the United States by way of Brazil

News about the East Indies under Japanese occupation was necessarily meagre in 1942 and was largely based on Japanese broadcasts. There was apparently some effort to arouse pan-Asian sentiment by changing Dutch to native names. Instructions were given to respect the "adat," or native code of customs and living habits. The Japanese claimed progress in restoring oil production and port installations which had been damaged during the fighting and asserted that cargoes of rubber from the Indies were reaching Japan. A curtailment of sugar production to 500,000 tons annually was announced on the Tokyo radio in the summer of 1942; this may have been designed to divert production to crops more useful for war purposes.

Education.—As of 1939, there were 21,440 schools of all types, with 2,324,505 pupils. Government expenditure on education was 31,267,100 guilders; 7.2% of the population was literate in 1930.

Defense.—The armed forces at the disposition of the Dutch military authorities at the time of the Japanese invasion were in the neighbourhood of 125,000–150,000 men, consisting mainly of trained natives, with a stiffening of Dutch officers and technical units. The East Indies navy was reliably estimated at 3 cruisers, 8 destroyers, 18 submarines and 42 torpedo boats. There had been increased attention to defense with the growth of tension in the far east, and the air force was supposed to number between 500 and 1,000 planes. The military establishments of the Netherlands East Indies were mostly wiped out by the invasion; remnants of these forces escaped to Australia and continued the struggle along with the United Nations. Government expenditures on defense were 517,000,000 guilders in 1941.

Finance.—The Dutch guilder (florin) (53.1 cents U.S. in 1941) is the unit of currency. Budget revenues were 694,140,035 guilders in 1941. Expenditures were 829,304,901 guilders in 1941. Amount of currency in circulation in 1941, 215,885,000 guilders. The public debt of the colony, consolidated and floating, was 1,372,600,000 guilders in 1939. The Java bank, the central banking institution, controlled the note issue. The Japanese did not introduce the yen as the currency during 1942, but carried on with what was apparently an intermediate currency organization, utilizing the notes of the Bank of Java and special currency issued for the use of the occupying forces.

Trade and Communication.—Imports in 1940 were 444,300,000 guilders and exports were 873,500,000 guilders. No complete figures were compiled for 1941. The principal exports in 1940 were rubber (328,254,000 guilders), oil and petroleum products (169,557,000 guilders), tin and ore (72,218,000 guilders), sugar (52,041,000 guilders), tea (50,925,000 guilders).

There were, in 1940, 43,450 mi. of highways and 4,620 mi. of railways, 3,387 in Java and 1,233 in Sumatra. The railways in 1940 carried 72,000,000 passengers and 11,000,000 tons of freight. There were 94,000 motor vehicles of all kinds in 1941. About 10,870 steamers, with a total tonnage of 12,456,664, cleared from the ports of the colony in 1939. The Royal Netherlands Airways was formerly one of the main routes of communication between Europe and the orient.

Agriculture.—Figures of output for the principal agricultural products in 1939 were as follows: sugar, 1,576,000 tons; copra, 537,000 tons; rubber, 383,000 tons; palm oil, 244,000 tons; coffee, 121,000 tons; tea, 83,000 tons; pepper, 71,000 tons; quinine, 12,000 tons.

Manufacturing.—Although the colony has always been primarily a source of raw materials, the world crisis of 1929–33 and the abrupt fall in the prices of primary products, together with the inundation of the country with cheap Japanese manufactures, gave an impetus to the development of local industries, such as batik, spinning and weaving, tobacco, ceramics, paint, soap, chemicals, cement, wood, glass and paper.

Mineral Production.—While Java is the principal source of cultivated crops, the Outer Islands supply most of the mineral resources of the colony. Figures of output for the principal mining products in 1939 were as follows: oil, 7,949,000 tons; tin, 31,000 tons; coal, 1,781,000 tons; gold, 2,500 tons; silver, 19,200 tons. (*See* also JAPAN; NETHERLANDS COLONIAL EMPIRE; WORLD WAR II.) (W. H. CH.)

Dutch Guiana: *see* SURINAM.
Dutch Harbor: *see* ALASKA; WORLD WAR II.

Dyestuffs.

Conservation of raw and finished materials was the industrial keynote for 1942. The national emergency brought about many drastic and sudden changes, and the organic chemicals industry was no exception. The most important problem confronting the dyestuff manufacturer was to furnish sufficient quantities of the highest quality vat colours for the requirements of the armed forces. The conversion of the industry from peacetime economy to fulfil wartime needs was a major task. Many of the basic materials used for the production of dyes are also required in the manufacture of explosives, aviation gasoline, pharmaceuticals, refrigerants, synthetic rubber, etc. and the dyestuff industry had to share these essential chemicals with other vital uses.

The government consumption of certain vat colours, used for olive drab and khaki shades, increased abnormally long before the war began. Concurrently, a growing demand for civilian goods dyed or printed with fast colours manifested itself. To meet this situation the dyestuff industry stepped up production on the vit war colours by expanding facilities. With the military progra developing rapidly it became evident that the production of thes particular anthraquinone vat colours would be insufficient to fi all the requirements of the government. This brought about th War Production Board Conservation Order M-103 which becam effective April 1, 1942. It restricted the sale and use of nin anthraquinone vat dyes for specified military purposes only an assured mills holding government contracts of a sufficient suppl of vat colours for their requirements. Quarterly civilian quota on the anthraquinone vat dyes not restricted for military us were also established. The Office of Price Administration adv cated the production of good quality, fast dyes as being essenti to the wartime conservation program; fewer nonessential cloth were decreed; restrictions placed upon style and fabric chang of civilian textiles; work clothing sales increased and the suppl of dyes adequately met the demand with but few exception Consequently war textiles, manufactured under many difficultie still possessed the desirable characteristics of materials prev ously obtainable.

The increased activity in the production and sales of synthet organic chemicals in 1941 was due to an increase in both civili and military consumption. Military demands were confined relatively few individual items. Not many synthetic organ chemicals were under general preference orders, limitation orde or price control.

The major increases in the production of dyes in 1941 as compared with 1940 were indigo 83% and azoic dyes 69%. Litt change occurred in the relative importance by class of applicatio of the various groups; vat, direct, sulphur and acid dyes a counted for about 80% of the total. Production of coal-tar dy in 1941 was 168,595,000 lb., an increase of 31.9% over the pr ceding year. Sales were 176,791,000 lb., 44.1% higher than 1940 and valued at $113,308,000. Vat colour production, excl sive of indigo, was 26,616,000 lb. and 40.5% over the 1940 tota 1942 production was comparable with 1941 but official figur were not available by the close of the year. (A. G. BN.)

Eaker, Ira C.

(1896–), U.S. army air officer, was bo April 13 in Field Creek, Tex. He studied the University of the Philippines, Columbia and Southern Ca fornia universities and was commissioned as second lieutenant the infantry reserve in 1917. Transferred to the Philippines 1919, he served in the air corps and later was given comman of the Manila air depot. In 1929, he was co-pilot in an arm plane which established an endurance flight record of 150 hou and 40 minutes, and some years later he made a cross-contine "blind flight." He served as executive officer in the air cor headquarters in Washington, 1937–40, and by Jan. 1942, he ha become a brigadier general. In the summer of 1942, he w named chief of the U.S. bomber command in the Europe theatre of war and in August of that year, he led a Flyi Fortress squadron that raided Rouen in the first all-America aerial attack on nazi-held territory. With Lt. Gen. Henry Arnold, he wrote *This Flying Game* (1936), *Winged Warfa* (1941) and *Army Flyer* (1942). After Maj. Gen. Carl Spaa went to North Africa in Dec. 1942, to reorganize Allied air pow there, it was understood that Gen. Eaker would succeed hi temporarily as U.S. air commander in Europe.

Ear, Nose and Throat, Diseases of.

During the ye 1942 sulphon mide drugs were applied locally in the ear, first cleansing t external canal thoroughly, drying it and blowing the powder Sulphanilamide or sulphathiazole powder was introduced in e nasal chambers by means of a powder blower. In the in- mmatory conditions of the pharynx, this structure was gently ufflated with one of the sulphonamides, coating the surfaces ificiently. The patient was instructed not to cough or spit for out one half hour after this treatment. Following mastoid erations, the powder was dusted in the cavity, with splendid ults.

A few cases of radical frontal, ethmoid and maxillary sinus erations were reported in which near the conclusion of the eration, one of the sulphonamides was dusted into the cavities. all of these, healing was far better than under similar opera- e procedures without the local use of the sulphonamides.

Dr. Harry P. Schenck and others reported favourable results the administration of a finer preparation of the sulphonamides, nely the microcrystals of sulphanilamide and sulphathiazole h and without suspension in a mild isotonic vasoconstrictor. e purpose of the finer preparation, that is the microcrystals, s to have the drug so finely divided that it would be in direct tact over a larger area of infected tissue surface, with no eterious local action; that it would have long contact with the per stability, as far as the chemical reaction was concerned, npatible with the upper respiratory mucous membrane in ry possible manner. Thus microcrystals of sulphanilamide or phathiazole in suitable vasoconstrictor solution could be ayed, instilled or packed wherever the rhinologist wished to ce this medicament.

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rnings, Company: *see* BUSINESS REVIEW.
rthquakes: *see* DISASTERS; SEISMOLOGY.
st Africa, British: *see* BRITISH EAST AFRICA.

stman, Joseph B. (1882–), U.S. government official, was born June 26 in Katonah, Y. He was graduated from Amherst college in 1904 and studied at Boston university. He was appointed to the Interstate mmerce commission by President Wilson in 1919 and was ppointed by succeeding presidents until 1933, when he served President Roosevelt's federal co-ordinator of transportation. ring his 14-year tenure on the ICC, Eastman was considered government-ownership" man by many railroad presidents be- use he fought to lower freight rates and executive salaries. He ounced the unnecessary duplication of services and sought to law dummy corporations and holding companies. In 1936, he urned to the ICC and in Dec. 1941, Mr. Eastman, then chair- n, was appointed by President Roosevelt as director of the vly-established Office of Defense Transportation (ODT), de- ned to co-ordinate federal and private transportation policies. May 1942, when the rubber shortage became acute, he was en authority to curb travel of motor cars, trucks and buses. September he ordered curtailment of all travel to football nes and on Oct. 1, he froze railway passenger schedules, elimi- ing special trains for sports events. (*See* also DEFENSE TRANS- RTATION, OFFICE OF.)

ton, Edward Dwight (1851–1942), U.S. educator, was born Jan. 12 in Lancaster, Wis. was graduated from Beloit college in 1872 and received D.D. grees from Northwestern and Yale universities. He was ordained minister of the Congregational church in 1876, and served in pastorates at Newton, Ia., and Oak Park, Ill. He was president of Beloit college, 1886–1905, 1907–17 and president emeritus from 1917 to 1942. He died in Fairfield, Conn., June 18.

Eberle, Abastenia St. Leger (1878–1942), U.S. sculptress, was born April 6 in Webster City, Ia. In her lower east side studio in New York city, Miss Eberle welcomed neighbourhood children into an improvised playroom, set up in her own quarters so that she might better study her subjects. She is represented at the Metropolitan museum, New York city, the Chicago Art institute, the Worcester Art museum, the Peabody museum in Baltimore, the Carnegie institute at Pittsburgh and the Detroit museum. She received the St. Louis exposition bronze medal, 1904, and the Lindsay Morris Sterling award of the Allied Artists of America, 1931. Miss Eberle died in New York city, Feb. 26.

Eberstadt, Ferdinand (1890–), U.S. government official, banker and lawyer, was born June 19 in New York city. He graduated from Princeton, 1913, and took his law degree from Columbia university, 1917. A corporation lawyer, Eberstadt was associated with a Wall street investment house until 1931, when he opened an investment-banking firm. When Chairman Donald Nelson organized the War Production board in Jan. 1942, he named Eberstadt to one of the vice-chairmanships, and placed him in charge of synchronizing the army and navy needs with production schedules. Within six weeks Eberstadt devised a controlled materials plan to get scarce materials in sufficient quantities to war factories on schedule. In a speech in New York city Dec. 2, 1942, he declared that the United States might supply munitions and supplies to French forces fighting with the allies, and also pleaded for a tolerant understanding of the confusion that accompanied the almost overnight creation of a $100,000,000,000 war industry.

Eclipses of Sun and Moon, 1943: *see* ASTRONOMY.
Economic Association, American: *see* AMERICAN ECONOMIC ASSOCIATION.
Economic Defense Board: *see* ECONOMIC WARFARE, BOARD OF.

Economics. No outstanding contribution was made in either pure or applied economics during 1942. Although it takes some time for judgment to ripen concerning the merits of the findings of research, the Conference in Research in Fiscal Policy established by the National Bureau of Economic Research made a substantial contribution in "Fiscal Planning for Total War." The Brookings institution devoted its attention, at a time when price control and inflation were topics of current interest, to the theories of "Price-Making in a Democracy." The Twentieth Century fund sponsored popular studies in post-war economic problems. The Harvard Committee on Research in the Social Sciences issued a study entitled "Parity, Parity, Parity," which emphasized the expansion of the parity concept from land economics to labour and capital. The Oxford Institute of Statistics issued several timely studies on vital war problems. The Graduate Institute of International Studies at Geneva contributed a special study on "International Economic Disintegration." The most numerous bibliographical additions to the special fields were made in farm economics, public finance, labour economics, economic systems, money and banking, and business finance.

A movement was started in 1942 to devise some award that might be made to professionally trained economists similar to the certificate awarded to public accountants for certain attainments in that field. This plan received support from those who were convinced of the validity of the popular criticism launched against self-selected "economists" whose utterances and publications, because of their lack of training, their inexperience, immaturity and vested interests, reflected upon the profession of economists.

In the colleges and universities the economic curriculum was modified in two directions; a greater number of courses in war economics was offered, and courses were offered designed to assist in the professional training of women for civil service positions as statisticians and economic analysts. The Bureau of Foreign and Domestic Commerce issued a supplementary report on courses in war economics showing that of the 120 colleges and universities answering the questionnaire, 89 were offering 322 various courses on war economics and related fields. The drain upon the teaching staff into governmental service had continued to such an extent that many colleges had great difficulty in procuring properly qualified personnel to teach courses. Because of this drain and the army draft, the number of graduate students in economics fell to the lowest level since World War I.

Simultaneously with the development of war courses came the increased interest in postwar economic planning, not only in academic centres but also in civic organizations, industry and government. Reports of the National Resources Planning board related to such important issues as demobilization unemployment, the federal six-year plan for public works, federal aid of industrial research and state projects. The Board of Economic Warfare (*q.v.*) studied the hemispheric cultural and trade solidarity, export licenses, shipping priorities, monopoly purchases, and the problems related to the lend-lease policy. Increasing interest was centred in the problems surrounding the shift from full employment in wartime to peacetime full employment. (E. H. He.)

Economic Warfare, Board of.

The Board of Economic Warfare was made responsible for directing the fullest possible use of the great economic power of the United States throughout the world, to help insure the defeat of the axis.

The board became in effect the "general staff" for United States economic warfare activities. Its basic objective in 1942 was to hit the enemy wherever possible on the economic front, at the same time building the strength of the United Nations. To gain this end, exports were controlled, government programs for the procurement and importation of strategic commodities were planned and directed, and vital economic intelligence and analysis work was kept up-to-date for every country.

President Roosevelt established the Board of Economic Warfare (Economic Defense board until Pearl Harbor) by executive order on July 30, 1941. Other executive orders and legislation rounded out BEW authorities and responsibilities.

Vice-President Henry A. Wallace was named chairman of the board. Its members included the secretaries of state, war, navy, commerce, treasury and agriculture, the attorney general, the co-ordinator of Inter-American affairs, the lend-lease administrator and the head of the War Production board. Day-to-day operations were carried out by a staff of 3,000 in 1942, under the immediate supervision of an executive director (Milo Perkins in 1942).

Operating as a "board," BEW worked in very close co-operation with a number of other government agencies in 1942. In addition to the armed services, agencies with which constant operating relationships were maintained included the department of state, which handled all negotiations with other governments, the bureau of foreign and domestic commerce, the United States tariff commission, the War Production board, the Office of Pri Administration, the Commodity Credit corporation, and vario subsidiaries of the Reconstruction Finance corporation.

In addition to administrative management and legal servic the board was organized into three major operating offices line with its responsibilities: the office of exports, office of i ports and the office of economic warfare analysis. Each of t three offices was headed in 1942 by an assistant director charge—respectively, Hector Lazo, Morris S. Rosenthal a William T. Stone.

Office of Exports.—To direct the flow of commodities commercial export channels so that the power of supply cou be used as a positive economic weapon in the successful pro cution of the war was the job of the office of exports in 19 In it resided responsibilities and duties transferred to the boa from the former office of the administrator of export contr by presidential executive order of Sept. 15, 1941, includi authority to requisition certain articles and materials need for the war effort. It was the task of the office of exports control shipments of goods to foreign destinations, seeing th they did not fall into enemy hands, while at the same ti advocating release of materials that could be spared from Unit State stockpiles to help friendly countries meet their obligatio as contributing partners in the United Nations war effort and satisfying their own essential economic needs.

Office of Imports.—When, on April 13, 1942, responsibil for bringing in essential raw materials from foreign countr was centred in the office of imports, the president's execut order directed the board to administer importation of materi and commodities required for the war production effort, and ". . . determine the policies, plans, procedures, and metho of the several federal departments, establishments, and agenc with respect to the procurement and production of such materi and commodities, including the financing thereof; and issue su directives, or initiate such proposals in respect thereto as may deem necessary."

In off-shore procurement operations during 1942, the W Production board made the basic determination on United Stat need for the commodity in question, and issued the appropri directive. BEW then outlined and programmed the operati passing along specific directives to the government "buyin agency involved. This was usually an RFC subsidiary, wh carried out the direct development and purchase operatio executing the BEW directives. For some commodities, the was one of simple procurement. For others such as, for examp rubber, hemp, certain oils and minerals, the task was to deve new or additional sources of supply in areas remaining open the United States. Commodity procurement experts were litera combing the world in 1942 for materials that would help b the axis. In many countries, preclusive buying operations w under way, giving the U.S. goods it needed and preventing th from falling into the hands of enemies who also needed the

Office of Economic Warfare Analysis.—Strategy for campaigns of economic warfare was developed in the office economic warfare analysis. Working closely with the British min try of economic warfare, and using every possible source of e nomic intelligence, this office kept a running analysis in 194 the economic position of all countries, including the enemy. Inf mation thus assembled was of direct assistance to the army a navy—in blockade operations, in determining needs for supp on expeditions and campaigns and in mapping military objectiv Assistance was extended also to friendly countries in build up their economies and keeping them going. Trained technici were often sent to work with other nations, on a partners basis, in developing new sources of raw materials and stepp industrial production. Under a special project of this office, supporting service was maintained for army and navy air nsport organizations in locating, procuring and assembling itegic raw materials flown in on transport planes returning m military missions. (M. Ps.)

uador, a South American republic, located on the Pacific coast, astride the equator. Area (including the Galá- os islands, 2,400 sq.mi.), according to Ecuadorian claims prior nid-January 1942, was 337,392 sq.mi., but the settlement of a indary dispute with Peru materially reduced its area. The oulation (1941 est.) was around 3,500,000. Chief cities: Quito, capital (140,000); Guayaquil (120,000); Cuenca (42,000); bamba (21,200). President in 1942: Dr. Carlos Arroyo del Río.

istory.—During 1942 the acute dissatisfaction with the set- nent of a boundary dispute with Peru dominated Ecuador's ory. By that decision, made by the Rio de Janeiro Conference oreign Ministers, Ecuador lost a major part of the Amazonian a which it had claimed. Opponents of the administration made ch political capital of the popular dissatisfaction, and in May reatened revolt brought the arrest of several of the most dis- cted. Despite the delicate political balance, Pres. Arroyo del led his administration in a policy of wholehearted collabora- with the United States. In July Ecuador's rubber crop was, treaty, assigned to the U.S., and in September, air and naval es on both the mainland and the Galápagos islands were leased hat nation. After a visit to Washington, D.C., in November, president announced the creation of the Ecuadorian Develop- it corporation, which, with a capital of $10,000,000 loaned by United States, was to develop Ecuador agriculturally and ustrially.

efense.—The army has a peacetime strength of 7,500, with 500 reserves. United States army aviation experts had con- ted an instructing mission in Ecuador since March 1941. The y comprised one training ship in 1941.

inance.—The monetary unit is the sucre (value: 7½ cents . in 1942). The 1943 budget called for receipts and expendi- es of 150,000,000 sucres (1942: 130,800,000).

rade and Resources.—In 1940 imports amounted to $11,- ,000 (1939: $10,184,000), with the United States supplying 4% (1939: 48.7%), Japan 10.5% (5.3%), Great Britain 7.5% 5%), Italy 4.1% (3.1%), France 3.6% (4.9%), Germany % (18.1%). Latin-American countries supplied 5.5% (1939: %), with 1.4% each from Colombia and Chile. Exports, $10,- ,100 (1939: $11,514,000), not including $753,487 gold (all to United States), went largely to the United States (59.9%; 9: 49.1%). Other Latin American countries took 27.3% 39: 19.9%), with Uruguay 8.2% (entirely petroleum), Peru %, Colombia 3.6% and Chile 3.0% leading.

n the first eight months of 1942, Ecuador's foreign trade regis- ed increases in value over a similar period in 1941. The United tes, though continuing to lead all other countries in both sides the trade, took somewhat smaller amounts of Ecuadorian ex- ts. However, there was an increasing amount of trade with er Latin-American nations, especially with Cuba, Venezuela Argentina. Petroleum shipments continued to decline in 2, but the location of U.S. military bases in Ecuador brought increased local demand. The leading exports in 1940 were: ao 28.3%; cyanide precipitates 28.1%; petroleum 24.6%; ee 15.8%; rice 14.1%; copper and lead concentrates 10.5%; ua (vegetable ivory) 8.4%; bananas 6.3%.

acao and coffee are the chief export crops, bananas the third. 1942 cacao and rice crops were at the same high levels as in 1. Cotton, as in 1941, was insufficient for domestic production, sugar was barred from export, because supplies were inadequate. Balsa wood exports increased sevenfold between 1936 and 1941 (2,298 tons in the first eight months of 1941) and made further progress in 1942. Kapok (1940: 384 tons) returned strongly after the crop failure of 1941. Rubber (1940: 1,509 tons) gave promise of considerable expansion.

Petroleum (1940: 2,349,000 bbl.) output fell sharply in 1941 and continued to fall in 1942. In 1940 1,389,678 grams of gold were mined.

Communication.—External communication is by sea and by Pan American Airways, and nearly all exports are shipped through Guayaquil. Internal communication is by domestic airlines (formerly German-controlled), 600 mi. of railway, the Guayas river and a 3,500-mi. highway system. In 1942 highway construction was financed largely by the U.S. Export-Import bank. (*See* also HISPANIC AMERICA AND WORLD WAR II.) (C. N. G.)

Eden, (Robert) Anthony (1897–), British statesman, was born June 12 and was educated at Eton and at Christ Church, Oxford. After service in World War I from 1915 to 1918, he contested the Spennymoor division of Durham in 1922, and in the following year he was elected for Warwick and Leamington, which he thereafter continued to represent. He was lord privy seal and a privy councillor, 1934, and in 1935 he entered the cabinet as minister without portfolio for League of Nations Affairs, holding this post until the following December, when he became foreign minister. Disagreement with Prime Minister Chamberlain over the latter's policy of "appeasing" Germany and Italy led to his resignation Feb. 20, 1938. Upon the outbreak of war Sept. 3, 1939, he re-entered Chamberlain's cabinet as dominions secretary. On May 11, 1940, he was named secretary of state for war in Churchill's cabinet, and on Dec. 23, 1940, he was appointed to the foreign ministry again.

On Nov. 22, 1942, Eden replaced Sir Stafford Cripps as leader of the house of commons, although he still retained his post as foreign secretary. On Dec. 2, he was cheered in commons when he declared that Britain, the United States and Russia would be obliged to use their armed might after the war to prevent any repetition of aggression.

Education. For two years the slogan of education in the United States had been "Education for Defense." Under the impact of Pearl Harbor that slogan was changed to "Education for Victory," adopted as the title of the official organ of the U.S. office of education in place of *School Life* which had been inaugurated during World War I. The changed character of education was indicated in the first sentence of the first issue of *Education for Victory* on March 3, 1942: "Education has ever been in the Nation's service. But in these days of total war that service has a new significance. 'You're in the Army now' is no cliché—it is an expression of national necessity."

Leadership in education in the war crisis was at once assumed by the U.S. office of education under its commissioner, Dr. John W. Studebaker. On Dec. 23, 1941, the U.S. office of education wartime commission was created with members representing national organizations. Formed into a number of committees the commission undertook the study of the following problems: Training of teachers for non-curricular war tasks; volunteer out-of-school services by school children; curriculum adaptations in elementary and secondary schools to war needs; advancement of vocational training for defense industries; the shortage of teachers; physical fitness among college and university students; problems of women students and the war; acceleration in secondary schools and colleges; publication of information on educational changes in the interests of war service; policies for postwar edu-

STUDENTS OF TULSA HIGH SCHOOLS eating lunch with small children as part of their course in nursery-school work. Students in the home-living course prepare and serve the meals

cation and training. The creation of state educational wartime commissions was encouraged.

The U.S. office of education became the education arm of the federal government and undertook 22 major wartime services, including the following: Training of skilled workers for industrial production; training engineers, chemists, physicists, and production managers (ESMWT); training for food production and farm machinery repair; training for homemaking; vocational rehabilitation; school and college civilian morale service; inter-American education; "boom town" schools; aviation education; nutrition education; distribution of information on education and the war; and planning for postwar readjustments. For many of these activities special congressional appropriations were made. The U.S. office of education co-operated with all other defense agencies, the OCD, Federal Works agency, the treasury, in the promotion of health and welfare in defense areas, evacuation policies, creation of nutrition centres, the sale of defense stamps and bonds, school garden programs, and establishment of 25 demonstration centres for instructio in inter-American relations.

The National Education association also turned its efforts t wartime services. Through it legislative commission it wa active in urging legislation fo federal aid for education an other educational measures. Th Commission on the Defense o Democracy through Educatio was concerned with the teache shortage and salary crisis an enlisted the interest of such o ganizations as the Citizen Emergency Committee on E penditures and the National A sociation of Manufacturers. Th work of both the Public Rela tions service and the researc division was expanded, and th Committee on Education an Defense co-operated closel with officials of the army, nav Federal Security agency, offi of education, and education institutions. The Education Policies commission of the N tional Education association i sued early in the year a stat ment of *A War Policy for Ame ican Schools*. The commissio set up a series of priorities education, including the follo ing: Training workers for w industries and services; produ ing goods and services for t war; conserving materials; rai ing funds to finance the wa promoting health and physic fitness; protecting the ideals democracy; teaching the w issues, aims and progress of t war and the peace; sustaini the morale of adults and children; and maintaining intellige loyalty to American democracy. Suggestions were made of speci activities in which teachers and pupils could engage in their com munities.

The American Council on Education co-operated with oth national agencies and was especially active in focusing attenti on higher education in whose interests it was created duri World War I. Its activities are described below.

In August a National Institute on Education and the War, a tended by chief state officers of education, state directors vocational education, experts in rural and higher education, a national agencies, was held in Washington. Representatives the OPA, OCD, OWI, the army, navy and air forces, and t war savings staff of the treasury discussed the needs of their sp cial divisions. The institute recommended that opportunities provided to every youth to equip himself for the war effort order to make up the revealed shortage of specialists in the arm forces and defense industries.

In June the Institute of Adult Education of Teachers Colleg Columbia university, issued a *Report of the Commission on Po war Training and Adjustment, A Statement of Principles Relati* *the Educational Problems of Returning Soldiers, Sailors, and splaced War Industry Workers.*

ocational Training.—The chief efforts during the year were oted to increasing provisions for vocational training of work- for war industries. Vocational, trade, and technical schools ered programs running in some cases for 24 hours a day for en days a week, especially in aircraft, shipbuilding, machine p skills and automechanics, and operators of farm machinery. urses lasted from ten weeks to a year, and special provision s made for the training of engineers, chemists and physicists, dical technicians, and works managers (ESMWT) in two-year lege courses. The work in this field was carried on with federal ($141,240,000 was appropriated for 1942–43) administered the U.S. office of education, plans and policies being deter- ned by local committees. One new feature was the increase in number of women trained to take the place of men.

ew Emphases in Education.—Schools were urged to adopt nore realistic point of view in the development of curricula h special attention to more technical courses, health, and the dy of inter-American relations. Under the auspices of the il Aeronautics administration, materials were prepared in all jects but especially in science, mathematics and geography to phasize the new era of aviation that is to make America's ith "air-minded." The need of an extension of adult education s expressed. Considerable concern was aroused by the revela- n that 10,000,000 persons were found in the 1940 census to e had only four grades of education, and by the rejection on ount of "functional illiteracy" of enough young men called ler the selective draft to make up 10 to 15 combat divisions. ention was also drawn to the large percentage of illiteracy ong aliens in the U.S.

The rise of "boom towns" created a demand for schools which s met with the aid of the U.S. office of education, and the ge increase of women in war industries drew attention to the d of nursery schools for preschool children (2 to 6 years of). The WPA allocated $6,000,000 for the provision of nurs- schools to take care of 50,000 children of working mothers a charge of 25 cents per day (if able to pay this sum) for the t of food and personnel. Added to the existing provisions this n made nursery schools available for 105,000 children.

outh Problems.—A movement begun early in 1942 to abolish Civilian Conservation corps was successful despite the efforts the president and Paul V. McNutt, Federal Security adminis- tor, to save it. A small sum was provided to liquidate the C within twelve months, the equipment to be turned over to army and navy. A proposal to abolish the National Youth ninistration failed but its appropriation was cut to one-third the amount requested. Help for youth was provided in other ys—by increased appropriations to the U.S. office of education vocational training and an appropriation for student loans.

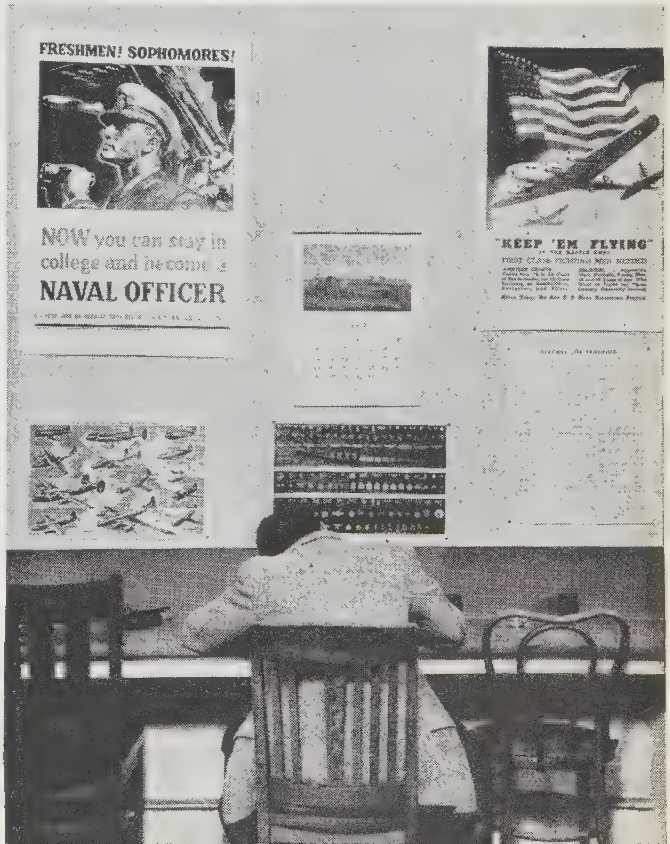
The abolition of CCC coincided with the publication of a five- r study of this organization by Kenneth Holland and Frank Hill (*Youth in the CCC*), who described it as the most im- tant educational development in 25 years and as a contribu- n to the war effort through the training provided in military its and routine, discipline of living in camps, training in activ- s needed by the army and the country, and education in the al of useful work.

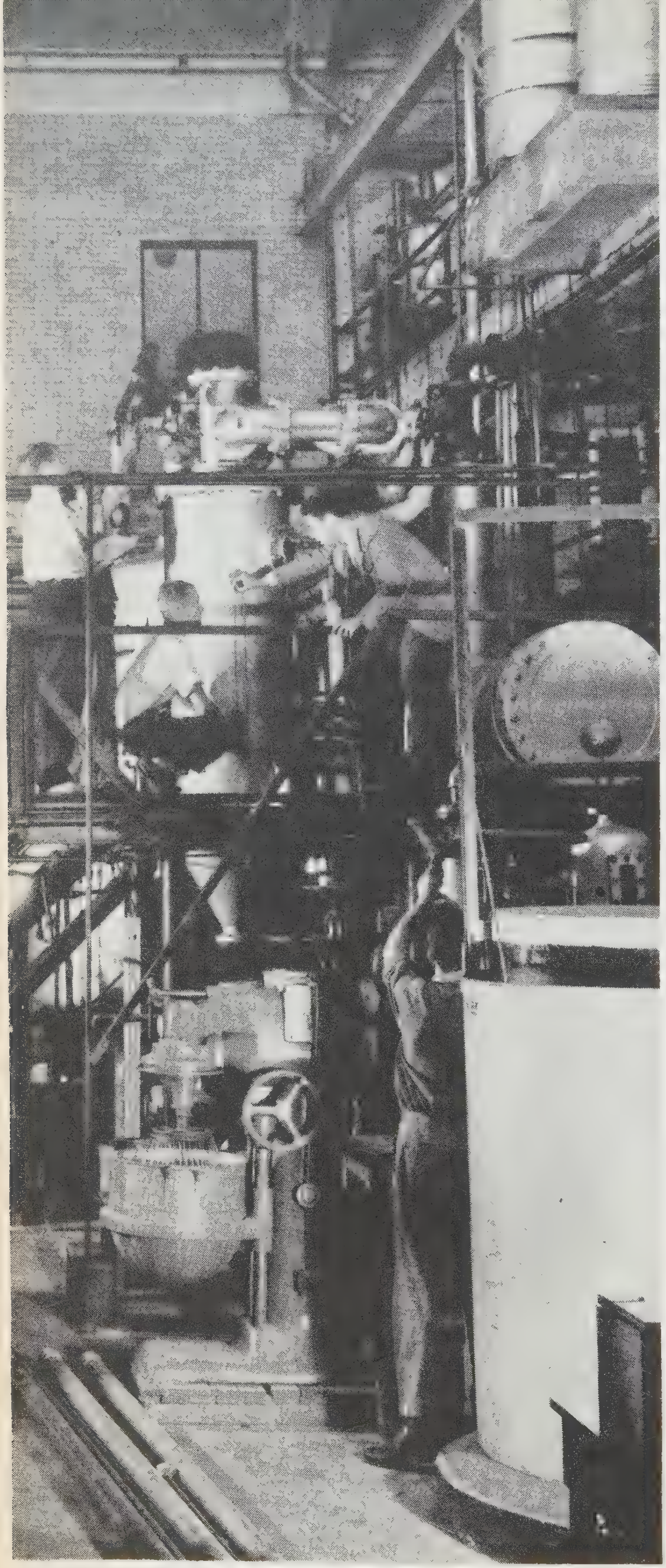
The six years of work of the American Youth commission un- the American Council of Education was brought to a close the publication of a report on *Youth and the Future* by Floyd Reeves. The report, with an introduction by Owen D. Young, essed the importance of a postwar employment program for urned soldiers and young persons in order to obviate the dan- s of unrest through unemployment. The employment of all youths under 21 must be made a social responsibility; compulsory education up to 16 should be followed by a year of required work to help young persons to realize their practical abilities and needs before entering on some occupation or further schooling; jobs should be found for all able and willing to work; and consumer co-operatives, profit-sharing in business, and intelligent pricing should be encouraged to make goods and services available to the consumer. Vocational training and guidance, work experience, retention of apprenticeship, more realistic training in current problems through social studies and participation in community work, and health should be given special attention. In secondary education greater attention should be given to the needs of the students not going to college, and beyond that the number of public junior colleges and technical institutes should be increased.

Teacher Shortage.—The most serious educational problem of the year was the teacher shortage which threatened to grow. Teachers were leaving for other activities attracted by better pay than the average of $77.42 a month found in a number of states. By the opening of the school year it was estimated that there would be a shortage of 50,000 teachers necessitating the closing of 50% of the rural schools and of many schools in smaller cities. The shortage was more serious in some subjects (industrial arts, agriculture, physical education, science and mathematics, home economics and commercial subjects) than in others. Salary adjustments were made in very few instances. To correct the situation and to avoid lowering of certification standards and the employment of incompetent teachers married women teachers were urged to return to the schools, and the establishment of a nationwide teacher placement agency was recommended. To balance the exodus from the schools teachers showed an excellent record of public activities in gasoline and sugar rationing, civilian defense, first aid, salvage campaigns, and draft registration.

(*See* Commission on Teacher Training, *This War and the Teacher,* and E. S. Evenden, *Teacher Education in a Democracy at War.*)

YALE FRESHMAN signing up for service at the university's bureau of military training information. Similar bureaus in U.S. colleges and universities guided thousands of underclassmen in 1942 into military and naval training for which they were best qualified





THE CHEMICAL ENGINEERING LABORATORY of Yale university, like the laboratories of many other U.S. institutions, was used in 1942 to give students a knowledge of explosives, synthetic rubber and other subjects vital to war and war economy

Federal Aid.—The realization, greater than ever, that equality of educational opportunity was not nationwide led to a renewed effort to secure federal aid. Senator Thomas sponsored Bill S.1313 to provide an annual appropriation of $300,000,000 to reduce inequalities of educational opportunities through public el mentary and secondary schools. The funds would be apportione to the states according to the numbers of inhabitants 5 to years of age and their personal net incomes, for the expenses public elementary and secondary schools, including kindergarte and junior colleges. Each state would determine its own metho of apportionment to the local school units. All control of educ tion would be retained by the states and local communiti Audits and reports would be required. States must continue spend for schools from state funds at least as much as in 194 and the interests of minority races must be protected where sep rate schools for separate races are maintained. (*See* for th section *Education for Victory, School and Society,* and *The Jou nal of the National Education Association.*)

Teaching of American History.—A serious educational iss was precipitated by the publication in the *New York Time* June 21, 1942, of the results of a survey of the teaching United States history in the colleges. The report of the surve based on returns from 690 colleges or 56% of those to which t questionnaire had been sent, revealed that 82% of the instit tions did not require the study of the subject and that many st dents completed their four years in college without taking a courses in American history. Further, it was pointed out that 72 of the colleges did not require United States history for admi sion. Less than 10% of the student body and only 8% of t freshmen were enrolled in courses in American history in t semester preceding the survey. Many presidents and professo of history urged that the subject should be made compulso They stressed the value of the contribution of a knowledge national history to the development of citizenship and civic sponsibility, and in the war crisis to an understanding of t democratic traditions at stake. The report had wide reperc sions throughout the country. It was discussed at a joint sessi of business men, representing the National Association of Man facturers, and educators at the annual meeting of the Natio Education association held at Denver at the end of June, a was the main topic of the address delivered by Gov. Ralph Carr of Colorado at the same convention. Speaking at the annu banquet of the state bar of Texas on July 4, Associate Justi Robert H. Jackson deplored the omission of history of the Unit States in the colleges and universities of the country and enter a strong plea in favour of the subject in "this great laboratory democracy." At a statewide conference of history professo held at Stanford university on Aug. 29, 1942, the inclusion of required "general survey in the history of the United States" w recommended in the interests of "the successful operation of democracy."

Colleges and Universities.—The outbreak of war found t institutions of higher education without plans to meet the situ tion, which was further aggravated by the failure of governmen authorities to state their needs in terms of manpower. The c leges and universities were more seriously affected than oth branches of education by the uncertainty and confusion becau of their dependence upon a student body liable to immedia call for service. Fourteen days after Pearl Harbor the planni and executive board of the American Council on Education re ommended the acceleration of students of high ability and pe formance in order to enable them to graduate before inducti into the armed forces at 20. The board stressed the point th it was essential to keep able students in schools and colleges meet the future demand for physicians, dentists, engineers a professional workers.

On Jan. 2, 1942, nearly 1,000 representatives of colleges, un versities and junior colleges met for three days in conference Baltimore at the call of the American Council on Education.

ssage was read from President Roosevelt which served as the ynote for education generally during the crisis. "We have one at task before us," wrote the president. "That is to win the r. At the same time it is perfectly clear that it will be futile win the war unless during its winning we lay the foundations the kind of peace and readjustment that will guarantee the servation of those aspects of American life for which the war fought. Colleges and universities are in the particularly diffi- t position of balancing their contributions to these two ends. m sure, nevertheless, that the leaders of our colleges and uni- sities can be depended upon to find the wisest solution for the icult problem of how to make this twofold contribution. I anxious that this national crisis shall not result in the de- uction or impairment of those institutions which have contrib- d so largely to the development of American culture."

he conference approved an accelerated program to reduce the ditional four-year course to three years or even less to be com- ted at the age of 20, and recommended that the government uld provide military training for all students physically fit service. A proposal to telescope the high school and college rses found very little support; only two leading institutions— own and Northwestern universities—announced that they uld admit qualified students at the end of their third high ool year. The proposal to accelerate courses was widely ac- ted throughout the country; some institutions merely extended all students a practice permitted only to able students. The ed-up was also helped by admitting students from high school ually at the beginning of any term or semester. Generally, vever, the four-year curricula were used by introducing an a session in summer and otherwise curtailing vacations. Al- ugh a few critics deplored the acceleration plan on educational unds, no serious difficulties were encountered in putting it into ct from the point of view of organization, and the small num- of women's colleges which were at first opposed to it accepted Two difficulties did arise, however, which had been foreseen became much more real when acceleration was put into prac- . Because of the financial conditions of most institutions of her education, which were the cumulative results of the de- ssion period, and the fact that acceleration did not increase olments, colleges and universities were confronted with the blem of remuneration to their faculties for the additional ching load imposed on them. The students were affected by introduction of extra sessions because they were deprived of opportunity during the summer vacation of earning money their education. Medical schools also adopted accelerated grams and reduced the period of training to three years, keep- their students at their studies and other activities of a pro- ional nature through the 12 months of each year. Hardest were the law schools which suffered severe reductions in olments.

he first of these difficulties was not met by any concerted . The solution of the second was made possible by a congres- al appropriation of $5,000,000 to be used for loans for about oo students who undertook training in engineering, physics, mistry, medicine (including veterinary), dentistry and phar- y. Students obtaining loans of tuition, fees, and up to $25 a th, payable through the institutions which they attended, e placed under the supervision of the War Manpower com- sion and were pledged to accept employment under its direc- during the war. The loans were to be repaid at 2½% interest. s appropriation was obviously inadequate; Dr. John W. Stude- er, U.S. Commissioner of Education, estimated that $50,000,- was needed for about 135,000 students.

y the middle of 1942 it was found that the conditions had been greatly improved. At a Second Conference on Higher Education and the War, held in Baltimore on July 15–16 the first of the resolutions adopted "deplored the continuing lack of any adequate and co-ordinated plan for the most effective utilization of higher education toward winning the war," a lack which was "impeding the flow of highly trained manpower essential to victory in a long war." The absence of a co-ordinated plan when all the institutions were ready to devote their facilities and energies to the war effort had "given rise to widespread confusion among governmental agencies, educators, students and the general public." It was accordingly urged that all the relevant governmental authorities should take steps "to assure effective and continuing co-operation between the agencies they represent and higher education." A co-ordinated plan would safeguard the permanent function of higher education to provide the nation with broadly educated and highly trained men and women in the interests of its health, safety and welfare. The major function of higher education is to develop breadth of understanding, stamina and qualities of leadership, essential characteristics of good officers. Although only 12% of the men inducted into the services were college trained, 80% of those selected for officer training had come from this group. To maintain equality of opportunity it was necessary to provide financial aid for students to enable them to take advantage of the accelerated courses without restriction of economic status, race or creed. Provision should be made to utilize those who are physically unqualified for military service but are intellectually fitted for other essential types of war service. A plan was also made for young women who have a vital part to play in the national effort.

When the academic year 1942–43 opened the confusion was not only not cleared up, but further uncertainties arose. There were doubts about the desirability of military training on the campuses, and the question whether the age for the selective draft would be lowered to 18 or 19 remained undecided for several months. Students in medicine, dentistry, pharmacy, physics, chemistry and engineering expected to be permitted to complete their courses of training. In May, 1942, the war department announced that students could enlist in the Enlisted Reserve corps of the army and be deferred from the call to active duty until graduation, "unless unforeseen circumstances dictated otherwise."

Despite the state of confusion the higher institutions of education were making important contributions to the war effort. War aid work, civilian defense work, special care for the health and fitness of students were undertaken. Every institution saw its

NORWEGIAN SCHOOL in session in a private home at Oslo. According to the Norwegian legation at Washington, D.C., which received this picture from underground sources in 1942, most of Norway's school buildings had been converted into barracks or hospitals for German soldiers faculties depleted for war work of some kind—military, civilian and research. Many institutions undertook important research work. The general trend among the students was in the direction of some form of technical preparation, a trend which alarmed those who feared for the future status of the humanities, and long-term preparation for postwar demands. In the latter area many institutions introduced courses on peace aims and reconstruction, open to the public as well as students. At least two institutions began to train specialists for reconstruction work abroad, and in different parts of the country intensive courses for the study of Arabic, Burmese, Chinese, Hindustani, Japanese, Korean, Malay, Persian, Pidgin English, Portuguese, Russian, Thai and Turkish were organized under the auspices of the American Council of Learned Societies. The study of Spanish, of Latin American culture, and of inter-American relations became widespread. One important development was the increase in the number of women taking courses in engineering, industrial management and inspection, and technical fields in general; many have already replaced men. There was also an increase of women in such subjects as home economics, nursing and nutrition.

By some it was anticipated that the war crisis would have its effects on the future of higher education in the United States. Dr. Walter A. Jessup in his annual report as president of the Carnegie foundation expressed the opinion that acceleration may lead to the permanent adoption of a three-year course in place of the traditional four. Changes in curriculum trends were also anticipated, but those might be affected differently by postwar demands for trained personnel.

The junior colleges, probably as a result of the demand for intensive training of two years, increased in number from 610 in 1941 to 627 and the enrolments showed an increase from 236,162 to 267,406 or 13.2%. Of the 627 junior colleges 279 or 44% were public and 348 or 56% private, but the public institutions had 74% of the enrolments.

Some controversy was aroused by the announcement in Jan., 1942, that The University of Chicago would award the A.B. degree after the first two years of study. President Hutchins, in defending the plan, referred to the confused organization of American education and the need to eliminate waste of time by differentiating between general and special education. For students who had neither the interest nor the ability to enter upon a course of specialized study the degree after two years would mark the end of their formal education; the remainder, improved in quality, would continue for three years more to the A.M. The plan received no support anywhere; it was charged that The University of Chicago would enter into competition with the junior colleges and was in any case cheapening the traditional A.B. degree.

As already indicated the colleges and universities were faced with serious financial difficulties. Some relief was afforded by the federal loans and other grants to students; another form of relief came from the rental by the government of buildings and dormitories for the training of officers. More serious than the immediate effects of the war crisis was the proposal by an official of the U.S. treasury to limit the deductions against estate taxes for charitable and educational bequests—a step which would affect churches, hospitals and educational institutions. It was charged that serious abuses had crept into charitable bequests, but no investigation had been conducted to demarcate use and abuse. Not only would college finances be seriously affected by such a step, but it was feared that the opportunity of the financial crisis might be an entering wedge for federal control in return for support. Equally serious was the tendency in different parts of the country to tax the property of higher educational institutions, the income of which was not used directly for educational purposes—cafeterias, dormitories, co-operative bookstores an property rented out to persons not connected with the institution

The issue of academic freedom and tenure produced only o case, that of Winthrop college, which was the subject of inqui by a committee of the American Association of University Pr fessors. The University of Georgia was dropped by still anoth national organization, the American Association of Universit Women. The Georgia case of 1941 was made an issue in the pr mary elections and helped toward the defeat of Governor Ta madge as candidate for re-election. (For this section see *Scho and Society, Educational Record, Journal of Higher Educatio Bulletin of the Association of American Colleges, Bulletin of th American Association of University Professors* and *Education f Victory.*) (For statistics of institutions *see* UNIVERSITIES AN COLLEGES.)

Anniversaries.—In May Roanoke college, Salem, Va., cel brated its 100th anniversary. Two public school systems, Detro and New York city, celebrated the centennial of the establis ment of their boards of education. Appropriate exercises marke the occasion in both cities; the Detroit board of education issue an interesting record, *One Hundred Years, The Story of the D troit Public Schools, 1842–1942*. The occasion of the 75th ann versary of the founding of the U.S. office of education in 186 was recognized as of the highest significance in view of the in portant status which this office had acquired in the war eme gency and the part that it would play in the postwar developme of education. The office in the 75 years after its creation as th National Bureau of Education had ten commissioners at its hea the first of whom was Henry Barnard.

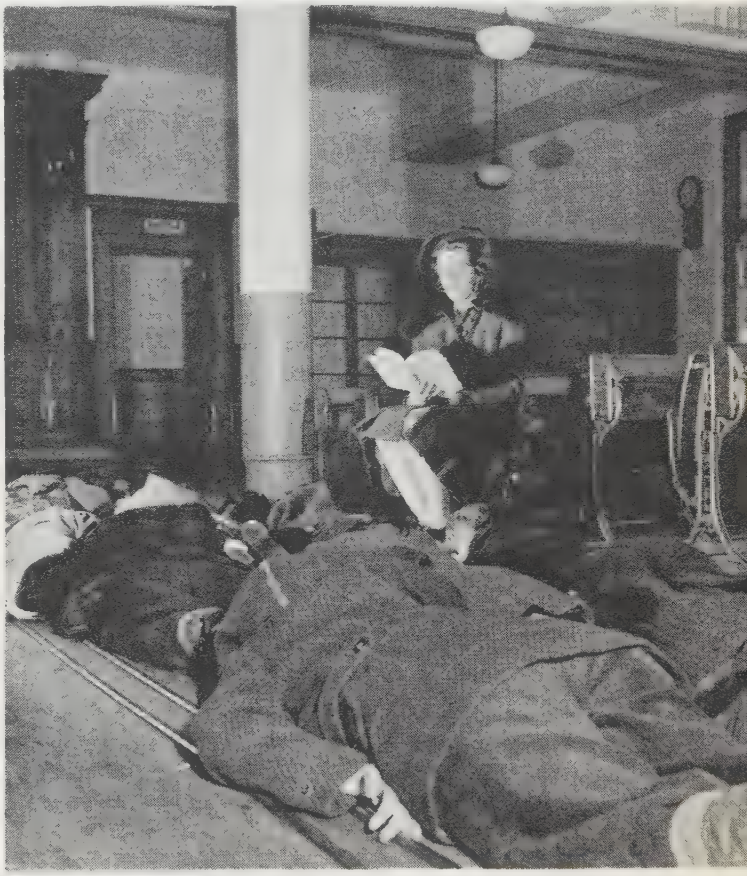
General World Movements.—*Europe.*—In the occupi countries of Europe the nazis continued their policy of suppres ing national cultures and nazifying the national school system Nowhere did these efforts fail so signally as in Norway, whe the resistance and martyrdom of the teachers will always sta out in the history of education as one of the most heroic stan against oppression. One of the first acts of Vidkun Quislin after assuming office as minister-president on Feb. 1, 1942, w to order all teachers to join a new nazi-created teachers' unio *Laerersambund*, and as members to teach in harmony with t New Order and so become agents to indoctrinate all childr with the principles of naziism. Of the 14,000 teachers 12,000 r signed despite threats by the nazi authorities to condemn them labour service; 2,000 were arrested and sent to concentrati camps. Despite the tortures of transportation in cattle-truck lack of food, physical drill under the whip and sickness only teachers joined the *Laerersambund*. Of the remainder, 500 we herded into an old wooden ship, designed for 250 passengers, a under the most horrible conditions were transported to Kirken despite the protests even of the doctor, himself a Quisling, allow to board the ship. How many died on the voyage was n known. This treatment had no effect on their more fortuna colleagues who not only continued to resist the Quislings and t nazis, but when schools were again reopened read the "Norw gian Teachers Pledge to their Pupils of April 9, 1942," closi with the following words which deserve to be recorded for time: "I will not call on you to do anything which I regard wrong. Nor will I teach you anything which I regard as not c forming with the truth. I will, as I have done heretofore, let m conscience be my guide, and I am confident that I shall then in step with the great majority of the people who have entrust to me the duties of an educator." Other efforts at nazification the requirement of compulsory membership of all children b tween 10 and 18 in the *Ungdomsfylking*, modelled on the Hit Youth, and the compulsory use of nazi textbooks and materi of instruction—also failed. The attempt to gain control of t

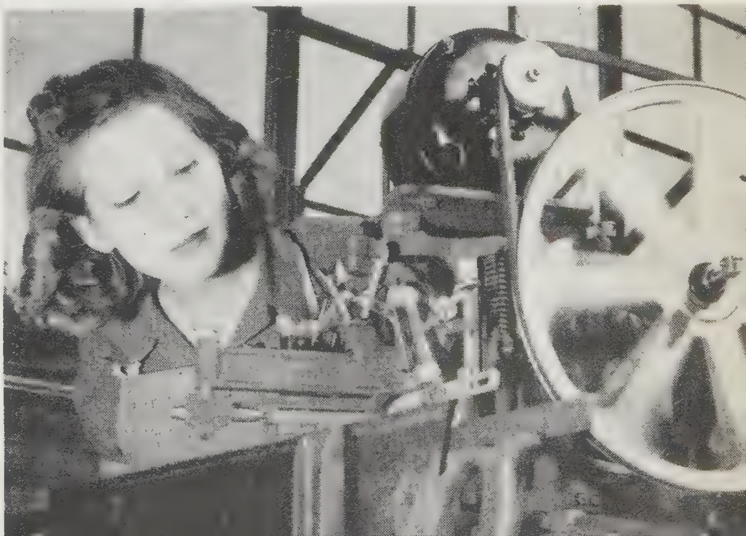
: MILITARY MARCHES were introduced into California schools in 1942 t of the wartime program of physical fitness

WHILE HER PUPILS lay face down on the floor during an air-raid n a New York city school in 1942, the teacher read them a story

, left: YOUNG ARTISTS at New York university's Clinic for the Social ment of the Gifted Child, at work on war pictures in 1942

right: HIGH SCHOOL GIRL of Milwaukee, Wis., in a school machine Many U.S. high schools introduced courses in preparation for war plant during 1942





higher education by appointing Quisling professors was met by the refusal of the students to attend classes. On Feb. 25, 1942, the officials and faculty of the University of Oslo sent a message of protest to the Department of Church and Education against interference with freedom of research and teaching, against education within the framework of a political party, and against compulsory youth service. (See *Norway's Teachers Stand Firm,* published by the Royal Norwegian Government's Press Representatives, Washington, D.C.)

Great Britain.—Plans for the further development and reconstruction of education in England and Wales were drafted and discussed with increasing intensity throughout 1942 by official and non-official organizations as well as by lay and professional groups. A new level was reached which carried the promise of educational reconstruction far beyond that of World War I. Nor was there any reduction in expenditures for education and the social services associated with it. The estimates of the board of education, the central authority, for the financial year 1942–43 were £57,763,118, an increase of £2,847,479 over the vote for the preceding year. It is significant to compare these estimates with those for 1933 (£41,832,562) and for 1938 (£51,002,330). Much of the increase for 1942–43 was due to the war bonus for teachers and the provision of milk and meals to children in schools. Capital expenditures almost entirely disappeared. To the estimated expenditures of the central authority must be added those of the local authorities, bringing the total expenditures up to £108,063,000 (as compared with £103,725,000 in 1941). These expenditures do not include the grants to and the expenditures of the universities and colleges.

(*See* also CAMBRIDGE UNIVERSITY; LONDON UNIVERSITY; OXFORD UNIVERSITY.)

Educationally the chief preoccupation was in the main with the care of young children and adolescents. This preoccupation was forced on Great Britain not only by the nature of the total war and the evacuation of children from their homes, but also by the increasing number of mothers who, whether voluntarily or by war regulations, were employed in war industries. The latter condition led, in World War I, to the establishment of nursery schools, which increased in the period between the two wars. After the outbreak of World War II their numbers increased with remarkable rapidity and variety. There were not only nursery schools and nursery classes but also residential wartime nurseries where young children might be left under trained care for the whole or part of the day. The major part of the basic cost of the residential nurseries was borne by the government with a small charge per day paid by the parents. It was planned to establish 1,000 such nurseries ultimately. A "daily guardian" system was also developed. The main emphasis of all institutions of this kind was on the health, feeding, play and the development of a feeling of security in the children. During 1942, a Child Care division was created in the board of education to exercise general supervision over all types of nurseries and to recruit and train teachers for them. The Child Welfare division of the ministry of health co-operated in this supervision.

For the older children already in school special measures were adopted for the care of their health and for feeding. Milk and midday meals were provided free or at cost with special attention to vitamin content and body-building foods; about 1,000,000 children were provided with meals.

The Service of Youth was further developed and expanded with the establishment of youth centres, clubs and service squads inspired by the first youth service squad organized in East Suffolk. With the registration of youth from 16 to 18 after Dec., 1941, to encourage spare-time voluntary work and training for industry, all children and adolescents were brought under educational supervision up to the age of 18. The range of activiti in which youth co-operated was constantly increasing and i addition to farm and forestry work included manning first ai and ambulance posts, air raid precaution posts, fire warden post and so on.

Full advantage was taken of the new conditions under whic school work must be carried on by evacuated children. Lack buildings and equipment stimulated teachers to develop outdo studies—geography, nature study, regional surveys and the lik Under the Camp School Act, 1939, 36 national camp schools we established and were attended in the main by pupils from 11 15; here, too, new educational interests grew up in gardenin dramatics, choirs and farm work in addition to the regular studie It was expected that this type of school would continue after th war. Disturbing as the first year of evacuation was, there wa ample evidence of improved health, physique, poise and bearin The lesson of the importance of sound health for education progress and mental security is not likely to be forgotten in th postwar period.

In no aspect of the plans for postwar reconstruction is the as clear evidence of the desire to implement the ideal of demo racy as in education. During 1942 numerous plans for educ tional reconstruction were published; chief among these were th *Green Book* of the board of education, which was not general circulated but outlines of which appeared, the *Green Book* of th National Union of Teachers, *Education, A Plan for the Futu* of the Association of Directors and Secretaries of Educatio F. H. Spencer's *Education and the People,* and *The Education* *a Community* by H. G. Stead. The chief source of informatio on most plans was *The Times Educational Supplement.* The was general consensus of opinion that the educational syste must be unified and articulated and that equality of opportuni must be provided for all children and adolescents up to 18. Nur ery schools should be provided for children from the ages of to 5, to be followed by a common primary school divided in infant school (5 to 7) and junior school (7 to 11). Seconda education is to be made available to all pupils according to the abilities in different types of schools ("modern," "gramma "technical" and "commercial") with a compulsory age limit 15 or 16 for full-time education, followed by part-time continu tion school up to 18. All types of postprimary schools are to on a parity as regards buildings, equipment, size of classes a qualifications of teachers, and fees are to be abolished in pu licly maintained schools. Private schools may be allowed continue but only under supervision by the central and local a thorities. Increased attention is to be given to health and phy cal well-being for all children up to 18, with medical inspecti and treatment and the provision of meals and clothing if nece sary. More opportunities are to be provided by means of schola ships for able students to proceed to the universities not only Great Britain but also in the dominions and the United Stat and the system of adult education is to be expanded and enriche The Service of Youth and camp schools are to be incorporat into the system. The teaching profession is to be unified, t preparation of teachers to be improved, and salaries to be pa on the basis of qualifications. Basic to the whole plan would concentration of everything relating to education in the hands the board of education as well as of local education authoriti reorganization of the local authorities themselves, and reform the system of financing education.

On the basic recommendations there was general agreeme There was no unanimity on plans for the preparation of teache while some recommended the single "multilateral" seconda school instead of a variety of schools at the postprimary lev The proposals were not as radical as might appear; they gradua erged out of discussions, surveys, and reports which began dur- World War I.

The world situation of 1942 was reflected in the movement, nulated by the board of education, to teach the history of the ited States in all schools.

To this end courses were organized for teachers and a number textbooks appeared, among them one by Professor Allan vins of Columbia university. (I. L. K.)

ucation, U.S. Office of: *see* Education.

ucation Association, National: *see* National Educa- n Association.

gs.

The goal for production of eggs in the United States in 1943 was set by the Office of Agricultural War Relations 4,780,000,000 dozen, 8% above the estimated production of 2. Military and lend-lease requirements for dried eggs in- ised substantially in 1942, and it was estimated that the ivalent of 1,220,000,000 dozen eggs would be needed to meet demand in 1943. Eggs in cold storage decreased heavily in latter part of 1942, and at the end of the year had reached lowest quantity on record, excepting the end of 1932. Shell s in storage Jan. 1, 1943, were reported as 259,000 cases of dozen each, compared to 549,000 cases Jan. 1, 1942.

condition favourable to expanded egg production in 1943 the fact that the average quality of laying stock had im- ved over that of 1942 and previous years. Approximately 82% he new laying stock hatched in 1942 was from commercial cheries, compared with the previous high record of 77%. The ch in 1942 was earlier than usual. The number of layers ally declines during the summer moulting season of low pro- tion. The low point of August, 1942, was 287,000,000 layers arm flocks. In Nov. 1942, there were 373,000,000 layers, an ease of 10% over the same period in 1941. At the same time, production in 1942 increased 17% over that of 1941 in the e period. Obstacles in the way of increased egg production at end of 1942 included the danger of larger laying flocks over- vding a number of hen houses, thereby increasing the possi- y of loss from disease and necessitating closer care of flocks. iculty in obtaining animal proteins for laying rations was ap- ent in some areas. Wholesale prices of eggs were included in OPA general freezing order of Oct. 5, 1942. Farm prices, ever, advanced, rising on an average from 37.4 cents in mid- ober to 38.9 cents in mid-November. Although permanent ngs were not established for eggs in 1942, announcement was le that they would be established later and that the price port program would raise the average of farm prices for eggs 943 at least 15% higher than in 1942. (*See* also Poultry.)

(S. O. R.)

ypt.

An independent kingdom of northeast Africa; bounded N. by the Mediterranean, S. by the Anglo-Egyptian an, N.E. by Palestine, E. by the Red sea, W. by Libya and the ara. Area *c.* 383,000 sq.mi. (arable land 13,600 sq.mi.); pop. . Dec. 31, 1939), 16,680,000. Chief towns (pop. 1937): Cairo). 1,307,422); Alexandria (682,101); Port Said (126,907); ta (94,421); Mansura (68,637); Damanhur (61,791); Assuit ,925).

uler, King Farouk I; premier, Mustapha Pasha Nahas b. 5, 1942); language, Arabic; religion, Mohammedan 91%; t 7%.

History.—The government of Hussein Pasha Sirry resigned in . 1942. The possibility of setting up in its place a national ernment to include the Wafdists was considered, but the Wafd ised to take part, and Nahas was called upon to establish a purely Wafdist government. The Wafd undoubtedly commanded the support of a very large majority of the people and Nahas was the statesman most likely to steer the country through the difficult times which inevitably lay ahead. The Wafd had boycotted the previous parliamentary elections, and Nahas insisted on the election of a new parliament. The elections were held in March and, with the Liberals and Saadists taking no part, the Wafd obtained an overwhelming majority in the chamber of deputies. The program of the new government was ambitious and comprehensive; it included on the one hand measures for improving the standard of living and on the other proposals for the increased efficiency of the army and air force. Nahas on more than one occasion after assuming office expressed his determination to uphold the Anglo-Egyptian treaty which he was himself instrumental in concluding; and while he said that he would never agree to Egypt's actively entering into the war, he made it clear that he would not tolerate interference with Britain's task in bringing the war to a successful conclusion. The government had to face serious problems concerning the internal welfare of the country, the most urgent being the rise in the cost of living and the scarcity of certain of the essentials of life. Meatless days had made their appearance some time before; difficulty in obtaining adequate supplies of grain and sugar were experienced by the poorer classes; and the prices of necessities rose alarmingly. Axis propaganda seized the opportunity to ascribe the shortage to the demands of the allied armies. The other side of the picture is shown by the fact that the British military authorities made available to the Egyptian government stocks of army grain until the harvest was reaped. The presence of the allied armies in Egypt brought money into the country, but it did not find its way to the fellahin who, of all classes, were the most seriously affected by the rise in prices. Some steps had already been taken by the government and more were projected. Of first importance was the requirement that more food crops should be grown instead of cotton; this was found to be essential in the last war but the lesson then learned was tardily applied; other measures entailed the control of exports and the regulation of prices. The temporary setbacks to the allied armies which brought the enemy to the very gates of the delta were faced without panic by the ordinary Egyptian. Nahas took the opportunity to deny that Egypt had been urged to take an active part in the war and to warn the people against subversive activities. The millenary of El Azhar university was

SOUTH AFRICAN patrol taking shelter during enemy mortar fire on the Egyptian front in 1942, before the great British offensive got under way Oct. 23

A CONSTANT WATCH over the Qattara depression was maintained by the British for four months after they retreated to El Alamein, Egypt, July 1, 1942. Although the sunken mud flats were generally considered impassable, the 8th army took no chances with a German surprise attack on its left flank

to have been celebrated in September, but the ceremony was postponed owing to the indisposition of the king. For the German invasion of Egypt and the British counterstroke, *see* WORLD WAR II.

(B. H. B.)

Education.—(1938–39): Elementary and secondary schools 4,065; scholars 1,064,209; colleges 8; scholars 1,980; Fuad I university: scholars, male 8,393; female 7,043; foreign schools (1936–37) 410; scholars 76,750.

Banking and Finance.—Revenue (1940–41) £E45,800,000; expenditure (1940–41) £E40,000,000; rev. and exp. ord. (est. 1941–42) £E46,000,000; public debt (May 1, 1940) £E93,988,100; notes in circulation (Dec. 31, 1941) £E50,700,000; gold reserve (Dec. 31, 1941) £E6,300,000; foreign assets reserve £E51,100,000; exchange rate (£E1 = 100 piastres): (average 1941) £E1 = 413.5 U.S. cents; (Aug. 1942) £E1 = 413.8 U.S. cents.

Trade and Communication.—External trade (merchandise): imports (1940) £E31,600,000; exports (1940) £E62,000,000. Communications and transport, 1938: roads, main 1,240 mi.; secondary 3,430 mi.; railways (1939), state 3,550 mi.; agricultural 879 mi.; shipping (1939) 110,000 tons gross; entered ports 35,390,325 tons gross; passed through Suez canal 25,827,977 tons gross; motor vehicles licensed (Dec. 31, 1938): cars 29,382; commercial 4,074; cycles 2,051; wireless receiving set licences (Dec. 31, 1938) 78,823; telephone instruments in use (April 30, 1938) 59,922.

Aerial Navigation (1938)

	Misr Airways Company	Imperial Airways Ltd.	"K.L.M." Royal Dutch Air Lines
Passengers	18,559	6,056	2,450
Freight and baggage (Kg.)	63,828	114,189	45,140
Mails (Kg.)	16,435	1,482,130	131,851
Miles flown	1,011,104	6,967,935	2,795,180
Regularity of service	98.1%	99.9%	98.2%

Agriculture and Minerals.—Production (1940) (in metric tons): cotton, ginned 412,000; maize 1,529,500; wheat 1,360,600; rice 659,800; petroleum 929,000; natural phosphates 183,000; cane sugar, refined 174,000; barley 241,100; ground-nuts 16,300. (*See* also ANGLO-EGYPTIAN SUDAN.)

Eire.

Eire is the southern portion of an island to the west Great Britain, extending from 51° 26′ to 51° 21′ and from 5° 25′ to 10° 30′ W. Under the constitution, opera since Dec. 29, 1937, the name "Irish Free State" given by treaty of 1921 to the 26 counties and four of the county borou of southern Ireland, was replaced by that of "Eire", or Irela President: Dr. Douglas Hyde (*de h-Ide*). National flag: the colour of green, white and orange.

Area and Population.—Area 26,601 sq.mi.; pop. (est. J 30, 1942) 2,963,000. Chief towns (pop. register 1941): Du (cap., 489,276); Cork (76,758); Limerick (42,522); Dun La haire (41,924); Waterford (28,481). Languages: Irish and F lish; religion: Christian (Roman Catholic 93%).

History.—Inevitably the year 1942 was one of increasing nomic stringency. Already in Oct. 1941 a national register rationing purposes had been compiled. By the new year it become plain that the wheat supply was insufficient, and on 7, 1942, Sean Lemass, minister for industry, commerce and plies, announced that it would be necessary to import 80 tons. During the next month 12 ships were bought or charte by Irish Shipping Ltd., with the result that by June the br situation had eased considerably. In February, after some ag tion, the price of home-grown wheat for the 1942 season raised from £45 to £52 a barrel; this was possible only by me of a subsidy of more than £800,000 to keep bread prices do In April it was found necessary to compel 100% milling of wheat. Butter supplies were also low because of increased sumption owing to shortage of other fats. In February r deliveries were cut by 12½% and by autumn the price of to farmers had to be raised to 9*d.* a gallon in order to en production. There were many other restrictions such as those paper and electricity, but the most serious crises arose over g line and clothing. On May 1 all private motoring was forbid and the use of motors by doctors and clergymen severely stricted. On June 9 a clothes-rationing order caused a dra demonstration strike in Dublin. The coupon system thus ina rated was extended in October to soap. Severe measures taken against the black market, and a bill was passed impo minimum fines. In spite of all this, and especially of a chr difficulty over transport, conditions continued fairly easy, there was a record internal tourist traffic during the summer

internal politics the most striking event was the resignation
James Dillon, on Feb. 19, from the vice-presidency of Fine
l, the chief opposition party. This followed a speech to the
y's annual congress in which he deplored the fact that Eire
not fighting with the Allies. William Cosgrave and other
ers at once reiterated their adhesion to the government's
rality policy, which had been several times re-stated by Prime
ister De Valera, notably on the entry of the United States
the war and in a Christmas Eve broadcast to the U.S.A. On
27 the Taoiseach declared that his government had not been
ulted about the dispatch of U.S. troops to Northern Ireland.
ing January and February there was much discussion about
trial of four I.R.A. members for the murder of a man named
ereux. One of these, named Plant, was executed on March 5;
were sentenced to penal servitude for life. I.R.A. activity
seemed to lessen, as far as Eire was concerned, until Sep-
per, when a detective named O'Brien was shot as he left his
e in Rathfarnham.

gislative measures were few during the year; the chief were
ct to provide for the conduct of the referendum on constitu-
al issues, and an act establishing a central bank, which was
ted from March to October. Municipal and local elections,
in August, indicated a severe decline in the strength of the
rnment party. (M. T.)

lucation.—In 1940–41: elementary schools 5,076; scholars
245; secondary schools 352; scholars 38,713; universities:
onal, 4,039 students; Trinity college, Dublin, 1,391.

nking and Finance.—Revenue, ordinary (1941–42) £36,-
oo; expenditure, ordinary (1941–42) £40,625,000; public
(March 31, 1942) total £55,684,675; notes in circulation
t. 1942) £25,775,658; reserve, gold (March 31, 1942)
1,685; reserve, British government securities £14,812,887;
ange rate (1942) £1=$4.035 U.S.

ade and Communication.—Foreign trade (merchandise):
rts (1941) £29,500,000; exports and re-exports (1941) £31,-
oo; roads, main (1940–41) 10,000 mi.; secondary 39,000
railways, total track mileage (1941) 2,492 mi.; shipping
1): vessels 505; net tonnage 37,272; motor vehicles licensed
. 1942): private cars 7,991; other vehicles 23,508; wireless
ving set licences (1940–41) 183,578; telephones, installations
o–41) 27,870.

griculture, Manufacturing, Mineral Production.—Produc-
1941 (in metric tons): oats 695,400; wheat 442,400; pota-
3,748,600; barley 145,200; beet sugar 97,000; coal 155,000;
7,421. Livestock, number (June 1, 1940): cattle 4,023,027;
3,070,588; pigs 1,049,089. Agriculture and fisheries, net
ut (1940–41) £55,048,000. Number of insured workers
o–41), average 440,756; number of unemployed, average
1) 74,656; (July 31, 1942) 55,000.

nhower, Dwight D. (1890–), U.S. army officer,
was born Oct. 14 at Denison,
He was admitted to West Point, graduating in 1915, and
g World War I was an instructor at several U.S. army
s. After graduating from the Army War college, he served
e office of the chief of staff in Washington. In 1935, he went
e Philippines as Gen. MacArthur's chief of staff and helped
the commonwealth's defenses. Chief of staff during the
army manoeuvres in Louisiana, he was later moved to
ington as chief of the general staff operations division. In
1942, Gen. Eisenhower was given command of the newly-
lished U.S. headquarters in England for the European the-
of operations and was promoted to the rank of lieutenant
al. On Nov. 8, 1942, he led a huge force of U.S. troops
h landed in French North Africa. Even as his troops were
swarming ashore, Gen. Eisenhower appealed in a broadcast to the French armed forces to co-operate with his armies in ousting the Germans and Italians from Africa. He subsequently concluded a politico-military arrangement with Adm. Jean Darlan to join the Allied cause. This deal was credited with having saved many American lives in the African invasion, but was also criticized as a short-sighted policy which discouraged the pro-democratic underground factions throughout conquered Europe.

Elections. The mid-term elections of Nov. 3, 1942, the first wartime national elections held in the United States since 1918, gave the Republican party a substantial increase in its representation in congress and the states. In the gubernatorial contests, the Republicans scored a net gain of 3, raising to 23 the number of Republican governors. In the senate, they won 9 additional seats, with no losses, and in the house they achieved a total of 209 seats, only 9 short of a majority of that body. The political subdivisions of the new congress, the 78th, were as follows: senate, 57 Democrats, 38 Republicans and 1 Progressive; house, 222 Democrats, 209 Republicans, 2 Progressives, 1 Farmer Labor and 1 American Labor.

Quantitatively, the Republican victories were greater than those registered in the wartime elections of 1918, when the party gained 21 house and 6 senate seats, and gave the Republicans their largest representation in the national legislature since the 72nd congress (1931–33).

Since candidates of both parties supported the national war program, the election results were to be interpreted as reflecting popular dissatisfaction with the administration's conduct of the war, and certain of its policies on the home front, rather than as a vote of protest against the entrance of the United States

THOMAS E. DEWEY visiting a county fair in New York during his campaign for the governorship of the state in 1942. He was elected by a plurality of more than 600,000 on Nov. 3, 1942

WORLD PROBLEM NO 1 --- MY POLITICAL JOB AND POWER
UNWORTHY POLITICIANS AND BUREAUCRATS
TIME FOR YOU TO GET TOUGH TOO !!
US
COMPLACENT VOTERS
Keith Temple

"CALL FOR ACTION ON THE HOME FRONT!" A plea by Temple of the *Times-Picayune* (New Orleans) to turn out politicians who in 1942 placed selfish interests above national safety

into the global struggle to defeat the axis. Among the factors contributing to the Republican gains were: (1) resentment of many voters over rationing, and restrictions on the sale of gasoline; (2) dissatisfaction with the progress of the war; (3) resentment of farmers in the midwest, where the Republicans won their biggest gains, over the efforts of the administration to keep farm labour costs out of the farm parity price formula; (4) a widespread feeling that the administration had shown too much favouritism toward organized labour; and (5) a protest against government regimentation and the expanding federal bureaucracy.

Though these factors explained the trend away from the party in power, the influence of personalities and local issues played an important part in determining the outcome in many individual contests.

The Governors.—Including the Maine election on Sept. 14, in which Sumner Sewall, Republican, was re-elected governor by a majority of approximately 58,000, there were 33 gubernatorial contests in 1942. Of these the Republicans won 18, the Democrats 14 and the Progressives 1. This one was in Wisconsin, where Julius Peter Heil, Republican, was defeated by Orland S. Loomis. The other Republican loss was in Wyoming. Republican governors displaced Democrats in five states—New York, California, Michigan, Connecticut and Idaho. Republican governors were re-elected, or succeeded other Republicans in New Hampshire, Vermont, Massachusetts, Pennsylvania, Ohio, Minnesota, South Dakota, Iowa, Nebraska, Kansas, Colorado and Oregon. Democratic governors were elected in six southern states, and in Arizona, New Mexico, Nevada, North Dakota, Oklahoma, Maryland and Rhode Island.

In point of national interest, the most important gubernatorial race of the year was that in New York state, where Thomas E. Dewey, Republican, defeated the Democratic candidate, Attorney-General John J. Bennett, Jr., by a plurality of about 630,000, thereby becoming the first Republican governor elected in th state in 20 years. The Republicans made a clean sweep of th state elections, winning majorities in both houses of the legisl ture. Dean Alfange, gubernatorial candidate of the America Labor party polled more than 400,000 votes. Lieutenant Govern Charles Poletti, Democrat. who also had the nomination of th American Labor party, failed of re-election by only 54,000 vote running 600,000 votes ahead of Bennett, the Democratic cand date for governor.

Other important gubernatorial contests were in Connecticu where former Governor Raymond E. Baldwin defeated the Dem cratic incumbent Robert Hurley; in California, where Ea Warren, Republican, was elected by a plurality of about 260,0 over Governor Culbert L. Olson, and in Michigan, where Har L. Kelly defeated Democratic Governor Murray D. Van Wagon by a margin of about 68,000. Three Republican governors we elected for third terms—Leverett Saltonstall of Massachusett Harold E. Stassen of Minnesota and John W. Bricker of Ohi

Though Governor Julius P. Heil, Republican of Wisconsin, w defeated for re-election by a Progressive, Orland S. Loomis, 109,000 votes, the state elected a Republican legislature. Loom died soon after his victory at the polls. His death was a bl to the Progressives in Wisconsin, who had not won a state-wi election, with the exception of the re-election of Senator Robe La Follette in 1940, since 1936, when Philip La Follette w elected governor. The vacancy caused by Loomis's death was fill by the Republican lieutenant governor, Walter S. Goodlan under a ruling made by the state supreme court on Dec. 29.

The Senate.—Thirty-six senatorial elections were held 1942. One of these, the Maine election in September, result in the re-election of a Republican, and three others (in Colorad Minnesota and West Virginia) for unexpired terms, were al won by the Republicans. Of the 32 elections for full six-ye terms, the Democrats and Republicans each won 16.

Among the more important Republican senatorial victor were those of Kenneth Wherry over the veteran Senator Geor W. Norris, Independent in Nebraska; of Chapman Revercor over Governor Matthew M. Neely in West Virginia; of Edwa H. Moore over Senator Joshua Lee in Oklahoma; of Hom Ferguson over Senator Prentiss M. Brown in Michigan, a Senator Henry Cabot Lodge over Representative Joseph E. Cas in Massachusetts. In New Jersey, the Hague machine suffere reverse in the election of Albert W. Hawkes, Republican, o Senator William H. Smathers, Democrat. West Virginia a Oklahoma both elected Republican senators for the first ti since 1928. Charles L. McNary of Oregon, Republican sen leader, was returned in the only senatorial election held in Pacific coast states.

Outside the solid south the Democrats elected their senator candidates in Colorado, Rhode Island, Montana, New Mexi Nevada, Tennessee and Kentucky.

The House.—In the elections for the house, Republican can dates made a gross gain of 49 seats, displacing Democrats in contests, and a Progressive in 1, winning 3 additional seats new districts created as a result of reapportionment. Democr displaced Republicans in 5 contests and the Republicans another seat in Illinois through the elimination of a district large, giving them a net gain of 43 seats.

The Votes.—The total vote in the house contests, accord to an estimate made by the Associated Press on Dec. 24, foll ing a tabulation of final official figures, was only 28,111,583, smallest in any national election in 22 years, and nearly 22,0 000 less than in 1940. The total of the highest vote in each st whether for senator, governor or representative at large, or combined district votes for representatives, was 30,024,927, lest since the 1924 presidential contest.

the congressional vote, the Republicans polled 14,217,320, .6%; the Democrats polled 13,331,245, or 47.4%, and other es 563,018, or 2%.

the last off-year elections, in 1938, the Republicans re- d 47.3% of the total votes cast, 36,203,133, as compared 49% for the Democrats, other parties polling 3.7%. In 1940 Republicans received 44.8% of the total as against 54.7% he Democrats, and 0.3% for other parties.

e Republicans polled 54.7% of their 1942 congressional vote midwestern states—Illinois, Indiana, Iowa, Kansas, Michi- Minnesota, Missouri, Nebraska, North Dakota, Ohio, South ota and Wisconsin. These states provided nearly half of the ublican house victories—103 out of 209. The Republicans d 23 seats in this region over 1938 while the Democrats 29. In 1942 this area sent only 25 Democrats to the house. the east, the Republicans elected 79 house members, com- l with 74 in 1938; the Democrats 53, as compared with 61. e far west the Republicans won 23 seats, as compared with 1938, and the Democrats 26, against 34.

tside the solid south, the Democrats won a majority of the ressional vote in 10 states—Arizona, Kentucky, Maryland, tana, Nevada, New Mexico, Oklahoma, Rhode Island, Utah Washington.

e Primaries.—The primary elections held earlier in the year led no clear-cut political trend. For the most part, local, r than national issues decided the outcome of these con- Nor was there any evidence that a record of pre-Pearl or noninterventionism operated as a serious obstacle to sentatives and senators of either major party in seeking re- nation. Representative Hamilton Fish, Republican, a lead- ritic of the administration's foreign policies, who was op- l both by Wendell L. Willkie and Thomas E. Dewey, won nination in the 26th New York district (President Roose- district) by a 2 to 1 majority. Other noninterventionists won their primary battles included Senator John W. Thomas, ocrat of Idaho; Representative John M. Vorys, Republican io, and Representatives William B. Barry, James A. O'Leary Martin J. Kennedy, Democrats of New York.

ong the noninterventionists defeated in the primaries were or William J. Bulow, Democrat of South Dakota, and Rep- tative Martin L. Sweeney of Ohio. Three Democratic sena- 15 Democratic and 7 Republican representatives were de- d in the 1942 primaries.

e comparatively small vote cast in the 1942 elections might tributed principally to three factors: First, the absence in rmed forces, many of them overseas, of 5,000,000 or more of voting age; second, the migration from their home states illions of workers in war industries; third, the preoccupation large portion of the electorate with their war jobs, and a ting apathy or indifference toward domestic political con-

e total vote polled by the Republicans in the house con- was 8,000,000 less than in 1940, and nearly 3,000,000 less in 1938, the last off-election year. The Democrats suffered greater losses, a drop of 14,000,000 votes from 1940, and y 4,500,000 less than their 1938 total. In the light of these es, defections from the Democratic party, rather than an ab- e increase of popular support for Republican candidates ed to explain the results of the 1942 voting. (O. McK.)

ctrical Industries.

In spite of numerous predictions of impending power shortages the 1942 was plainly one of growth deceleration for the electrical stry in the U.S. As the war changed the internal economy of the nation the effect was apparent in the use of current. The production of electricity in 1942 amounted to 188,500,000,000 kw.hr., an increase of 20,000,000,000 or 12%. The previous year, however, the output had increased 23,000,000,000 or 16½%.

Thirty per cent of this increase came from government-owned systems, although their total output was but 14.3% of the aggregate for the country. Gradually these publicly owned systems (municipal and federal) were becoming a larger part of the nation's utility industry. In 1941 their ratio to the total output was 13.2%.

In spite of the increasing deficiency of power supply in Canada, imports to the United States increased 50% to 1,500,000,000 kw.hr.

Two-thirds of the 1942 production or 125,300,000,000 kw.hr. were produced for fuel but only 40% of the increase came from fuel. Hydro, which supplied 60% of the increase, generated 63,200,000,000 kw.hr. The difference was large only because hydro was down so far in the previous year due to the unprecedented drought along the eastern seaboard.

The year showed a continuation of the improvement in efficiency which started seven years previously. Losses which previously used to run at the rate of one in every six kw.hr. generated were down to less than one in seven.

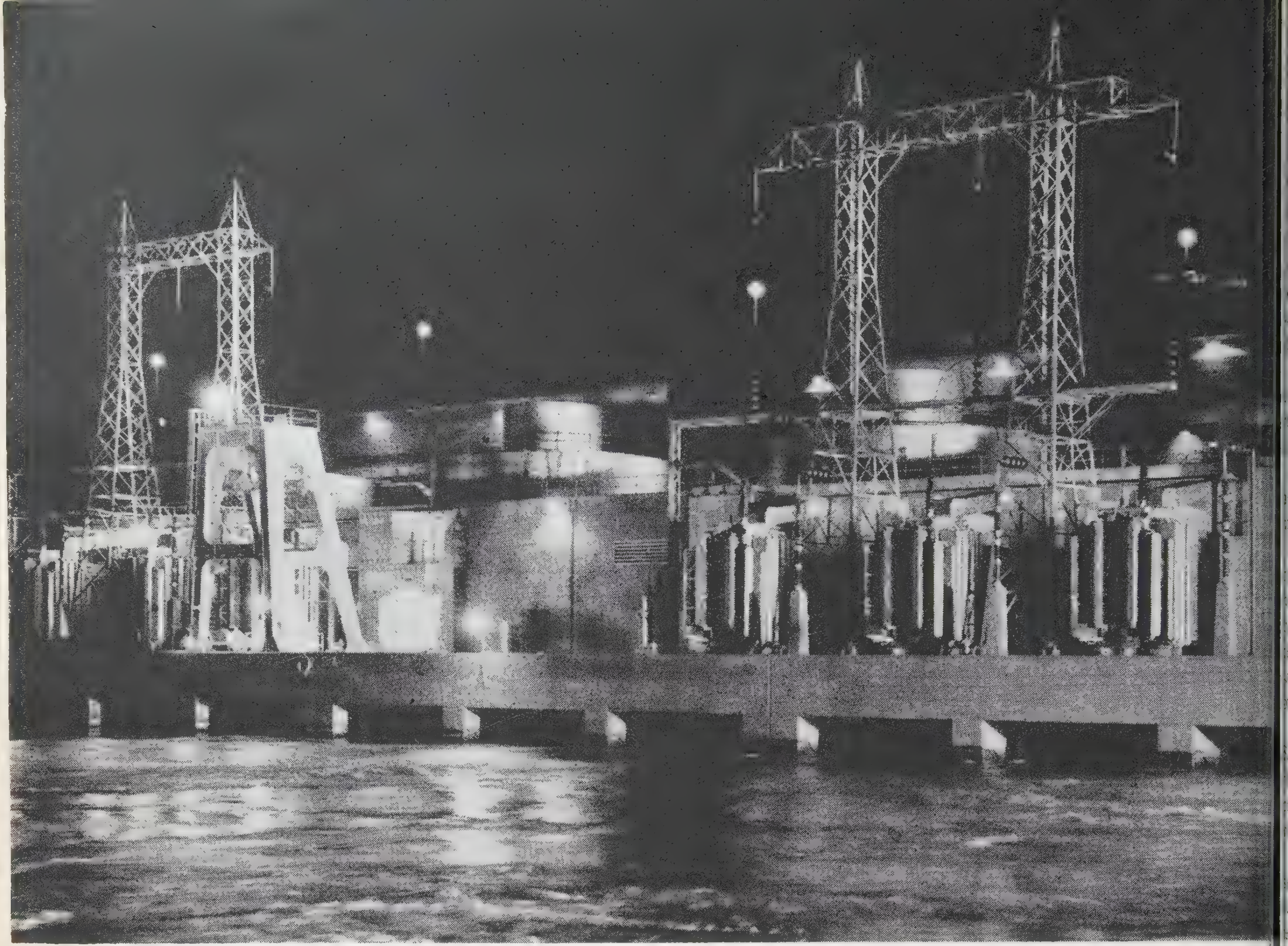
Generating capacity increased 2,700,000 kw. to a national total of 46,812,000 kw., of which fuel accounted for 33,538,000 kw. or 71.7% and water 13,274,000 kw. or 29.3%. This was a new high for hydro ratio and reflected the federal hydro construction program.

Of the total capacity of the country, 38,716,000 kw., or 82.8% was privately owned against 84.2% the year before; government owned was 8,096,000 kw. or 17.2% against 15.8% in 1941. Ten years ago the government owned aggregate was 2,423,000 kw. or but 6.7% of the total.

Of the new generating capacity added in 1942, 1,658,000 kw. was for privately owned companies and 1,125,000 kw. for government owned. This was the third largest annual addition in the history of the industry.

Due to the round-the-clock operation of war plants, the utility load factor improved during the year. On the average each kilo-

TESTING a 600-watt aeroplane headlight developed in 1942 to illuminate runways during landings on blacked-out fields



WATER rushing from the draught tubes of Wheeler dam, near Florence, Ala., in the Tennessee Valley Project area. The generating capacity of the TVA system was increased by 50% in 1942 to supply electrical power to U.S. war industries

watt of capacity was used 4,147 hr. This was the first time that 4,000 hr. was exceeded. Fuel generation was used 3,834 hr. and hydro just missed 5,000 hr., going to 4,949 hr. Just the increase in the load factor was responsible for half the increased output.

The increased use of hydro power brought a greater improvement in fuel economy because a lessened necessity to use old and inefficient steam stand-by units. The coal consumption per kilowatt-hour dropped three points in 1942 to 1.31 lb.

In excess of 68,000,000 tons of coal were used, 16,600,000 bbl. of oil and 228,500,000,000 cu.ft. of gas. As a result of conversion from oil to coal burning the utilities used 3,666,666 bbl. of oil less, or nearly 20%.

The utilities met their December peak with 110 days' supply of coal in storage—the largest storage ever carried. Normally about half this number of days' supply was sufficient.

Water storage was good all over the United States and for municipal and power and industrial use was around 80% greater than it was in 1941.

The sum of the non-coincident December peaks equalled 33,357,585 kw., an increase during 1942 of 1,800,000 kw. or 5.66%. The increase in peak the previous year, however, was twice as great, or nearly 13% again, indicating a deceleration of growth.

The reserve based on dependable capacity as defined by Federal Power commission was 209 kw. per 1,000. In Dec. 1941, it was 183 kw. Dependable capacity in Dec. 1942 was 6,500,000 kw. less than total installed capacity. This gives an extra reserve except under the most unusual circumstances of nearly 20%, making 40% in all.

Sales to ultimate consumers reached a total of 158,800,000 kw.hr., made up as follows: rural, 2,900,000,000; residential, 000,000,000; small light and power, 27,350,000,000; large and power, 88,000,000,000; street and highway, 2,000,000, electric railways, 4,200,000,000; electrified railroads, 2,400, 000; municipal and miscellaneous, 4,950,000,000.

The large light and power which is largely the heavy indu increased usage but 8,000,000,000 kw.hr. against 16,500,000 in 1941. This further indication of decelerated growth bore the statements from WPB that the war production industries about finished their expansion program.

Residential usage continued to grow, in spite of curtailed m facture and sales of appliances due, of course, to the energy by the record-breaking sales in 1941, the comparative usag fects of which were not felt until 1942. Incidentally, ave residential usage exceeded 1,000 hours in 1942 for the first tim

Small light and power continued to show improved growt spite of the heavy mortality among retail stores. The reason in the fact that this group contained large numbers of smal dustrials which had converted and gone to longer hours.

The effect of tire and gasoline rationing was seen in the pi in usage by street railways, a market which had gradually decreasing for years. Decreased consumption by street and way lighting of some 5% was due to year-round war time ar dimouts.

Revenues were up 7.6% to $2,850,000,000 but again sh the deceleration in growth previously mentioned. In spite o greater war production load, the relative position of other changed little during the year, so that, in general, the rev position was not greatly affected.

The revenue per kilowatt-hour used in residences again went wn this time by .06 cents to 3.67 cents.

Expenses decelerated in every department except taxes which reased by $124,000,000 to 24.1 cents per dollar of revenue. perating ratio before taxes was but slightly larger than in 1941 38.6 against 38.4—but after taxes the ratio was 62.6 against .9 for the previous year. Salaries and wages were 12.6 cents r dollar of revenue against 14.9 cents in 1941; maintenance and neral operating expenses were up 2.1 cents, fuel up 0.4 cent d miscellaneous 0.2 cent. Dividends and surplus fell from 18.3 14.1 cents.

The number of customers at the end of 1942 showed an in-ease of over 600,000. Of these, 116,000 were rural and 590,000 sidential customers; commercial and industrial showed losses of arly 100,000 due to the restrictions of civilian economy.

At the end of 1942 there were 32,215,888 customers classified follows: Rural, 1,102,892; residential, 26,616,400; commercial d industrial, 4,372,657 and others 123,939.

The Rural Electrification administration reported a total of 10,000 consumers connected to the lines of co-operatives. It d 797 systems in operation with a total of 378,000 miles of es and 60 generating plants totalling 57,500 kw. These sys-ns generated 130,000,000 kw.hr. and purchased 1,300,000,000 .hr. They sold 1,140,000,000 kw.hr. for $47,200,000. The rchased energy cost $11,530,000, or just under 9 mills per kw.hr.

Capital expenditures for privately owned utilities only were 74,000,000 or about three-quarters of the amount budgeted at beginning of the year. For 1943 the budget for the private mpanies was down to $270,000,000. Of this amount, one half s allocated to generation.

In spite of the reduced capital expenditures, approximately the me amount of new capital was sold as in each of the two pre-ous years, just under $100,000,000. Refunding sales fell off to s than half, leaving the year's financial operations at $351,-0,000, the lowest since 1934.

Output of electrical manufacturers in 1942 was up 50% against 19% increase in the Federal Reserve Board Index of general lustry production. The total for the year is estimated to have ached $7,000,000,000. Production index reached 46.1 (1925=0) and orders received index went up to 529, an increase of arly 60%.

Sales of industrial apparatus were greater by 52%, transmis-n and distribution equipment by 23% and insulated wire and ble by 5%. Because appliance production was halted early in e year no production figures are available for this class of ma-rial. Inventories were up to 300 (December 1938=100); ship-ents at the end of the year had passed the 300 index mark for e first time.

The year saw few developments of any note in new devices or uipments. Old equipment was salvaged and substitutes used herever needed. Wood replaced steel for line construction, steel placed copper for some lines. Silver (100,000 tons of it) was ed in place of copper for bus bars in government war plants. y employing cooling methods of one kind or another equipments nerally were run at higher than rated loads.

Commercial activities were confined to helping the customer ercome war difficulties. Meters were more and more read on e bi- or tri-monthly plan and more and more billings were ade bi-monthly.

War Production board limitations further restricted the use of aterial for extensions. Order L-94 defined the operations re-uired if and when a power shortage area developed. Utilities arted regional integration through power pools, thereby adding over 1,000,000 kw. of reserve power to dependable capacity.

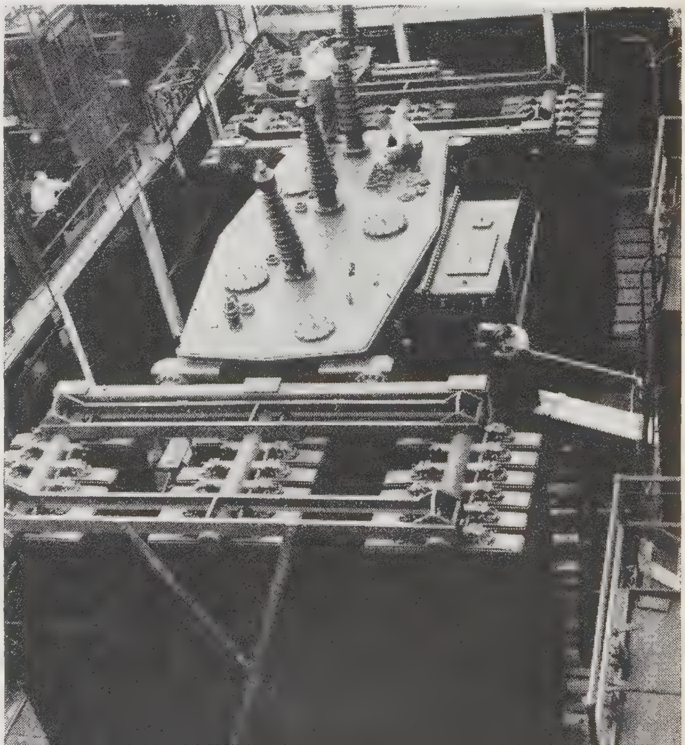
The operations of the Holding Company act were evident in a large number of split-offs from the parent company. Some of these were purchased with public funds, REA buying a number of the smaller operations, but a good many were taken by neighbouring utilities.

There was considerable new rate regulation but not many rate changes. Prudent investment got a good start as the result of the supreme court ruling modifying the fair value theory. OPA established its right to intervene in rate-raise cases.

Lighting.—Due to restrictions on the use of materials, all lighting activity not directly related to the war effort was greatly reduced or discontinued. Except for rulings in dimout areas and some municipal efforts to save money spent on street lighting there was no order reducing the amount of civilian lighting. Industrial lighting, on the other hand, went forward rapidly, both in the lighting of new war plants and in the relighting of converted factories. During 1941 and 1942 more than 1,200 installations of 50 ft.-candles and over were reported.

Studies were made of industrial lighting maintenance which gave an operating figure of 66% of initial ft.-candles. The large areas worked on in some war plants gave rise to problems of vertical lighting. One of the solutions was white cement floors which gave an increase in vertical illumination over gray cement of 20%. Fluorescent lighting continued to show large acceptance with a trend toward mercury and combination systems for high bays. Some new circuits for fluorescent lighting were brought out to reduce the amount of material used. Rectified fluorescent, because of greater use of material, was dropped for the duration. Restrictions in the use of steel for fluorescent fixtures gave rise to the use of non-metallic painted reflectors. No street lighting extensions were permitted except to war plants and camps. The double-ended rotating airway beacon was replaced by an all-glass prismatic globe. Lumiline stocks were frozen and many types of lamps were redesigned to save materials. Photoflash lamps were further simplified.

Because of industrial use, the 100-watt fluorescent lamp showed the greatest increase in sales but the 40-watt size still leads at approximately 60% of the total. Life of the 100-watt lamp was increased from 2,500 to 3,000 hours. Progress was made in improving colour uniformity, reducing blackening and eliminating



ANT 257-TON TRANSFORMER built in 1942 at Sharon, Pa., for a U.S. war ant brown rings.

Several new lamps were introduced as the result of the war. The most significant was the blackout lamp to provide starlight values, a 14-watt lamp for indoors and a 9-watt lamp for outdoors. With them went blackout lighting units also. There were no new lamps for the dimout but collars were devised to further shield street lamps and specifications set up limiting the amount of light that would shine out from show windows. To measure these low values of illumination down as far as 0.000005 foot lambert new low brightness meters were devised.

Several new units and lamps were designed for aviation service both for the fields and the machines. A large bomber, for instance, was to employ 24 different types of lamps for a total of over 100 units.

Blackouts gave rise to an improved red photo flash lamp while rough manufacturing such as shipbuilding caused a rough service lamp to be designed.

A number of new designs of lighting systems were being tried out as the year was closing, including 406-volt series street lighting for interiors and totally indirect for high bay industrials. Cold cathode lighting appeared to be increasing in number of installations and some improvement in new incandescent installations was noted. (*See* also CENSUS, 1940; PUBLIC UTILITIES.)

BIBLIOGRAPHY.—*Electrical World;* Edison Electric Institute; Federal Power Commission; Rural Electrification Administration; Illuminating Engineering Society; National Electrical Manufacturers Association; War Production Board; Bituminous Coal Division, Department of Interior; United States Geological Survey. (S. B. W.)

Electric Lighting: *see* ELECTRICAL INDUSTRIES.
Electric Transmission and Distribution: *see* ELECTRICAL INDUSTRIES.

Electric Transportation.

All forms of electric transportation in the United States and Canada were greatly affected by the World War in 1942. The effects, however, were quite different for the four major types of service. The electrified trunk line railroads experienced greatly increased traffic, but were not able to make any extensions of their trackage, nor any important additions to their equipment, as material was not available for such purposes. The subway and elevated rapid transit lines experienced few changes in their operations. No additional trackage was placed in service, and no great change occurred in the volume of riding. Some elevated railway lines which were no longer in use were demolished in order to obtain steel for war purposes. The street and interurban electric railways had large increases in riding due to the decreased use of private automobiles. There were some extensions of trackage and some new equipment was put in service, but, in general, the effect of the war was to cause more intensive use of existing track and equipment. Electric trolley bus operation, which had been expanding steadily before 1942, remained almost stationary, the principal change being a moderate increase in patronage. Because of the war, accurate information was not available concerning electric transportation developments outside of the Unite States and Canada.

Table I.—*Electric Transportation Equipment as of Jan. 1, 1942*

Population of Cities	Passenger Cars			Trolley Buses
	Surface Railways	Rapid Transit	Suburban Railroads	
Over 500,000	16,636	9,865	..	711
100,000 to 500,000	5,931	..	..	2,121
25,000 to 100,000	1,125	..	..	207
10,000 to 25,000	188	..	..	..
Suburban areas	1,525	..	2,725	..
Total for United States	25,405	9,865	2,725	3,039
U. S. possessions	71	..	..	30
Canada	3,360	..	..	29
Grand total	28,836	9,865	2,725	3,098

Table II.—*Track and Trolley Bus Route of Electric Transportation Lines as of Jan. 1, 1942*

Population of Cities	Miles of Electric Track			Miles of Route
	Surface Railways	Rapid Transit	Suburban Railroads	Trolley Buses
Over 500,000	6,134	1,217	..	293
100,000 to 500,000	3,314	..	..	1,601
25,000 to 100,000	1,150	..	..	195
10,000 to 25,000	384	..	..	..
Suburban areas	4,231	..	4,074	..
Total for United States	15,213	1,217	4,074	2,089
U. S. possessions	34	..	..	16
Canada	1,747	..	..	16
Grand total	16,994	1,217	4,074	2,121

Regulation.—Government regulation of transportation was e tended to an unprecedented extent in 1942. The Office of Defens Transportation, created by President Roosevelt in 1941, wa given authority over all forms of rail, highway and inland wate way transportation in the country. Previously the Intersta Commerce commission had exercised authority over comm carriers operating in interstate commerce, but the ODT was give far wider powers, including private as well as public transportation, and intrastate as well as interstate operations. Early in th year a special department of ODT was created with the designation of division of local transport. In Canada the Office of Trans Controller was given powers generally similar to those of th local transport division of ODT in the United States. Both offic followed policies of a generally similar character.

Table III.—*Passengers Carried in 1941*

Population of Cities	Electric Surface Railways	Rapid Transit Railways	Electrified Suburban Railroads	Trolley Buses
Over 500,000	4,503,350,000	2,296,292,000	..	183,700,00
100,000 to 500,000	1,122,740,000	..	..	402,140,00
25,000 to 100,000	170,617,000	..	..	30,800,00
10,000 to 25,000	28,500,000	..	..	..
Suburban areas	346,591,000	..	164,863,000	..
Total for United States	6,171,798,000	2,296,292,000	164,863,000	616,640,00

Statistics for electrified trunk line railroads are not available for presentation in th form.

The basic reason for the establishment of governmental contr over local transportation was the shortage of rubber for autom bile tires and the consequent necessity for the adoption of a ne philosophy among people who had become accustomed to us automobiles widely for both pleasure and business travel. A pr gram sponsored by ODT included the following major points: (1 encouragement of walking instead of riding; (2) use of publ transportation wherever possible; (3) establishment of stagger hours for factories, offices and schools to permit public trans facilities to handle a larger number of passengers; and (4) form tion of share-the-ride groups to utilize private autos more effe tively where public transportation was not available.

This program had a far-reaching influence on electric tran portation. Many people who had previously used private autom biles shifted to street cars and rapid transit. The trend which ha formerly existed toward the substitution of motor buses in pla of electric rail cars was halted, and in some instances even r versed. Hundreds of electric rail cars which had been in storag for years were overhauled and put back in service. A substanti mileage of track on which electric railway service had been su pended was restored to operation. Change-overs from electr railway to bus operation were forbidden by ODT for the durati of the war.

Traffic Trends.—Paralleling the ODT program was the esta lishment of gasoline rationing for automotive vehicles. This wa done on the eastern seaboard in May and throughout the United States in December.

The result was a further shift from private to public transportation.

The best available figures indicate that the transit industry in the United States carried about 19,000,000,000 passengers in 1942 as compared with 14,333,000,000 in 1941, an increase of approximately 30%. This represented an all-time-high peak for the industry, the biggest previous year having been 1927 when about 16,000,000,000 passengers were carried. Some localities experienced increases far greater than the average, and some had smaller increases. Generally speaking the surface electric railways gained in about the same ratio as the transit industry as a whole, or from about 6,000,000,000 to nearly 8,000,000,000. This, however, was considerably below 1923, the peak year of street car riding, when more than 13,000,000,000 passengers were carried. Rapid transit lines and electrified suburban railroads experienced moderate increases in riding.

Reports from transit operating companies all over the United States and Canada present a statistical picture of electric transportation at the beginning of 1942 as shown in the tables on page 262.

Route and Equipment.—The general effect of war conditions was to "freeze" the status of electric transportation route mileage and equipment throughout the year 1942. A few minor route extensions were made, as well as a few minor abandonments, but the mileage involved was a negligible part of the total. Changes in the amount of equipment owned were also of small extent. In line with its policy of encouraging greater use of public transportation facilities the Office of Defense Transportation recommended the construction of 800 new street cars and 600 new trolley buses in 1942. The War Production board, however, ruled that sufficient materials were not available, and authorization was given only for the construction of 357 new street cars and 450 trolley buses. This was no more than a normal year's increase in equipment. No new rapid transit cars were built during the year, nor new equipment for electrified railroads.

Despite the relatively small increase in the number of vehicles, the transit companies operating electric transportation were able to augment their service substantially by making more intensive use of their existing equipment, and particularly by reconditioning cars that were on hand.

Exact figures were not available to show how many of the older cars were restored to service, but the number certainly was large. (J. A. Mi.)

Electrification, Rural: *see* Rural Electrification.
Electron Microscope: *see* Photography.
Elementary Education: *see* Education.

Elias, Alois

(1890–1942), Czech general and premier of the protectorate of Bohemia-Moravia, a cabinet member in the last years of the republic, was appointed premier and interior minister of the protectorate in April 1939. His efforts to keep the Czechs in line with German regulations did not satisfy the nazis as being thorough or effective, and his duties were restricted and authority limited. Likewise, his attempts to effect a compromise on anti-Semitic legislation earned General Elias the distrust of the Germans. He met with equal disfavour among his own anti-nazi Czech people who considered him a nazi tool. When in Sept. 1941, German authorities announced a state of emergency in Bohemia-Moravia, they revealed that Elias had been arrested and sentenced to death for treason. A London dispatch of June 20 said his execution was reported in a German radio broadcast.

Elliott, John Lovejoy

(1868–1942), U.S. educator, was born Dec. 2 in Princeton, Ill. He was graduated from Cornell in 1892 and received his Ph.D. from the University of Halle, Germany, in 1894. He taught ethics in the New York Ethical Culture school after 1894 and was elected senior leader of the Ethical Culture society in 1933. He founded in 1895 the Hudson Guild in New York city, a recreation centre for thousands of young people. He devoted the major part of his career to welfare work among the poor and fought for better housing and public health facilities. Dr. Elliott was president of the National Federation of Settlements, 1919–23. He died in New York city, April 12.

El Salvador: *see* Salvador, El.
Embassies, Great Britain: *see* Ambassadors and Envoys: *To and from Great Britain.*
Embassies, United States: *see* Ambassadors and Envoys: *To and from the United States.*

Emergency Management, Office for.

On May 25, 1940, President Roosevelt, in an administrative order issued "in pursuance of Part I of Executive Order No. 8248 of September 8, 1939," found the existence of a threatened national emergency and established, in the executive office of the president, the Office for Emergency Management. Actually, the Office for Emergency Management (OEM) was created a few days earlier than the establishment of the Advisory Commission to the Council of National Defense, which was done on May 29, 1940.

On Jan. 7, 1941, the president issued Executive Order No. 8629 establishing the Office of Production Management within the Office for Emergency Management. This was a significant step, in that the Office for Emergency Management replaced the Advisory Commission to the Council of National Defense as the over-all co-ordinating defense organization. To strengthen this effort at basic co-ordination the president, on Feb. 28, 1941, reallocated to the Office for Emergency Management the funds which already had been made available to the several offices of the Advisory Commission to the Council of National Defense. These funds were used for administrative and operating expenses of the Office for Emergency Management and such agencies as were established in or co-ordinated through it. In his letter of reallocation the president authorized the liaison officer for Emergency Management to establish in the OEM a Division of Central Administrative Services and a Division of Information to provide staff services to the constituent agencies of the OEM. The Division of Information in 1942 was made a part of the Office of War Information.

At the end of 1942, the following agencies were within the framework of the Office for Emergency Management:

Office of the Liaison Officer (including Division of Central Administrative Services and Office of the Counsel): Board of War Communications (*q.v.*); National War Labor Board (*q.v.*); Office of Alien Property Custodian; Office of Civilian Defense (*q.v.*); Office of the Coordinator of Inter-American Affairs; Office of Defense Health and Welfare Services (*q.v.*); Office of Defense Transportation (*q.v.*); Office of Lend-Lease Administration (*q.v.*); Office of Scientific Research and Development (*q.v.*); Office of War Information (*q.v.*); War Manpower Commission (*q.v.*); War Production Board (*q.v.*); War Relocation Authority, and War Shipping Administration.

The Emergency Price Control Act of 1942, approved by the president on Jan. 30, 1942 (56 Stat. 29; 50 App. U.S.C. 921), created the Office of Price Administration (*q.v.*) as an independent agency under the direction of a price administrator. Until the passage of the First Supplemental National Defense Appropriation act, 1943, the Office of Price Administration was an OEM agency and received funds from the Office for Emergency Management and the Emergency Fund for the President. The Division of Central Administrative Services of the Office for Emergency Management continued to render services to the OPA, subject to the approval of the bureau of the budget, as required by the Appropriation act.

W. H. McReynolds was the first liaison officer in charge of the Office for Emergency Management. In April 1941 he was succeeded by Wayne Coy, who was liaison officer throughout 1942, in addition to being assistant director of the bureau of the budget. (W. Cy.)

Emery: *see* Abrasives.

Emigration: *see* Immigration and Emigration, U.S.

Emmons, Delos Carleton (1888–), U.S. army officer, was born Jan. 17 in Huntington, W.Va. He was graduated from West Point in 1909 and was commissioned as an infantry lieutenant. In 1917, he was transferred to the aviation service of the signal corps, remaining in this branch of the service throughout World War I. In 1934, he was sent to Hawaii as commanding officer of an air unit. He was made a brigadier general in 1936, major general in 1939 and lieutenant general in 1940. He was appointed commanding general of the G.H.Q. air force in 1939. Emmons, rated as a command pilot and command observer, the two highest rankings for airmen in the U.S. army, was named chief of the air force combat command in June 1941. After the Japanese attack on Pearl Harbor, Gen. Emmons was designated Dec. 17, 1941, as head of the army command of the Hawaiian department, succeeding Lieut. Gen. Walter Short. He was given over-all command of the army and air force at Hawaii. In 1942 he warned that another Japanese attack on Hawaii could be expected but said the island would be well prepared for such an emergency.

Endocrinology. **Anterior Pituitary Gland.**—Pituitary damage generally leads to a loss in body weight, while injury to the hypothalamus results in a marked gain in weight. The work of Hetherington and Ranson further clarified the respective roles of the anterior pituitary and the hypothalamus in the control of body weight. Growth in body length is not interfered with by injury to the hypothalamus. When the anterior hypophysis is removed without injury to the hypothalamus, a decrease in weight occurs. When the removal of the anterior hypophysis is accompanied by hypothalamic damage, obesity follows but without growth in body length. These findings clearly indicate that the influence of the hypothalamus on appetite, and through it on body weight, is not mediated by the pituitary gland. They also show that, while increased nutrition must be a concomitant of normal growth in stature, the increase in weight and increase in length are actually independent processes. The anterior pituitary gland is essential to true growth, but is not essential to the formation and deposition of adipose tissue.

As regards the influence of the anterior pituitary on growth Marx, Simpson and Evans, using thyrotropic hormone, confirmed the previous work showing that the presence of increased thyroid activity or thyroid hormone enhances the effect of a given dose of growth hormone. With respect to weight increase, Marx and co-workers also reported that immature hypophysectomized rats treated with growth hormone but allowed only the same food intake as untreated hypophysectomized animals, nevertheless gained more weight. In the light of the work of Samuels and associates, the explanation for the increased weight of the treated animals would appear to be an increased retention of minerals and water.

There have been two points of view as regards the inability of the hypophysectomized animal to maintain its blood sugar level during fasting. Some workers advanced evidence that the difficulty arises from a reduced ability to make blood sugar in the liver; others have contended that there is an excessive utilization of the blood sugar. Bodo and co-workers studied this problem by comparing normal and hypophysectomized dogs as regards their reaction to adrenalin administration and to hypoglycaemia, taking into account the liver glycogen stores available at the time. Their results indicated that in the absence of the anterior hypophysis, the mechanism for the rapid conversion of liver glycogen into blood sugar is impaired.

The diabetic state induced in dogs by the repeated administration of massive doses of anterior pituitary extract was further studied. Young compared the reaction of adult dogs and of puppies to this treatment. Most of the former developed diabetes while the puppies (which have a relatively greater amount of insular tissue) did not. These results support the hypothesis that so-called Young's diabetes is due to an exhaustion of the overstimulated islands of Langerhans. Houssay and co-workers studied the rate at which overstimulation is able to exhaust the pancreas of adult dogs. The pancreatic glands of pituitary-injected animals were implanted into the neck of completely depancreatized dogs. The glands of animals which had been injected with pituitary extracts up to four days, were still capable of secreting sufficient insulin to keep the test animals at a normal blood sugar level. The pancreatic glands of animals injected for longer periods became progressively less able to furnish the required amount of insulin.

It was generally accepted that the anterior pituitary gland stimulates the thyroid by way of the thyrotropic hormone. Nevertheless, it was also known that a diminished amount of this hormone is found in the blood and urine of thyrotoxic patients while the reverse is true in hypothyroidism. The work of Rawson, Sterne and Aub helped to resolve this paradox. They found that thyrotropic hormone was inactivated by incubation with slices of thyroid tissue, there was some inactivation by lymphoid tissue but none by other tissues. It may well be, therefore, that the decreased thyrotropic hormone levels in thyrotoxicosis and the increased levels in hypothyroidism are reflections of the rate of destruction of the hormone by the thyroid gland, rather than measures of the amounts secreted by the pituitary. The manner in which thyrotropic hormone exerts its influence on the thyroid gland was studied by Morton *et al.,* making use of radioactive iodine. They found that in normal animals the radioactive iodine was rapidly incorporated into di-iodotyrosine and thyroxine. In hypophysectomized animals, on the other hand, the iodine did not progress beyond the stage of di-iodotyrosine. This would indicate that the anterior pituitary, through the thyrotropic hormone, regulates the conversion of the inactive di-iodotyrosine into the hormonally active thyroxine.

Thyroid.—One of the most important developments in the knowledge of the thyroid was the discovery that simple iodination of blood serum, or even albumen or casein, leads to the formation of organic iodine compounds with thyroid hormone activity. Such compounds were successfully used in the treatment of myxoedema and presumably the same compound was formed in the blood and in the thyroid gland when iodine was used to treat endemic goitre. This made it difficult to understand the well-known effect of iodine in lowering the metabolic rate in thyrotoxicosis. The work of Reineke, Williamson and Turner might offer an explanation. They showed that the progressive iodination of casein produced compounds with progressively greater thyroid activity until the iodine content reached 7%. As the proportion of iodine was increased beyond this figure the thyroid activity of the end product was reduced.

Work during 1942 also shed some light on the mechanisms by which the organism is harmed in thyrotoxicosis. The loss in body weight and the reduction in the liver glycogen content have been considered to be direct effects of the excess of thyroid hormone. Drill, Overman and Shaffer showed that the administration of the vitamin B complex (in the form of fresh whole yeast) together with thyroid extract prevents the weight loss and the deglycogenation of the liver which otherwise occurs. It seemed likely that when the metabolic rate is increased by the administration of thyroid extract, or spontaneously in thyrotoxicosis, the available B vitamins are used up at an excessively rapid rate. As a result of this the appetite does not keep pace with the increased nutritional requirements, and loss of weight and lowered glycogen storage levels result. In the work of Drill and associates the thyroid treated animals receiving adequate amounts of vitamin B complex increased their food intake, as compared with the control animals which received thyroid extract alone.

Parathyroid.—The work of Neufeld and Collip demonstrated that the parathyroid hormone increases the level of calcium in the blood indirectly, by increasing the rate of excretion of phosphates by the kidney. Nephrectomy, or ligation of the renal blood vessels or of the ureters in experimental animals prevented the hypercalcemia following parathormone administration. In normal animals given parathormone, the replacement of the excreted phosphate by sodium acid phosphate administration also prevented the rise in blood calcium.

There was other work which might show a closer relationship between the level of calcium in the blood and the activity of the parathyroid glands. Patt and Luckhardt perfused the parathyroids of experimental animals with blood containing little or no calcium. Their results indicated an outpouring of parathormone following this stimulus. A similar result was obtained after the blood calcium was lowered by the intravenous administration of sodium oxalate. Thus the parathyroids resemble other endocrine glands which have been shown to be partly regulated by the blood levels of the substances which they affect. However, determinations of phosphate were not recorded by Patt and Luckhardt and it was possible that their results might have been secondary to changes in the blood phosphate level.

Pancreas.—Little is known of the functional interrelationships between the endocrine glands and the central nervous system. Although nerve pathways to the endocrines have long been outlined, it is generally true that a gland can maintain fairly normal endocrine control of the bodily functions it affects even after its nervous connections have been completely interrupted. However, there was evidence that nervous stimulation and inhibition of glandular secretion do occur, and that they may be important as emergency mechanisms. It is possible that these same pathways may be involved in the glandular disturbances accompanying psychoneuroses. McQuarrie, Ziegler and Hay clarified the interplay of neuro-endocrine influences on the blood sugar level during anoxia. They found that in the intact animal, anoxia resulted in hyperglycaemia. Under the same circumstances, animals lacking the secretion of the adrenal medulla responded with a hypoglycaemia. When the pancreas as well as the adrenals were removed, anoxia had no influence on the blood sugar. In view of previous evidence that anoxia produces its effects via the nervous system, it appeared that it stimulates both the sympathetic-adrenal and the parasympathetic-pancreas systems. Ordinarily the former prevails so that hyperglycaemia usually occurs. Noxious stimuli other than anoxia also have the same effect. One might speculate that a reversal of the relative strengths of the two systems in some individuals might account for certain cases of periodic hypoglycaemia. (*See* also PHYSIOLOGY; ZOOLOGY.)

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(S. So.)

Engel, Kurt (1909–1942), Austrian pianist, was born Jan. 14 in Vienna and studied at the Academy of Music and the Master-School for Piano, Vienna. In 1932, he won a prize in the international Chopin competition in Warsaw. Engel, a refugee from nazi Austria, arrived in the United States in 1938 and was soloist with leading symphony orchestras on the stage and in radio. His last public appearance was in Carnegie hall, New York city, April 1941. He died in New York city, Jan. 22, while giving a piano lesson.

England: *see* GREAT BRITAIN AND NORTHERN IRELAND, UNITED KINGDOM OF.

English Literature. The expression of the creative spirit in literature in Great Britain during 1942 was not especially remarkable. That could not be expected. War is not a healthy state either for the arts or for the body politic. It is in fact the culmination of a state of disease. Destruction is the result of a failure to create. And English literature after 1914 more often lamented that failure than redeemed it. But there were signs in the literature of 1942 that the pulse of creation was beginning to beat more strongly. A nation's poetry should be the index of its state and there was an unusual spate of verse by young poets. Two things were notable about it. Though it reflected an appalled sense of the negation of human values which modern war is and an inevitable element of creative frustration, it had cast off sophisticated disillusionment. Second, while its note was seldom combative, the best of it did grapple with the roots of evil from which the mechanical frenzy of war days springs. This applies to such anthologies of new verse as *Poems of This War,* edited by Patricia Ledward and Colin Strang, *Lyra,* edited by Alex Comfort and Robert Greacen, *Poems from the Forces,* edited by Keidrych Rhys, or *Poetry in Wartime,* edited by M. J. Tambimuttu. There were, also, individual volumes of note by Alun Lewis, Henry Treece, Ruthven Todd, Nicholas Moore and Francis Scarfe. In this new movement of poets there were signs of imagination escaped from the clutches of self-conscious intellectualism and beginning to create its own forms and language. Among the work of older poets Robert Nichols' selection from his poems of 20 years, *Such Was My Singing,* possessed a lyrical gusto, a buoyant craft, as well as a satirical and rhetorical daring hardly to be found elsewhere in these unromantic days.

In the realm of fiction there was less originality. Such established writers as Francis Brett Young, L. A. G. Strong, Victoria Sackville-West, G. B. Stern, D. L. Murray and Robert Graves all gave of their expected best. But in none of these can the possibilities of fiction be said to have been extended or essentially new ground explored.

It was, however, on the whole a fruitful year for biography, autobiography and criticism, though soundness and comprehensiveness were more characteristic than brilliance. Among notable books in this field were Garret Mattingly's *Catherine of Aragon,* Edmund Blunden's *Thomas Hardy,* Hugh Fausset's *Walt Whitman,* Forrest Wilson's life of Harriet Beecher Stowe, Ralph Straus's *Sala,* Joseph Hone's *Life of W. B. Yeats,* and Jean Burton's *Sir Richard Burton's Wife.* One of the cleverest books, compounded of biography and criticism, was William Gaunt's *The Pre-Raphaelite Tragedy.* John Pick's study of *Gerard Manley Hopkins* as priest and poet will not be easily superseded, and R. Ellis Roberts' *H. R. L. Sheppard* was a notable contemporary portrait. Perhaps the best autobiographies had a rural and naturalistic background—for example, A. L. Rowse's *A Cornish Childhood* or H. J. Massingham's *Remembrance.* But there was one religious autobiography of absorbing interest, the anonymous *Midnight Hour* by "Nicodemus."

Of pure criticism there was little, but the precise scholarship of Geoffrey Tillotson's *Essays in Criticism and Research* recalled a world in which vital conventions held chaos in check. E. M. Forster's Rede lecture on Virginia Woolf made an admirable introduction to the posthumous volume of her essays. And three outstanding works, Rae Blanchard's *Correspondence of Richard Steele,* Katharine Balderston's *Thraliana* and Ernest de Sélincourt's *Dorothy Wordsworth's Journals* testified to the patient persistence of editorial research.

Of books defying any particular category perhaps the most remarkable was Rebecca West's *Black Lamb and Grey Falcon,* a compelling meditation upon recent European events interwoven with a journey through Yugoslavia and a plunge into Balkan history.

Much print and paper, of course, went into books dealing from all angles with the war. But few, if any, of these, whether it was such a vivid and circumstantial record as Charlotte Haldane's *Russian Newsreel* or accounts by fighter pilots of their experiences, like Richard Hillary's *The Last Enemy,* were essentially distinct from journalism.

(*See* also AMERICAN LITERATURE; PUBLISHING [BOOK].)

(H. I'A. F.)

Entomology. The demands of the army and navy for specialized foods for overseas forces created needs not provided for by any existing agencies and the labour problems became continually more acute in 1942. The great value of dried and dehydrated vegetable and animal foods and the advantages of these products over fresh and even canned goods in respect to weight and bulk in shipping became so apparent and desirable that a national dehydration program was being perfected as rapidly as possible. Dehydrated vegetables usually contain 5% or less of the original moisture content and dried meats, milk and eggs may have the moisture reduced about as much. In the case of dried fruits the moisture content may remain as high as 14% to 20%. However, in all of these products both weight and bulk were reduced to the extent of requiring about 4½ times less space than the ordinary fresh materials, which was a large item in connection with vital transportation problems. This turn to dehydrated foods was further augmented by the scarcity of tin cans and metal containers previously used for the preservation of a large part of the animal, fruit and vegetable foods of the nation.

The most important dehydrated foods, other than raw and manufactured cereal products in 1942 were: ANIMAL: whole milk, eggs and meats; VEGETABLE: potatoes, cabbages, peas, spinach, carrots, turnips, onions, beans, beets, corn, rhubarb, pumpkins, and squash, sweet potatoes, tomatoes and baked beans; FRUITS: apples, apricots, raisin grapes, peaches, pears and prunes.

Entomological Problems in Connection with Dried and Dehydrated Foods.—The entomological problems in connection with the preparation and preservation of dried and dehydrated fruits are many and varied. They begin with the planting of the seed and do not cease until the food is ultimately consumed. The danger of food destruction by insects is always present. Government specifications for dehydrated foods required that they be practically free from insect damage, which necessitated a thorough program of insect control on the growing crop. This might prove to be a most difficult program due to the scarcity of a number of important insecticides, including copper compounds, mercury compounds, zinc, arsenic, rotenone, etc.

Every practice known to the entomologist, the professional agriculturist and the practical farmer which had a bearing on the reduction and control of insect pests had to be utilized in this war program of crop production. This meant that in addition to the well-known methods of spraying, dusting, and fumigation, it would be necessary to practice clean culture to reduce natural breeding places for insects; thorough cultivation to eliminate volunteer hosts; crop rotation to prevent continuous infestations of successive crops of the same kind; timely planting, cultivation and irrigation; early harvest; early fall plowing of stubble and the destruction of refuse; and many other similar performances that increase crop production and at the same time reduce insect infestations and losses occasioned by them.

Fortunately the process connected with the dehydration of all food products in which the various materials are subjected from 4 to 12 or even 24 hours to temperatures of 140° F. to 200° F. or more, renders such products absolutely free from all forms of insect life. This thorough sterilization and the great reduction of the moisture content guarantee a clean and wholesome product to the consumer, in so far as insects are concerned, if the food can be packed immediately in clean containers which, when perfectly sealed, are proof against the entrance of the minutest forms of insect life. If, however, the dehydrated products are carelessly stored in insect-infested bins or warehouses, they may soon take up moisture and become thoroughly infested and contaminated by insects.

Insects which are common on various types of stored food products are practically cosmopolitan in distribution because of commerce. They are always most abundant and injurious in the tropics, but if artificial or natural temperature and moisture conditions are favourable to their development, they may be quite as destructive in subtropical, temperate and even colder regions. It is to be expected that food supplies sent into the tropics will be subjected to very severe tests by insects and unless the packaging of the products remains always insect proof, which also means practically gas tight and moistureproof, insects are sure to make their way into the products. Packages which may meet these requirements in the U.S. may not be able to withstand the onslaughts of insects aboard ships and in the exposed food dumps of the tropics, where they will be at the mercy of sun, rain and tropical insects.

Most Important Insects and Mites Infesting Stored Products

Cereals and Cereal Products

Granary weevil, *Sitophilus granarius* (Linn.); rice weevil, *Sitophilu oryzae* (Linn.); lesser grain borer; *Rhizopertha dominica* (Fab.); cadelle *Tenebroides mauritanicus* (Linn.); drugstore beetle, *Stegobium paniceum* (Linn.); broad-nosed grain weevil, *Caulophilus latinasus* (Say); saw-toothe grain beetle, *Oryzaephilus surinamensis* (Linn.); rust-red grain beetle *Laemophloeus ferrugineus* (Stephens); flat grain beetle, *Laemophloeus pusillus* (Schön.); square-necked grain beetle, *Cathartus quadricollis* (Guérin) confused flour beetle, *Tribolium confusum* (Duval); rust-red flour beetle *Tribolium castaneum* (Herbst.); broad-horned flour beetle, *Gnathoceru cornutus* (Fab.); false black flour beetle, *Aphanotus destructor* (Uytten) long-headed flour beetle, *Latheticus oryzae* (Waterh.); yellow mealworm *Tenebrio obscurus* (Fab.); Angoumois grain moth, *Sitotroga cerealell* (Oliv.); Mediterranean flour moth, *Ephestia kuehniella* (Zeller); Indian meal moth, *Plodia interpunctella* (Hbn.); meal snout moth, *Pyralis farinali* (Linn.); cereal psocid, *Troctes divinitorius* (Müller); cereal mite, *Tyroglyphus americanus* (Banks); grain mite, *Tyroglyphus longior* (Gervais); flou mite, *Aleurobius farinae* (DeGeer).

Dried and Dehydrated Fruits

Saw-toothed grain beetle, *Oryzaephilus surinamensis* (Linn.); dried fruit beetle, *Carpophilus hemipterus* (Linn.); confused flour beetle, *Tribolium confusum* (Duval); Indian-meal moth, *Plodia interpunctella* (Hbn.); raisin moth, *Ephestia figulilella* (Greg.); fig moth, *Ephestia cautella* (Walker); dried fruit mite, *Tyroglyphus passularum* (Hering).

Seeds and Nuts (Whole and Shelled)

Bean weevil, *Acanthoscelides obtectus* (Say); pea weevil, *Laria pisorum* (Fab.); broad bean weevil, *Laria rufimanus* (Boh.); four-spotted bean weevil, *Laria 4-maculatus* (Fab.); Mexican bean weevil, *Zabrotes pectoralis* (Sharp); saw-toothed grain beetle, *Oryzaephilus surinamensis* (Linn.); red-egged ham beetle, *Necrobia rufipes* (DeGeer); Indian-meal moth, *Plodia nterpunctella* (Hbn.); chocolate moth, *Ephestia elutella* (Hbn.)

Cheeses; Cured Meats and Dehydrated Milk and Eggs

Red-legged ham beetle, *Necrobia rufipes* (DeGeer); black carpet beetle, *Anthrenus piceus* (Olivier); varied carpet beetle, *Anthrenus verbasci* (Linn.); cheese skipper, *Piophila caesi* (Linn.); cheese mite, *Tyroglyphus iro* (Linn.).

Fumigants for Stored Food Products Insects

The most important fumigants used in 1942 for treatment of insect- and mite-infested food products were:

Cereals and Cereal Products

Hydrocyanic acid (HCN).—Available as a solid, dust or liquid. A deadly gas that should be used with great care. Amount required depends upon the kind of fumigant used.

Methyl bromide (bromomethane—CH_3Br).—Liquid used at the rate of 1 lb. to 1,000 cu. ft. of space.

Methyl formate ($C_2H_4O_2$) is a relatively new and effective material when used alone or in combination with carbon dioxide.

Chloropicrin ("vomiting gas"—$C\ Cl_3NO_2$).—A liquid often applied as a spray used at the rate of 2 lbs. to 1,000 cu. ft. of space.

Carbon disulphide (CS_2).—A liquid often applied as a spray. Highly explosive and should be used only by experienced persons. Should not be used in insured buildings without the written consent of the insurance underwriters. Applied at the rate of 10 to 30 lbs. per 1,000 cu. ft. Fire hazard is reduced by mixing with carbon tetrachloride.

Carbon tetrachloride ($C\ Cl_4$).—A relatively noninflammable fluid and gas commonly known as a "cleaning fluid." Applied at the rate of 30 lb. per 1,000 cu. ft. Often mixed with carbon disulphide, chloropicrin, ethylene dichloride and other gases to reduce their fire hazard.

Ethylene dichloride ($C_2\ H_4\ Cl_2$).—A heavy and not dangerously inflammable gas. Often combined with carbon tetrachloride in proportion of 3 to 1. Used alone at rate of 15 lb. or 3 to 6 gal. per 1,000 cu. ft. or in combination with carbon tetrachloride, as indicated above, at the rate of 3 gal. per 1,000 cu. ft. of space.

Dried Fruits

Methyl bromide.—See above.

Chloropicrin.—See above.

Carbon disulphide.—See above.

Carbon tetrachloride.—See above.

Ethylene dichloride.—See above.

Ethylene oxide [$(CH_2)_2O$]. Noninflammable when used at the rate of 2 lbs. per 1,000 cu. ft. Also used in combination with carbon dioxide.

Ethyl formate ($C_3\ H_6\ O_2$) is now quite extensively used in individual packages of dried fruits. Before sealing the packages a small quantity of the material is added as a safeguard against possible insect infestation.

Animal Products—Cheese, Milk, Eggs, Meat

Certain chemicals that are readily absorbed or adsorbed by oils and fats are unsuitable as fumigants for animal products, which accounts for the omission of many of the above-mentioned chemicals in this list.

Hydrocyanic acid.—See above. Thorough ventilation following treatment is necessary for this gas and for chloropicrin.

Chloropicrin.—See above. Treated animal products must be thoroughly aired after treatment and before used for food.

"Carboxide," a commercial fumigant composed of a mixture of ethylene oxide and carbon dioxide in the ratio of 1 to 9. It is a very safe fumigant for animal products but is not so toxic as either hydrocyanic acid gas or chloropicrin.

Insecticides.—Among the new and promising insecticides in 1942 were: basic copper arsenate for leaf-eating cotton insects; barium arsenate for controlling blowflies on sheep in Australia; phthalonitrile for leaf- and fruit-eating insects; thiourea and derivatives proved to be toxic to the larvae of fleshflies and to the larvae of the clothes moth; xanthone gave some promise in controlling codlin moth on apples; potassium antimonyl citrate might prove to be a valuable substitute for tartar emetic in the control of citrus thrips; phenothiazine proved toxic to the larvae of the blowfly in Australia and the codlin moth larvae in the United States; calcium chloroacetate proved somewhat less effective than sodium arsenite in grasshopper baits in South Africa and effective against maggots of the blowfly in Australia; selenium compounds continued to be very toxic to orchard mites, *Tetranychus* and *Paratetranychus*, on grapes, citrus, cotton, etc., in the United States; paris green proved to be a valuable larvicide for anopheline mosquitoes, as effective as pyrethrum and petroleum oil emulsions; dinitro-ortho-cyclohexylphenol and dinitro-ortho-cresol very effective as aphide ovicides on dormant trees; nicotine, pyrethrum and rotenone compounds still held very important places in the control of many insects infesting plants that cannot be treated with heavy metal poisons. Derris or nicotine dusts were suggested as possible combinations with calcium arsenite dusts to kill both the cotton boll weevil and the cotton aphis with single applications. Acrytonitrile and chloracetonitrile were shown by H. H. Richardson and A. H. Casanges to be promising new fumigants for the control of the confused flour beetle and the bedbug. Arsenate of lead was still considered to be the most effective stomach poison for the control of codlin moth, especially for the calyx and first cover sprays. Substitutes may be made for the later applications.

A new cockroach poison, 4, 6-dinitro-o-cresol, was reported by J. B. Gahan to be more toxic to cockroaches and to kill them more rapidly than either sodium fluoride or pyrethrum, "being more effective at a 5% concentration than pyrethrum at 5% or sodium fluoride at 50%. Exposure to the air in a room for seven days did not destroy the toxicity of a 10% dust."

Control of the pillbug, *Armadillidum vulgare* (Latr.), and the dooryard sowbug, *Porcellio laevis* (Koch), in the field by the use of calcium arsenate at the rate of 3 to 5 lb. of dust to 1,000 sq. ft., was demonstrated by R. M. Bohart and A. Mallis at Los Angeles, Calif.

The control of the corn earworm, *Heliothis armigera* (Hbn.), by the use of a pyrethrum-oil mixture proved to be most successful during the summers of 1941 and 1942. From 0.75 to 1.00 cc. of the insecticide is injected into the silk end of each ear.

Scarcity of Important Insecticides.—Because of war needs, many important insecticides were allocated for other purposes based on end use. Some of these were expected to be very scarce in 1943 while others might be made available in sufficient quantities to take care of the necessary emergencies in field insect pest control. Those most affected were antimony, arsenic, copper, mercury and zinc compounds; rotenone, pyrethrum and tar oils. Fortunately considerable quantities of certain of these prepared remedies were still in the hands of insecticide manufacturers and would be available as long as the supplies held out.

Entomological Notes.—The citrus mealybug, *Pseudococcus citri* (Risso), was reported to have been extremely abundant in and injurious to the vineyards of Almeria, Spain in 1941 and 1942.

The weevil, *Otiorrhynchus singularis* (Linn.), appeared as an economic pest of Portugal laurel trees for the first time in British Columbia in 1937 and was reported in 1942.

A stem-infesting cynipid gallfly, *Plagiotrochus suberi* (Weld), was proving to be a pest of cork oaks in middle and southern California. The insect was believed to have been imported years ago from southern Europe.

The raspberry root-borer, *Pennisetia marginata* (Harris), appeared for the first time in Saskatchewan in 1941.

The tick, *Ixodes dentatus* (Maix), known previously only from the North Atlantic coast, was taken on a cottontail rabbit, near Ames, Iowa, on June 17, 1942, by C. R. Joyce and G. W. Eddy.

Because of the mild and humid winters in the south, the storage of corn and other grains is generally hazardous because of the great havoc wrought by cereal-infesting insects. Special efforts were being made to protect such food products from these pests by building cribs sufficiently tight by the use of asphalt paper liners, either to prevent infestation or to make it possible to fumigate with any of the fumigants recommended above. Carbon disulphide, a well known and reliable fumigant, has great fire hazards and should be used only in small isolated cribs and great care should be exercised to keep sparks, coals, lighted tobacco or flames from igniting and exploding it.

Increasing the populations of the cotton aphide, *Aphis gossypii* (Glover), by the application of calcium arsenate dusts for the control of the cotton boll weevil, *Anthonomus grandis*, was thought to be caused by raising the pH in the soil and thereby also in the leaf cell sap of the plants, a condition which makes the juices more attractive to the aphides and hastens their propagation and development.

The milky disease, caused by the bacteria *Bacillus popilliae* and *B. lentimorbus*, which attack the Japanese beetle, *Popillia japonica* (Newman), was extensively cultivated and distributed by entomologists of various states and of the U.S. bureau of entomology and plant quarantine. A co-operative project representing seven states, 260 experimental plots, 21,000 acres infested by the beetle, were treated with 25,593 colonies of the bacteria during the years 1939–1941 inclusive.

U.S. Public Health Service.—Many professional entomologists were employed by the U.S. public health service in connection with the control of insects and insect-borne diseases which might interfere with the military training and fighting forces in the United States and abroad. Most of these men were serving in the reserve.

A great many entomologists also enlisted in the medical departments of the army and navy and were actively engaged in malarial and other insect-borne disease control, and various sanitary problems related to it.

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Enzymes: *see* BIOCHEMISTRY.

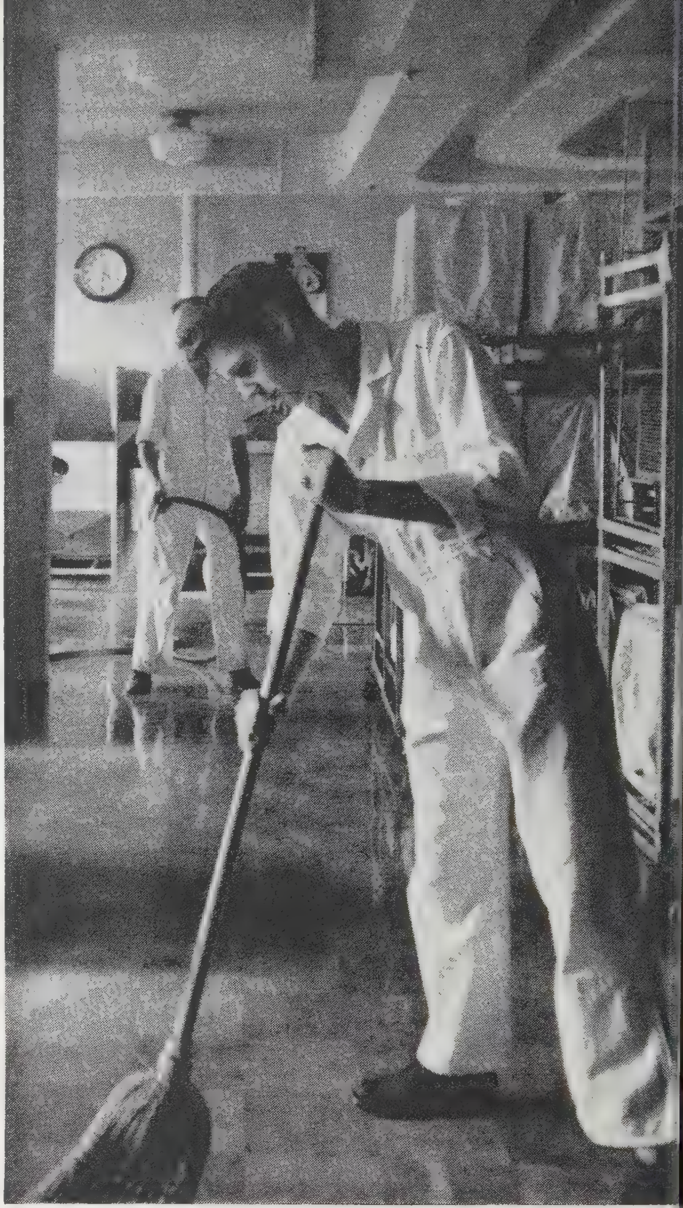
Epidemics and Public Health Control.

Paul and Trask pointed out interesting new epidemiologic facts about infantile paralysis, among which is the isolation of the virus from flies. This was done on two separate occasions, in epidemics in Connecticut and Alabama. In both instances, contaminated flies were caught within areas where the prevalence of poliomyelitis was high, and where human carriers were known to exist. The flies had been feeding, both in and outside of privies, on human stools which might well have contained the virus. Flies, as carriers of the virus, might explain much concerning the baffling epidemiology of this disease. There was much evidence that pointed to the intestinal spread of infantile paralysis. The question as to the significance of insect vectors, and also the existence during epidemics of other possible extrahuman carriers of the virus, such as mammals and birds, would require further study.

Diphtheria.—Bundesen pointed out in 1939 that the level of antitoxin developed in the blood stream following inoculation with diphtheria toxoid decreased in amount as time went on.

Volk and Bunney stated that diphtheria antitoxin immunity, regardless of the immunizing procedure, is not permanent, and that as time goes on the antitoxin content of the blood stream is reduced. This fact had been confirmed by other workers.

Volk and Bunney claimed that reinoculation of children five or six years after inoculation in infancy would maintain the blood antitoxin at a good average level. However, diphtheria experience in Chicago showed that many children who had toxoid developed diphtheria less than three to five years after inoculation with toxoid. Consequently, Bundesen felt that the best practical solution to diphtheria prevention is to inoculate infants at ni months of age, giving a reinforcing dose at about three years age, and another reinforcing dose when the child enters kinde garten or first grade.



CLEANSING THE INFECTED TICK-REARING ROOM at the Hamilton, Mon laboratory for study of Rocky Mountain spotted fever. More than 200,000 pe sons were vaccinated against this fatal disease in 1942, yet it continued spread over the United States

Pneumonitis.—A widespread outbreak of virus pneumonia, pneumonitis, occurred during 1942 in many parts of the Unit States. The sputum in these cases does not type out for pneum coccus. Cases were seen of all types of severity. Few deat were reported. Some of the common symptoms are: headach cough, muscle pains, pain in the chest, increased temperature usually very slight. The disease is peculiar in that many cas have lasted two, three, four or five weeks. Apparently, the d ease is due to a virus which is not affected by sulphonamide dru Diathermy is said to produce favourable results, although the is not enough experimental evidence to support this belief. Trea ment consists mainly of constitutional measures.

Whooping-Cough.—In 1942, in Chicago, about 150 cases whooping-cough were treated with a high antibody titre rab serum. The serum was prepared from rabbits which received peated inoculations of vaccine. A large percentage of patie showed definite and prompt improvement, indicating that t serum if given early in the disease will act more or less as specific. Reactions were so mild that they were not considerec drawback to the administration of the serum. (*See* also BACTERIOLOGY; ENTOMOLOGY.) (H. BU.)

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Epilepsy: *see* NERVOUS SYSTEM.

Episcopal Church: *see* PROTESTANT EPISCOPAL CHURCH.

Epstein, Abraham (1892–1942), U.S. economist and authority on social security, was born April 20 in Russia. He immigrated to the United States in his youth and was educated at the University of Pittsburgh, graduating in 1917. He then joined the Pennsylvania commission on old age pensions as research director and drafted the first model old age pension bill which was introduced to the state legislature in 1921. An advocate of old age pensions and unemployment and health insurance, he was credited with helping build up public opinion that made the federal social security bill possible. Epstein, who was a lecturer on social insurance at New York university and at Brooklyn college, died in New York city, May 2.

Eritrea: *see* ITALIAN COLONIAL EMPIRE.

Esperey, Franchet d' (1856–1942), French army officer, was born May 25 in Mostaganem, Algeria, where his father was on duty as a colonel. Young d'Espérey entered St. Cyr when he was 18. Seven years later, he was commissioned as a lieutenant and soon saw action in desert campaigns in Algeria and Tunisia. In 1882, he fought against the Indo-Chinese at the siege of Tonkin, and after 20 years in the orient he returned to France to command a regiment in Besançon. At the start of World War I, he was in command of the first army corps and distinguished himself in battles against the advancing Germans in early 1914. He was later transferred to command of the 5th army corps and succeeded in repulsing Von Bulow's armies in the first battle of the Marne. In 1917 he replaced Foch as commander of the armies of the north, but the next year was chosen to command the Army of the Orient when the Allies decided to break the grip of the Central Powers in the near east. On Sept. 10, 1918, he launched an offensive in Salonika that crushed the resistance of the Bulgarian-German armies in 10 days. Bulgaria was knocked out of the war by the end of the month and Turkey capitulated shortly afterward. He was made a marshal of France in 1921 and was elected to the French Academy to succeed the late Marshal Lyautey in 1934. Marshal d'Espérey left Brittany as the Germans advanced southward in June 1940 and moved to his estate near Albi, France, where he died July 8, 1942.

Espionage: *see* FEDERAL BUREAU OF INVESTIGATION.

Estaunié, Edouard (1862–1942), French novelist, was born Feb. 4 in Dijon and studied at the École Polytechnique. A retired official of the French post office, Estaunié wrote novels in his leisure and was elected to the French academy in 1924. In later years he wrote *Le labyrinthe, Tels qu'ils furent* and *Madame Clapain* (1932). He died April 2, according to a Vichy dispatch. (See *Encyclopædia Britannica.*)

Estonia. One of the Baltic states of northeastern Europe, north of Latvia, south of Finland, formerly a republic; became part of Germany's "Ostland" (*q.v.*) in 1941. Area 18,371 sq.mi.; pop. (est. 1939) 1,122,000. Chief towns: Tallinn (capital 146,400); Tartu (60,100); Narva (24,200); Nomme (19,700); Pärnu (21,500). Language, Estonian (a Finno-Ugrian tongue). Religion, Christian (Lutheran 78%, Greek Orthodox 19%). Ruler in 1942: the German reich through Reichscommissar H. Lohse of the Ostland and Commissioner-General Litzmann for Estonia.

History.—Behind affairs of 1942 in Estonia and the other Baltic states stood the sequence of events after Sept. 29, 1939 when Estonia signed her "treaty of mutual assistance" with the U.S.S.R. and granted garrison privileges to the Red army. Immediately after June 15, 1940, the Russians definitely occupied the country, perhaps forestalling a German *Putsch.* On July 15 Estonia "voted" to apply for membership in the U.S.S.R. and in August was accepted as the 16th soviet republic. Until the summer of 1941, Estonia remained under soviet domination. Collectivization was not completed in this one year of control, but the status of some of the larger farms and factories was changed and the economy of Estonia was being reoriented.

When the Germans struck against the U.S.S.R. on June 22 1941, Estonia's geographic position delayed the struggle there for a short time. Russian garrisons held out in the islands of Hiiumaa (Dagö) and Saare Maa (Oesel) until the very end of 1941, but the Germans then completed their conquest. The new nazi civil administration was set up on Dec. 5, 1941, the last one in the Baltic states. The five-man council of Estonian "fuehrers" was subordinated to the local Commissioner-General Litzmann and to Reichscommissar Heinrich Lohse with headquarters in Riga.

Reconstruction aims were defined by the nazis as "replacing chaos by European order, and substituting construction and civilization for destruction." In detail this meant taking ownership of the sovietized lands and industries by the German state and collecting rents from former owners. Estonia was also one of the countries for which Danish and Dutch economic co-operation was sought by the nazi administrators—seemingly with little success. The "new order" was also announced to involve educational reform, with the re-establishment of the famous old university at Dorpat (Tartu) (founded by Gustavus Adolphus in 1632 during Swedish control of the region); another phase of this reform would make German the universal language of the country. Plans were also made for the rebuilding of the destroyed sections of Tallinn (Reval), where fortunately the picturesque old central portion had survived intact. Seemingly the German "Balts" who had been moved out of Estonia in the fall of 1939 were not being sent back to the country unless in small numbers. The threat of eviction of native Estonians still stood, however, and it was feared that the Germans intended to use the land as rewards for meritorious nazis when the war was over, and to resettle the Estonians farther to the east.

Abroad the Estonians were less active than the nationals of the neighbour states, and news from this little country was exceedingly scarce. The essential fact was that most things both present and future depended on the outcome of the military struggle raging just east of the border—and on battlefronts around the world.

Statistics of education, finance and economic conditions ceased to be issued after the soviet occupation in 1940; the following figures apply to the years preceding World War II.

Education.—In 1937–38 there were 1,224 elementary schools 58 middle schools, 39 technical schools and 30 agricultural schools Tartu (Dorpat) university had 3,219 students and 217 professors in 1938.

Finance.—The monetary unit is the kroon (26.7 U.S. cents at par). Effects of German monetary changes in 1941 and 1942 were uncertain. Revenue (est. 1939–40) 99,293,000 kroons; expenditure 99,293,000 kroons.

Trade and Communication.—Imports in 1939 totalled 101,351,000 kroons; exports, 118,217,000 kroons. Principal imports were raw cotton, sugar, woollen yarns and thread, iron and steel. Principal exports were butter, wood and paper, cotton goods, cellulose, flax and tow, meat products and eggs. Imports were chiefly from Germany, Great Britain, Sweden, the United States and the U.S.S.R. Exports were chiefly to Great Britain, Germany, Finland, the United States and Sweden. In 1942 what trade existed was confined largely to Germany and her satellites, even Sweden being largely cut off.

Agriculture.—Production (in short tons) of the leading crops in 1939 was as follows: rye (250,994), potatoes (963,741), oats (164,684), barley (99,207) and wheat (94,026). Estonia in 1938 had 660,890 cattle, 649,730 sheep, 384,580 pigs, 219,020 horses and 1,596,570 chickens.

Manufacturing and Mineral Production. — Manufacturing production was valued at 166,238,000 kroons in 1937. One of the larger cotton mills in Europe is at Narva, where textile manufactures in 1937 were valued at 47,425,000 kroons. Other important industries are paper and wood, food products, cement, flax, leather. Shale oil production rose rapidly to 209,437 short tons in 1939. Approximately 60,000 people were employed in industry in 1938. (F. D. S.)

Etching.

In London the Royal academy and the Royal Society of Painter-Etchers conducted their exhibitions as usual, though necessarily somewhat limited in scope. In spite of the fact that almost every able-bodied Englishman was taking part in the war effort in some capacity, the response to exhibitions was surprisingly large and a number of artists even published new plates.

Of the famous Scottish trio of Sir D. Y. Cameron, Sir Muirhead Bone, and James McBey, the first-named ceased to etch, Bone was serving as an official war artist, as he did in World War I, and McBey transferred his citizenship to the United States. The distinguished English etcher, Gerald Brockhurst, was also in the U.S.

In both occupied and unoccupied France it may be presumed that such etchers as survived the fall of their country and were able to maintain themselves, were doing what they could to carry on their art.

Both the South and Central American countries and Mexico produced interesting and vital prints, but etching found comparatively little support among their artists. Woodcut and lithography seemed to be the favourite media.

Canada and Australia graphic artists succeeded in organizing exhibitions during 1942. It is particularly significant that in Honolulu both output and interest were active.

So much happened in the art life of the United States in 1942, and so many new printmakers came into public notice that a list of even the etchers who were active would be too long for inclusion here. Despite the great numbers who entered the armed forces or went into war industries, the regular annual etching shows drew entry lists equal to and, in some cases, greater than, those of normal times. The big national print societies such as the Society of American Etchers, the Chicago Society of Etchers, and the Print Makers Society of California, held their exhibitions as usual, and many other smaller and more regional groups all over the U.S. were equally active. In the east, the National Academy of Design and the Pennsylvania Academy of the Fine Arts had their accustomed comprehensive and representative print sections, while most of the other great museums throughout the land conducted print exhibitions at some time during the year. Travelling print shows were in great demand, and at on time the American National Committee of Engraving had 17 c these in circulation. Probably the most impressive demonstratio of printmaking on the part of American graphic artists, howeve took place when, on Dec. 7, the first anniversary of Pearl Harbo the Metropolitan Museum of Art, in New York city, opened i doors on a great contemporary exhibition of painting, sculptu and prints, organized by and held under the auspices of Artis for Victory, a national association designed to put at the di posal of the government the services of the artists of the Unite States. To this exhibition 724 artists from 39 states (includi the District of Columbia and Hawaii) sent 3,035 prints, fro which 578 works by 414 artists were selected by a jury nation in scope. (J. T. Ar.)

Ethical Culture Movement.

A movement in religi started in 1876 by Fel Adler in New York city, and established ten years later in Londo by Stanton Coit. Societies were active in 1942 in New York cit Brooklyn, Philadelphia, St. Louis and Chicago, and there we four in London, England. The purpose of this innovation was provide spiritual homes for people of different religious antec dents to whom the profession of traditional creeds was incompat ble with intellectual honesty, and to act as a liberalizing influen on other religious bodies by inducing them to accord greater me tal liberty to their adherents, and to place the development ethical knowledge and practice above the study of theologic tenets. The principle most emphasized was that of "the ind pendence of ethics," which was cardinal in the Platonic and Ari totelian traditions, but had been lost to view during much of t Christian period, although great theologians had at times rea serted it.

The Ethical Culture societies conduct Sunday services and large variety of educational and social welfare activities. T first social settlement in the United States (the University Sett ment in New York city) was an enterprise of the moveme which also originated, in New York and Chicago, the Visiti Nurse associations and the societies providing legal aid for t poor. A considerable literature devoted to vindicating the spir ual nature and dignity of man against the doctrine of hum animality has been produced. The movement is experimental a pragmatic in action, though the founder and the majority of t leaders offered reasoned rejections of the pragmatist doctrine metaphysics. Enterprises of the societies in England and Ameri included sustained efforts for the relief of refugees from Eu pean persecution, and their re-education and integration in English-speaking society. The formerly flourishing branches the movement in Germany and Austria were suppressed by t nazis.

The Standard, edited by George E. O'Dell, is published ea month at 2 W. 64th st., New York city. An authoritative expo tion of the movement's principles is to be found in two volum by Felix Adler, *An Ethical Philosophy of Life* and *The Reco struction of the Spiritual Ideal*. The English Ethical union (pre dent, Lord Snell) had offices in 1942 at Chandos House, Palm Street, London, S.W.1. (Ho. J. B.)

Ethiopia.

A kingdom of northeast Africa. Area, *c.* 350,0 sq.mi.; pop. (est. Dec. 31, 1939) 9,500,000; ca Addis Ababa; religions: Christian (Copt) and Mohammedan; la guages: Amharic and Arabic; ruler: Emperor Haile Selassie.

History.—The reconstruction of Ethiopia after the dama caused by the Italian occupation and the war was the empero main task in 1942. The people in the main proved loyal, a revenue came up to expectations, amounting to £500,000 in t first year. The emperor intended to restore the 1931 constitution, but was not able to summon the legislature immediately. In the meantime the government issued decrees having the force of law. The Italian decrees abolishing slavery and forced labour were kept in being.

An agreement between Great Britain and Ethiopia was signed at Addis Ababa on Jan. 31, 1942. By it, Great Britain recognized the independence of Ethiopia and the sovereignty of the emperor. Normal diplomatic relations were restored; ministers were exchanged during the course of the year. The British government undertook to help the emperor to obtain British advisers, police officers, and judges. Great Britain was to make Ethiopia grants of £1,500,000 and £1,000,000 respectively during the two years' currency of the agreement, and £500,000 and £250,000 in the next two years if it were prolonged. The British foreign secretary said in parliament that this tapering off of financial aid was to ensure that the dependence of Ethiopia on a foreign country not be perpetuated. It was agreed that Great Britain should be consulted on all currency matters. Certain areas of strategic importance were to remain under British military control so long as might be necessary for the conduct of the war against the common enemy. Apart from this, British forces would not be maintained in the country; their withdrawal was in fact complete by the beginning of Sept. 1942. Under a military convention signed at the same time as the agreement, a British military mission was provided to train and organize the Ethiopian army.

President Roosevelt announced on Oct. 9 that he had received a telegram from the emperor stating that his government and people were anxious to assume the obligations of the pact of the United Nations, and offering to place the military and economic resources of the nation at their disposal. The president accepted this offer with gratitude, and the British government did likewise. (M. Cs.)

Trade and Communication.—Chief exports: hides and skins, coffee (13,000 metric tons in 1937–38) and gold. Roads (1940) *c.* 4340 mi.; railways (Addis Ababa to Jibuti in French Somaliland) 486 mi.

European War: *see* World War II.

Events of the Year: *see* Calendar of Events, 1942, pages 1–16.

Exchange Control and Exchange Rates.

Only a small portion of international trade had any counterpart in 1942 in the foreign exchange markets. Foreign commerce was almost completely restricted to exchange among allies in the war; and within this sphere transactions were effected by governments at predetermined rates without recourse to the ordinary mechanism of payments. Consequently the outstanding features of the foreign exchange market in 1942 were its small turnover and the relative inflexibility of exchange rates. Both features were set in clear relief by the fact that even in Switzerland, a neutral country and an established centre of international finance, only three currencies—Argentine pesos, Portuguese escudos and Swedish crowns, could be freely exchanged. Those changes which did occur during 1942 in foreign exchange rates fell principally into two categories. A number of small countries, mostly neutral nations, appreciated their monetary standards in terms of foreign currencies, often as an attempt—probably futile—to combat inflation. The spread of the yen area, another main feature of 1942, frequently involved sharp alterations in exchange rates. On the whole, 1942 represented the final step in the subordination of foreign trade and finance to political and military control.

Continental Europe.—Seventeen out of 20 countries in continental Europe were linked to the central clearing of Berlin, the remaining three being Portugal, Spain and Turkey. Most of the countries which resisted but were finally conquered by Germany were permitted to trade only via the Berlin *Verrechnungskasse*, while Denmark continued in 1942 to negotiate separate payment agreements. Thus Denmark concluded bilateral agreements with Belgium (Feb. 18), Spain (Aug. 22) and the Netherlands (Sept. 9), and a triangular clearing with Sweden and Finland (April 20). Toward the end of January the Danish authorities protested to Berlin against the doubling of the German clearing debt (an increase of 460,000,000 krone) in 1941, and secured an 8% appreciation of the krone relatively to the reichsmark. The measure was opposed by the Danish Farmers' party, but supported by a union of industrialists and labourers who demanded a cheapening of imported raw materials.

During 1942 Germany virtually completed the process of bringing the valuation of the reichsmark in terms of the currencies of conquered or dominated countries to parity with such "free currencies" as the Swiss franc, dollar, etc. In some cases this was accomplished by increasing the quotation for the reichsmark in the particular country, in some cases by decreasing the premium for the free currency, and sometimes by a combination of both. Thus in April 1941 the Swiss franc bore premiums from 18%–22% relatively to the reichsmark in Bulgaria, Greece, Hungary, Rumania and Yugoslavia, whereas by April 1942 the premium had been eliminated in all but Rumania. The currency of the Netherlands was reduced to complete dependence on the German mark by admitting German exchange balances to the required cover for Dutch banknotes.

The perennial tendency for Germany to run into debt upon clearing account was intensified during the year. By April the newly founded Serbian national bank held a frozen Berlin balance of 70,000,000 reichsmarks; by the midyear Germany owed Hungary 376,500,000 pengo; the Danish case has been noted. Some countries, such as France and Italy, however, found themselves in arrears. The French government levied a 9% tax on exports, but was compelled to reduce it to 3%. In the case of Italy, the passive balance was to be partly offset by Germany's crediting the clearing account with about 1,000,000 lire daily for the labour of Italians in Germany.

Among neutral European countries, Sweden renewed clearing and payment agreements for 1942: with Germany (Dec. 20, 1941), the Swedish Export Credit board underwriting export credits to Germany; with Bohemia-Moravia (May 4, 1942); and with Hungary (Sept. 1). Trade with France proceeded on a barter basis, under an agreement effective on June 1, at about one-sixth its former volume. The clearing with Italy operated smoothly, but Germany accumulated large arrears. On April 20 the exchange control law of 1939 was renewed for another year.

Switzerland resisted the temptation afforded by New York premiums on francs (24%–55% in May) to raise the officially pegged rate, preferring to combat rising domestic prices by taxing exports (10% in the case of Spain) and applying the proceeds to an import subsidy. The authorities also refused to buy dollars at these favourable rates, since physical imports were already narrowly restricted by the European blockade and the use of dollars was limited by the United States general freezing order. In August an export embargo was placed on gold; the conversion of foreign currencies to gold reduced the Swiss holdings of the former from a high of Swiss fr. 1,308,000,000 in 1941 to Swiss fr. 143,000,000 at the end of June.

The Bank of Portugal decided in June to reintroduce the effective circulation of gold in the form of a new coin, the dubrao, equalling 1,000 escudos. Reflecting the improvement of its exchange position, Spain suppressed from August onward the "free peseta" rate prevailing outside the clearing; in the sterling relation this signified an appreciation from 46.55 pesetas = 1 pound to 40.50 = 1 pound. On Aug. 5, the *Official Bulletin* announced that from Jan. 1943 the general moratorium established in the civil war would be lifted. In Tangiers, effectively under Spanish domination until recently, the peseta commanded a premium relatively to the French franc, and the absence of exchange control conduced to chaotic monetary conditions. Turkey likewise exploited an appreciation of its standard: on Aug. 5, the import premiums paid for "free currencies" (25% for United States dollars, 40% for Swiss fr. and 40% for Swedish kr.) were reduced, but the export premia (38%, 48% and 48%) were retained at former levels to combat rising domestic prices and to counterbalance the extensive foreign claims against Turkey. A general export-licensing system was adopted on May 16. The rise of nonbelligerent countries' currencies is illustrated also by Iran, where importers paid 174 rials for the pound in 1941, though the official rate stood at 68.8 rials; in March 1942, in consequence of United Nations' demands upon the Iranian transportation system, the official rate could be adapted to the actual market level at 128–140 rials = 1 pound.

British Empire.—The exchange control system of the United Kingdom had by the beginning of 1942 been practically completed. With outside free currency countries—Switzerland and the United States—Britain employs registered accounts; with most other countries outside the sterling area, special accounts; within the area, sterling exchange for residents and sterling area accounts for nonresidents; and lastly, Central American accounts. All of these accounts are strictly bilateral except for the last category, which is fungible as amongst the various countries of Central America. Outside the large operations of the British ministries of supply and food and of lend-lease, a large share of British trade is conducted by the U.K. Commercial corporation through its subsidiaries in Spain, Portugal, Turkey, Palestine, Egypt, Sudan, Iran, Iceland, Syria and Iraq. It employs various methods of finance including the clearings and special accounts. In September the exchange control was tightened by the inclusion of Brazilian milreis and Uruguayan pesos amongst currencies to be offered by British residents to the Bank of England. With the improvement in quotations on these currencies, some British exporters had taken payment for exports in deposits in these countries and not in English banks.

During 1941 the sterling area was widened to include several near east and African currencies; but the Japanese conquests in the orient in 1942 produced a significant shrinking as we presently observe. Late in the year paper money with the imprint "Issued by the British Military Authority" was introduced in North Africa for the use of troops, since the use of ordinary English notes would have jeopardized the British exchange control system by opening a channel for the infiltration of English money seized by the Germans in the invasion of the Low Countries. For the use of American soldiers in Great Britain, special sterling accounts without restriction as to employment were introduced.

Accompanying the Japanese advance into Burma there developed in India a speculative boom in the price of silver. In March quotations advanced to Rs. 89 per 100 fine tolas and approached the point at which it would pay (at Rs. 109) to melt silver rupees. The Indian government, however, possessed ample reserves in London to assure the maintenance of its selling price of silver bullion at 23½*d.*, and the rupee rate was unaffected.

Throughout 1942 the official and free exchange rates of sterling in New York continued at $4.035.

Canada does not belong to the sterling area but maintains its rate at something of a compromise between the pound and dollar. During 1942 the Canadian dollar varied generally between 87 cents and 90 cents in U.S. dollars. On Jan. 2 two orders in cou cil became effective, considerably liberalizing the exchange co trol so far as concerns relations with U.S. and the sterling are For sums under $100 Canadian residents are not required to ma formal application in order to remit to nonresidents for goo already imported. Licences and permits are simplified or elim nated for remittances within the sterling area, and sterling a counts and money may be freely disposed of. For the fiscal ye from April 4, 1942, Canada made a "gift" of $1,000,000,0 covering anticipated exports to U.K. during the year, thus eli nating all possible foreign exchange complications.

United States.—Exchange control in the United States w already nearly full-fledged before the war declarations. On Ju 14, 1941, all continental European assets within the United Stat not already blocked were frozen, and on July 25 the assets Japan and China were included. An executive order of Dec. imposed an automatic blocking upon the assets of any count falling under the control of enemies of the United States. T last vestige of the international character of the dollar disa peared. By March 1942 the total of foreign exchanges no long quoted in New York had risen to 38, leaving only the Sou American and six sterling currencies, of which the majority we pegged.

On March 13 the treasury prohibited, except with special pe mission, the importation of foreign and domestic money fro blocked countries not under general licence and from enemy a certain other countries. As a result dollar notes fell to varyi discounts abroad, exemplified by a 50% discount in Switzerla in May. The prohibition of export of U.S. currency to Mexi was added on Aug. 14.

During the course of the year 1942 a number of Latin Ame can countries prohibited or restricted the export of U.S. curren —Argentina, Bolivia, Costa Rica, Cuba, Dominican Republic, Salvador, Honduras, Mexico, Nicaragua, Peru, Uruguay and Ven zuela. This action followed declarations of war in some cases a in others it probably represented collaboration with the U treasury. A treasury order of July 7 required the exchange of U currency in Hawaii for a special Hawaiian series by July 15. D tinctively marked notes, to prevent reimportation into the Unit States, were issued for military use in North Africa at the ra of $1 = 1 pound = 300 N.A. francs. Australia permitted the fr circulation of U.S. money.

In May the treasury put an embargo upon silver exports Portugal, Spain, Switzerland and Sweden, and in September a nounced that its stock of nonmonetary silver would be lent domestic industries. The treasury's silver buying price was a vanced from 35 cents to 45 cents an ounce on Aug. 31, probab as a part reimbursement to Mexico for undertaking compensati for U.S. oil properties.

The Board of Economic Warfare revoked general export cences after Jan. 19, 1942, in favour of individual licences fo long list of commodities. On April 30 a maximum export pri regulation became effective as formulated by the Office of Pri Administration, collaborating with the Board of Economic Wa fare and the department of state. The order provided that exp prices should be cost of acquisition plus average export-trade pr mium prevailing from July 1–Dec. 1, 1940, or from March April 15, 1942, whichever period yielded the lower premium. T regulation was subsequently revised.

Latin America.—On March 7 the Argentine minister of finan announced that, to cope with the extraordinary growth of Arge tine blocked sterling accounts resulting from abnormal exports Great Britain, an agreement had been reached to invest the exce sterling in repatriating Argentine bonds held in Great Brita chiefly the Conversion Bond issue of 1934, the "Créditos" a

Latin American Exchange Rates[1]

Averages are actual selling rates for sight drafts on New York, in units of foreign currency per dollar, with the following exception: Cuba—United States dollars to the peso. The peso of the Dominican Republic, the Guatemalan quetzal and the Panaman balboa are linked to the dollar at 1 to 1; the Haitian gourde is fixed at 5 gourdes to 1 dollar. Note.—Special rates apply to automotive equipment and agricultural machinery, imported from the United States into Argentina.

Country	Unit quoted	Type of exchange	Annual average rate		Average rate, 1942									Latest available quotation	
			1940	1941	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Rate	Date
Argentina	Paper peso	Official A	3.73	3.73	3.73	3.73	3.73	3.73	3.73	3.73	3.73	3.73	3.73	3.73	Nov. 19
		Official B	4.23	4.23	4.23	4.23	4.23	4.23	4.23	4.23	4.23	4.23	4.23	4.23	"
		Bid	..	4.88	..	..	..	..	..	..	..	..	..	4.94	"
		Free market	4.37	4.24	4.22	4.24	4.22	4.23	4.24	4.26	4.23	4.22	4.23	4.24	"
Bolivia	Boliviano	Controlled	39.09	43.38	46.46	46.46	46.46	46.46	46.46	46.46	46.46	46.46	46.46	46.46	Nov. 23
		Compensation	53.83*	55.00♀	..	..	..	..	..	..	..	..	..	..	
		Curb	56.71	54.02	48.25	48.38	48.70	49.25	50.00	51.50	50.00	50.00	50.00	50.00	End of Oct.
Brazil	Milreis	Official**	16 500	16.500	16.500	16.500	16.500	16.500	16.500	16.500	16.500	16.500	16.500	16.500	Nov. 7
		Free market	19.789	19.717	19.650	19.650	19.650	19.650	19.650	19.650	19.642	19.630	19.630	19.630	"
		Special free market	20.700	20.678	20.600	20.583	20.500	20.500	20.500	20.500	20.500	20.500	20.500	20.500	"
		Curb	21.421	20.298	19.899	19.943	19.777	19.751	19.757	20.000	..	..	..	..	.
Chile	Peso	Official	19.37	19.37	19.37	19.37	19.37	19.37	19.37	19.37	19.37	19.37	19.37	19.37	Nov. 11
		Export draft	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	"
		Curb market	33.04	31.78	31.59	31.09	30.16	30.34	30.53	31.14	31.15	31.74	32.22	33.70	"
		Free	31.05	31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.12	31.10	31.10	31.10	"
		Gold exchange	31 05	31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.12	31.10	31.10	31.10	"
		Mining dollar	31.13†	31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.12	31.10	31.10	31.10	"
		Agricultural dollar	..	31.15♂	31.15	31.15	31.15	31.15	31.15	31.15	31.12	31.10	31.10	31.10	"
Colombia	Peso	Controlled	1.75	1.7545	1.755	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.755	Nov. 14
		Bank of Republic	1.755	1.755	1.755	1.755	1.755	1.755	1.755	1.755	1.755	1.755	1.755	1.755	"
		Stabilization fund	‡	‡	‡	‡	‡	‡	‡	‡	‡	‡	‡	..	..
		Curb	1.88	1.86	1.77	1.80	1.79	1.76	1.76	1.77	1.77	1.77	1.77	1.77	"
Costa Rica	Colon	Uncontrolled	5.70	5.85	5.83	5.88	5.87	5.82	5.72	5.62	5.64	5.56	5.64	5.66	Nov. 23
		Controlled	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62	"
Cuba	Peso	Free	.90	.975	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	Nov. 9
Ecuador	Sucre	Central bank (Official)	16.42§	15.00	15.00	15.00	15.00	14.93	14.10	14.10	14.10	14.10	14.10	14.10	"
		Central bank (Free)	15.44‖	..	..	..	..	..	..	..	..	..	..	..	..
		Commercial bank	15.73‖	..	..	..	..	..	..	..	..	..	..	..	..
Honduras	Lempira	Official	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	"
Mexico	Peso	Free	5.40	4.86	4.86	4.86	4.85	4.86	4.86	4.86	4.85	4.85	4.85	4.85	Nov. 14
Nicaragua	Cordoba	Official	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	..	5.00	Nov. 21
		Curb	6.36	5.93	5.26	5.11	5.26	5.34	5.42	5.35	5.23	5.22	..	5.00	"
Paraguay	Paper peso	Official	70.00¶	..	333.00	333.00	330.00	333.00	333.00	333.00	333.00	333.00	333.00	333.00	Oct. 31
		Free	75.35¶	..	..	□	..	..	..	..	..	..	..	..	..
Peru	Sol	Free	6.17	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	Nov. 14
Salvador	Colon	Free	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	"
Uruguay	Peso	Controlled	1.899	1.899	1.899	1.899	1.899	1.899	1.899	1.899	1.899	1.899	1.899	1.899	"
		Free	2.66	2.31	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	"
Venezuela	Bolivar	Controlled	3.19	3.26	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	Oct. 31
		Free	3.46°	3.76▲	3.55	3.35	3.35	3.54	3.41	3.35	3.35	3.35	3.35	3.35	"

[1]Source: Department of Commerce, *Foreign Commerce Weekly*. *March 16–Dec.31; **For commitments of the government only; †Established on July 13; ‡For Class 2 merchandise, 1.795; Class 3, 1.87; Class 4, 1.95; §June–December; ‖January–May; ¶Paraguayan pesos to 1 Argentine peso; ♀Jan. 1–June 20; ♂Established March 25; □Abolished on Feb. 10; °Jan. 1–June 25; ▲July 24–Dec. 31.

"Cédulas," and the Transandine railway bonds, aggregating together £4,100,000. Because Argentina experienced a strong capital influx from the U.S. in 1941, there followed in 1942 a requirement to register all foreign securities and to deposit dollar notes with the central bank. The free market rate on dollar exchange had been fairly stable at a level 3% above 1940. The auction or "bid" rate on foreign currencies at a substantially higher level than the free market rate was applied only to luxury goods comprising not more than 2% of imports.

Brazil announced in October the intention of supplanting the milreis by a new currency unit, the cruzeiro, to be divided into 100 centavos. This avoided the inconvenience of dividing an already small currency unit into 1,000 parts.

Colombia divides imports for exchange-control purposes into four classes with progressively less favourable rates from class I to IV. Prior to April 9 there were delays in obtaining exchange for classes II, III and IV, but after that date the decline in imports resulted in exchange being available for all classes.

Cuba, in Dec. 1941, followed by Bolivia, Ecuador, Guatemala, Haiti, Honduras, Paraguay and Venezuela early in 1942, froze the funds of axis countries.

In conjunction with a stabilization loan from the United States, Ecuador lowered its official exchange rate from 15 sucres to the dollar, at which level it had been maintained since Nov. 1940, to 14 sucres = $1.00. The change was approved on April 28 but the new rate was not effective until June 30. Rates on other countries paralleled the dollar rate.

On Feb. 6 Mexico established an office of control and supply in the ministry of national economy, charged with the issuance of certificates of necessity for products subject to export licence in the United States.

Paraguay resumed the service on its foreign debt—the London loans of 1871 and 1872, amounting to £800,000—on Aug. 26. Service had been in abeyance since 1932.

The Bank of the Republic of Uruguay on March 27 renewed the practice of charging a premium of 3½%–6% for exchange against imports of semiluxuries and domestically produced goods which the rise of the peso rate had adversely affected.

Orient.—The Chungking government was aided in its effort to stabilize monetary conditions in China by a $500,000,000 loan from the United States and £50,000,000 from the United Kingdom early in 1942. In February the Chungking government was able to abolish restriction on money movements within the country and to free the export of currency, except for newly printed banknotes sent to ports of entry or the interior, which required permission of the ministry of finance.

In territory dominated by the puppet Nanking government, the Chungking yuan was attacked and finally displaced by the Japanese authorities. In 1941 the exchange rates had been set at 1 Chungking yuan = 1 Nanking yuan = ¼ of 1 Japanese military yen. On March 23, 1942, a rate of 100 Chungking yuan = 77 Nanking yuan was proclaimed; and on May 31 a rate of 2 Chungking yuan = 1 Nanking yuan was announced and a brief interval was allowed before the use of Chungking yuan was prohibited. The Shanghai dollar had been severed from its dollar and sterling links on Jan. 1, 1942; and on Aug. 1 the Hongkong dollar was demonetized after two successive devaluations by 50%, without opportunity for holders to exchange for Japanese currency.

Throughout its field of conquest, Japan supplanted the provincial or colonial currencies with the military yen (or "gumpyo" in Japanese) at rates established by Tokyo. In the Philippines, U.S. $1 = 2 yen; in Thailand, the baht was defined in February as 1 baht = 1.551 yen, but in April the ratio was changed to 1 baht = 1 yen; in Indo-China, piastres 100 = 97.60 yen. Whereas the German "occupation marks" were envisaged by the German authorities as temporary, the Japanese were said to regard the military yen as permanent. International transactions were to be settled through clearing accounts with the Bank of Japan. The degree of over-valuation enforced by the Japanese for the yen exceeded that of the mark; the Japanese were determined to end cheap Japanese exports in the "co-prosperity sphere." (*See* also Gold.)

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Exchange Rates: *see* Exchange Control and Exchange Rates.

Exchange Stabilization Funds.

The largest operation of the U.S. Stabilization fund in 1942 was the extension of a $500,000,000 credit early in the year to the Chungking government to strengthen the Chungking yuan. The treasury granted smaller credits to support Latin American currencies throughout 1942, as for example the $5,000,000 loan to Ecuador announced on Feb. 5.

Cuba began on Feb. 11 to require the delivery of certain percentages of dollar exchange from sugar exports to the Cuban Stabilization fund against reimbursement in pesos at par. The fund had been operated with a loss because of the recent appreciation of the peso, and the decree of February was devised to provide new resources. The Cuban congress resolved in a debate on Feb. 7 to continue the fund as a valuable adjunct to a central bank which is to be established in the future.

On Dec. 29, 1941, Japan severed connections between the yen and the Anglo-Saxon currencies. Shortly thereafter it was announced that the stabilization fund of 300,000,000 yen would be wound up since there would be, it was said, no need for foreign exchange machinery in the new yen area.

In Europe, the existence of exchange controls and war conditions led to the complete inactivity of stabilization funds. (*See* also Exchange Control and Exchange Rates; Gold.) (H. S. E.)

Expenditure, Government: *see* Budgets, National.

Exploration and Discovery.

During 1942 there was practically no exploration in the Antarctic, and, while there was a lot of it in the Arctic, the whole was under the taboo of military secrecy. (V. S.)

Export-Import Bank of Washington.

The Export-Import Bank of Washington, an agency of the United States, was established on Feb. 12, 1934, for the purpose of financing and facilitating trade relations between the United States, its territories, insular possessions and foreign countries. By an act of Congress approved Sept. 26, 1940, the Export-Import bank was to continue as an agency of the United States until Jan. 22, 1947, or such earlier date as might be fixed by the president by executive order. By this act the bank was also granted specific authority to make loans which would assist in the development of the resources, in the stabilization of the economies, and in the orderly marketing of the products of the countries of the western hemisphere.

The bank in 1942 had lending authority of $700,000,000. Its capital consisted of $1,000,000 of common stock and $174,000,000 of preferred stock. All common stock, except 11 shares standing in the respective names of the trustees, was held jointly by the secretaries of state and commerce in their official capacities. All of the preferred stock was purchased by the Reconstruction Finance corporation. The bank's governing body was a board of 11 trustees representing the departments of state, treasury, commerce and agriculture, and the Reconstruction Finance corporation.

From its creation to the end of 1942, the bank had authori $1,101,761,946 of loans, compared with $837,705,261 at the cl of 1941. During 1942 disbursements amounted to $50,410, and repayments to $55,040,943. As a result, outstanding loans the end of 1942 were $181,500,341 compared with $186,130, at the end of the previous year.

Because of the international situation, the bank's commitme during 1942 were confined largely to Central and South Ameri Credits were extended in varying amounts to develop or expa the production of strategic materials; to finance highways, wat works and sewerage systems, and other public works; to facilit certain types of exports; to continue the construction of Brazilian steel mill; to develop the Itabira iron ore deposit a associated railway and port facilities in Brazil; to complete a la hydroelectric project in Uruguay; to aid in the construction o steel mill in Mexico; and to assist in carrying out other proje contributing to the development of the resources of the counti of the western hemisphere. (W. L. Pi.)

Exports: *see* Agriculture; International Trade.

Eye, Diseases of.

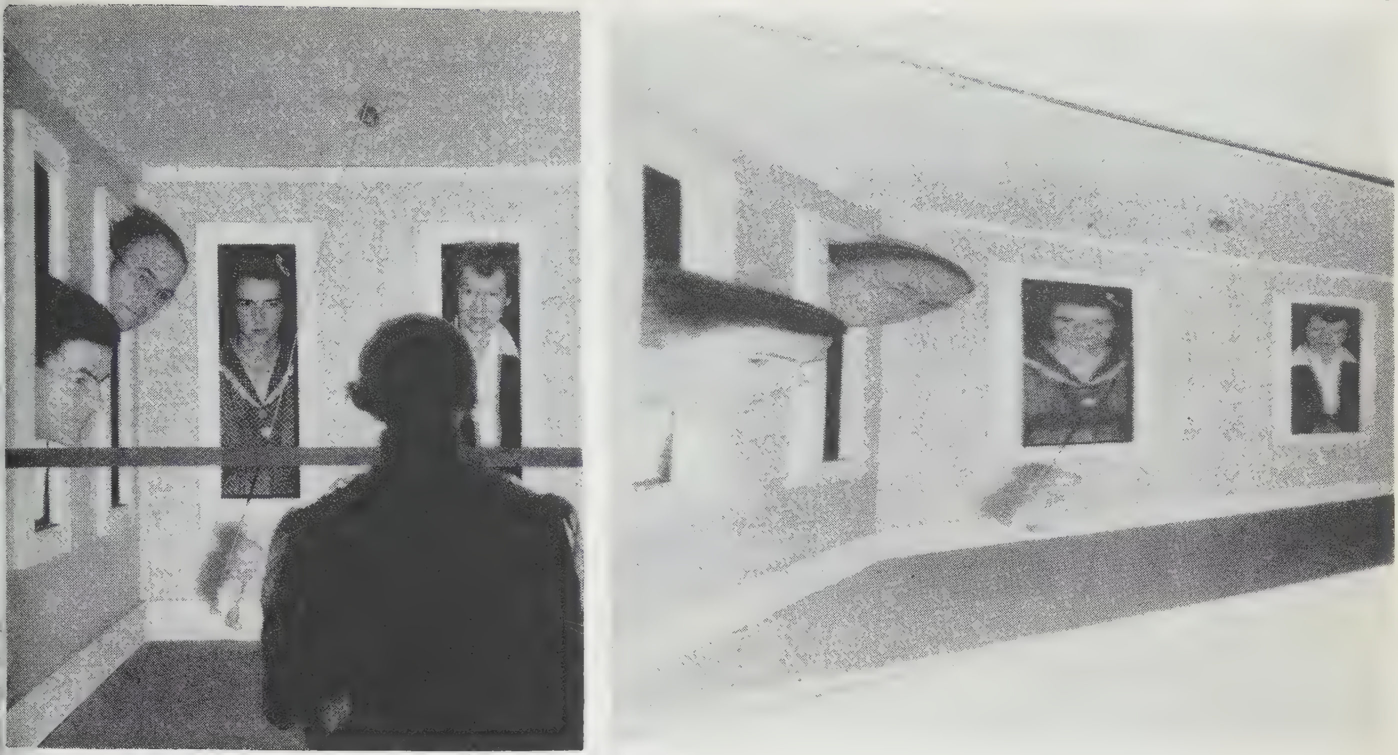
Epidemic Keratoconjunctivitis (Sh yard Conjunctivitis).—In the sumr of 1941 an epidemic of an unusual type of ophthalmia star among shipyard workers at the Pearl Harbor Navy yard. By latter part of the year, the disease began to appear among sh yard workers on the west coast of the United States. During early months of 1942, it reached epidemic proportions and merous sporadic cases were seen in other parts of the count The number of cases then gradually diminished. By summe was seen but rarely.

The disease was characterized by intense swelling and redn of the conjunctiva, involvement of the lymphatic glands of face, and by the absence of discharge from the eyes. The corn became involved in a large percentage of the cases, the charact istic lesion being small superficial infiltrates. Vision was te porarily diminished in those cases having corneal involvement.

The first explanation for the epidemic was based on the p sumption that some industrial irritant was at fault, but that p sumption could not be substantiated. This theory was furt discounted when the disease was found to be contagious, ma non-shipyard workers becoming infected. The disease seemed m likely due to a virus type of infection, there being some exp mental evidences that this was the case. The disease tended be self-limited, the average case lasting about two weeks. Ea treatment with the sulphonamides and with X-rays seemed to beneficial in hastening recovery.

Syphilitic Optic Atrophy.—At least 8% of all persons suf ing from syphilis of the central nervous system have been fou to develop atrophy of the optic nerves. The incidence of bli ness in untreated cases of neurosyphilis has been high, up to 65 within three years from the time the disease was contracted. statistical study of the results of treatment of syphilitic op atrophy was reported from the Wilmer Ophthalmological in tute of Johns Hopkins university and hospital. The results w most satisfactory following induced malaria therapy by which incidence of blindness was reduced to 18% after three ye The authors of the report felt that malaria was the only efficaci method of treatment. Their studies showed progression of bli ness under other methods to parallel that in the untreated cases

Colour Vision in Industry.—In a study of the colour vision 7,000 workers in an Indiana industrial plant, it was found t those workers with deficiency in colour vision had in genera lower efficiency rating than those with more nearly normal col vision. There are various degrees of colour blindness rang



TEST CONDUCTED at the Dartmouth Eye institute for the study of aniseikonia, an eye affliction which produces distorted vision. At the left is a rectangular box as seen by a person with normal vision; at the right, the same box as seen through a pair of glasses ground to simulate aniseikonic vision

from inability to discriminate precisely between nearly related shades of colour to total colour blindness, a very rare condition. Plant efficiency was found to be increased by assigning workers to jobs requiring colour discrimination and acute vision on the basis of response to colour vision tests.

Night Vision in Aviation.—Study of the complete ocular functions of aviators in military aviation became increasingly important due to the visual problems associated with night flying. The problems of taking off from and landing on airfields with but dimly illuminated landmarks are quite different from those encountered in daylight flying. Careful studies of the dark adaptation, stereoscopic vision and depth perception in pilots and aviation cadets were leading to refined tests of these functions. The ophthalmic department of the royal air force devised three instruments called the rotating hexagon, the rotating stereogram and the rotating depth perception apparatus with which to study three of the principal ocular functions. From these studies, standards of efficiency were being established, which were increasing the safety of the air forces. (*See* also VITAMINS.)

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(W. L. BE.)

Facts and Figures, Office of: *see* WAR INFORMATION, OFFICE OF.

Fair Labor Standards Act: *see* CHILD WELFARE.

Fairs, State: *see* SHOWS.

Falk Foundation, The Maurice and Laura,

of Pittsburgh, Pa., continued its policy of financing economic research studies but with special emphasis in 1942 on the problem of postwar economic reconstruction. During the year the foundation appropriated to The Brookings Institution, Washington, D.C., $80,000 for a series of studies of significant phases of the problem of demobilization and economic reconstruction after the war, and $50,000 to finance the formulation of a postwar industrial program for the United States. Other grants by the foundation were $15,000 to the United War Fund and $2,500 to the American Red Cross. The Foundation also paid $50,000 on the principal of its grant of $300,000 to the Carnegie Institute of Technology for the endowment of the Maurice Falk Professorship of Social Relations and $8,333.33 for the expenses of the professorship 1942–43.

In 1942 the following publications were issued as reports on studies made under the foundation's grants: *Price-Making in a Democracy* (released by Brookings Institution as a series of pamphlets); *Refugee Settlement in the Dominican Republic* (Brookings Institution); *Output and Employment in Agriculture, 1899–1939* (National Bureau of Economic Research); *America's Factories Since 1899* (National Bureau of Economic Research); *Productivity of Labor in Peace and War* (Occasional Paper 7, National Bureau of Economic Research); and *Is There Enough Manpower?* (Brookings Institution). (J. S. G.)

Falkland Islands: *see* BRITISH EMPIRE.

Farish, William Stamps

(1881–1942), U.S. oil executive, was born Feb. 23 in Mayersville, Miss. Three months after graduating from the University of Mississippi law school (1900), he went to Beaumont, Tex., as an oil prospector. By 1917, he was vice president of the Humble Oil company, which he helped to organize. During World War I, he served on the National Petroleum War Service committee, which handled oil supplies for the Allied nations. He later joined the Standard Oil Company of New Jersey, serving as chairman of the board, 1933–37, and president and chief executive officer, 1937–42. Farish died in Millbrook, N.Y., Nov. 29.

Farm Co-operatives: *see* AGRICULTURE.

Farm Credit: *see* AGRICULTURE.

Farm Credit Administration: *see* AGRICULTURE.
Farm Income: *see* AGRICULTURE.
Farm Machinery: *see* AGRICULTURE.
Farm Mortgages: *see* AGRICULTURE.
Farm Security Administration: *see* AGRICULTURE.
Farm Tenancy: *see* AGRICULTURE.

Fascism

The year 1942 marked in all probability the turning point in the fortunes of fascism as a movement of international importance. In Oct. 1942, the 20th anniversary of the march on Rome and of fascism's coming to power in Italy was celebrated. Yet the usual pomp and jubilation were conspicuously absent. It is true that in the 20 intervening years fascism had widely spread, not only in Europe but on all continents. The 20 years had witnessed the establishment of fascist governments in Germany, Hungary, Slovakia, Croatia, Rumania, Bulgaria, Spain, France and Japan; and semi-fascist governments had existed in Poland and Greece. In many other countries, especially in Latin America and the Union of South Africa, strong fascist parties existed. Practically no country was entirely free of them. Thus Signor Mussolini's proud forecast that fascism would be the political philosophy of the 20th century seemed on the road to realization. Yet the subdued mood reported from fascist Italy, as the year 1942 drew towards its end, cast heavy doubts on the ultimate fulfillment of fascist expectations. As against all the exaggerated claims of an alleged superiority of fascism as compared with "obsolete" and "decadent" democracy, of its higher efficiency and military invincibility, facts proved that fascism could reveal itself inefficient and that democracies could surpass it even in the art of warfare, which fascism acknowledged as its most proper domain.

The year 1942 saw an ever closer co-operation between the European brand of fascism represented by Germany and the Asiatic brand represented by Japan. On Feb. 4 the German radio broadcast to Asia that German and Japanese gods were symbols of the "same pure Aryanism," that Wotan, the leading god among the Germans, and Amaterasu, the Japanese sun goddess who is the ancestor of the Japanese imperial house, are "similar in character and meaning" and that "both gods are watching over their people to keep them in military and patriotic spirit." Japanese fascists under the leadership of Toyoma Nakano maintained that the Japanese emperor, as a descendant of the sun goddess, is destined to rule the earth as its ancestor rules heaven, and that Japan can never rest until the whole of mankind is one household under the paternal sway of the Japanese emperor. In spite of this glorification and deification of the emperor, the emperor had become a mere figurehead and the real power in fascist Japan was in 1942 in the hands of prime minister Hideki Tojo, who apparently wished to revive the days of the Shogunate. The needs of the war were made an excuse for converting Japan entirely into a one-party fascist state. The Imperial Rule Assistance association, founded by Prince Fumimaro Konoye, became the only political party in Japan with the prime minister as its leader. All resistance to Japanese policy and the Japanese war aims was viewed as resistance against the divine law which had singled out Japan for the unification of mankind. Though it was in no way certain whether this plan of global unification under the leadership of one of the two great fascist powers might not ultimately lead to a clash between Germany and Japan, should these two powers be victorious, nevertheless both of them stressed the close spiritual affinity and solidarity which doubtless existed between them.

While fascism gained strength in Japan and prepared itself and the country for a long struggle, the disintegration of the fascist party in Italy became manifest in the repeated removals from
the party of members "found guilty of unethical conduct in t
face of the war emergency." A meeting of the fascist par
directorate on May 26 decided to eliminate all those party me
bers who "do not deserve the honour" of being in the party, esp
cially all those who held very remunerative jobs in commerci
administrations and continued their speculations in the econom
field. By August 14, 1942, a meeting of the national directora
of the party reported an initial dismissal of 66,000 party membe
for different reasons including speculation and food traffic on t
black market, and these dismissals were soon to be followed
many others.

In the democratic countries and those of their allies fasci
movements and sympathizers were put under much closer supe
vision, and in some of them they had to abandon their activitie
In the United States, federal grand jury investigations accused
number of persons and publications of fascist propaganda or
co-operation with fascist countries. Some of the more extremi
pro-fascist publications ceased to appear, others had their post
privileges withdrawn, some of the leaders were arrested, and pr
ceedings of de-naturalization were instituted against persons fou
loyal to fascist countries, especially against members of t
German-American bund.

In those Latin-American countries which had either declar
war on or broken relations with the fascist powers, fascist prop
ganda, frequently supported by the Spanish Falange, was strict
supervised. But it was different in Argentina, where the "Allian
of Nationalistic Youth," the local counterpart of the Europe
fascist movement, enjoyed the protection of the governme
which showed openly some sympathy for the axis powers. Follo
ing the European example, the fascist youth of Argentina select
three "martyrs," Jacinta Lacebron Guzman, Julio Benito de Sa
tiago and Francisco Garcia Montano, who had been killed aft
fights with anti-fascist groups in 1934 and in 1938. The Allian
adopted an emblem, three upright lances in the form of t
tacuara, a native Argentina weapon consisting of a point of ste
lashed on with a rawhide to a shaft of bamboo. The leader of t
Argentinian fascist group in 1942 was Juan Bautista Molina,
retired general. The fascist movement in Chile was of much le
strength than that in Argentina.

Curbs were also placed on the fascist movement in Sou
Africa, the Ossewa-Brandag, or "covered wagon sentinels," a
extremist Boer organization, violently anti-British and pro-Ge
man. At the beginning of 1942 a subversive plot of dangero
dimensions was discovered among the police officers of Johanne
burg. On the other hand, the military successes of the Unite
Nations brought with them a weakening of fascist influences
the Arab countries and in India. Yet fascist propaganda co
tinued ceaselessly its activities for undermining the democrat
powers. Its main lines remained unchanged: they were directe
against British imperialism, against the Jews, and against co
munism. And by a dexterous use of insinuations, distortions a
emotional appeal to prejudices fascist propaganda remained to
certain degree successful in its efforts to confuse and disunite t
democracies. (*See* also ANTI-SEMITISM; COMMUNISM; DEMO
RACY; GERMANY; ITALY; JAPAN; RUMANIA; SPAIN.)

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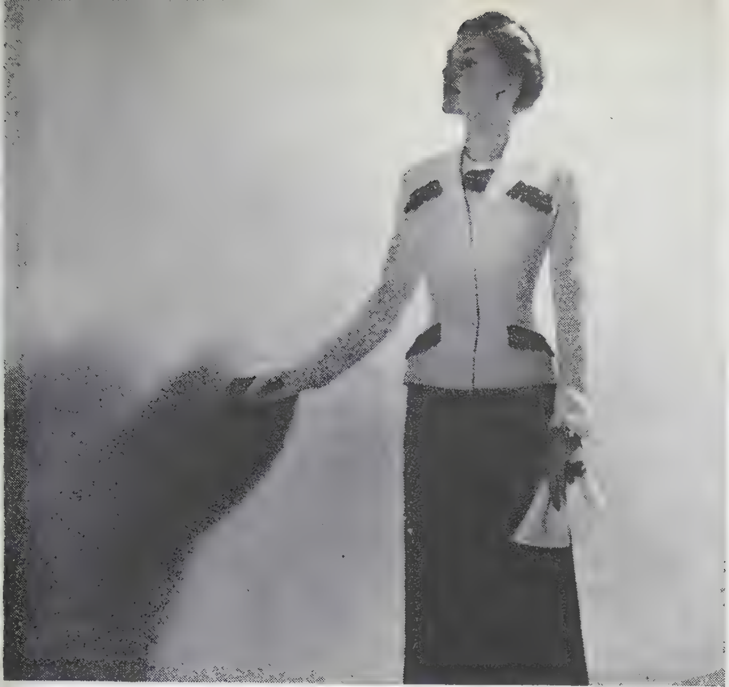
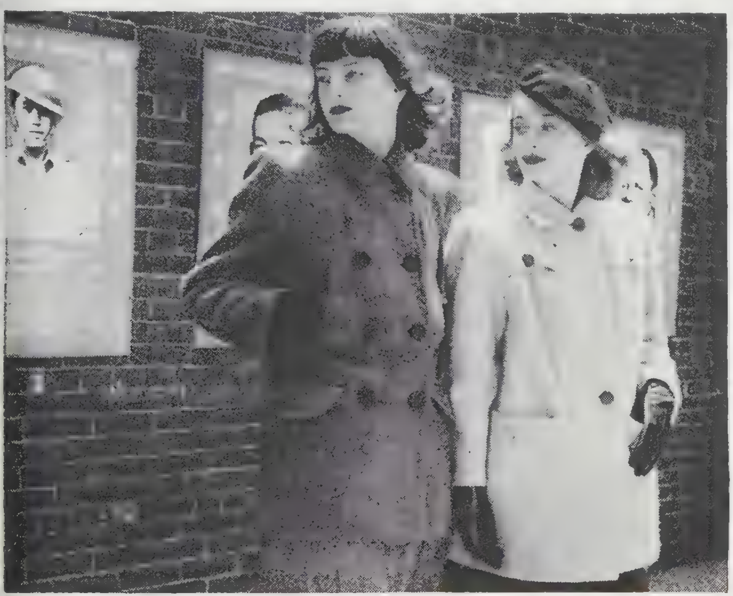
(H. Ko.)

Fashion and Dress.

The war, psychologically and mat
rially, had an overwhelming infl
ence on the fashions of 1942. The common denominators in a
clothes were economy of cut, comfort, adaptability and a gre
simplicity.

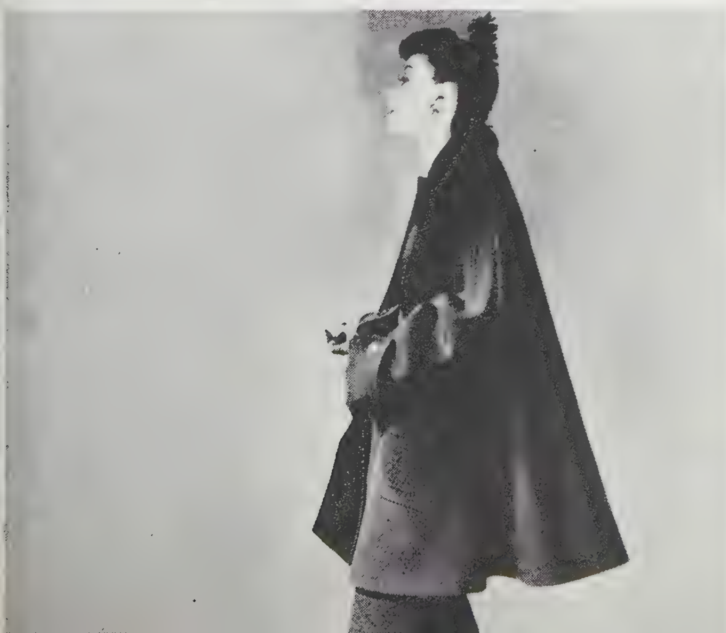


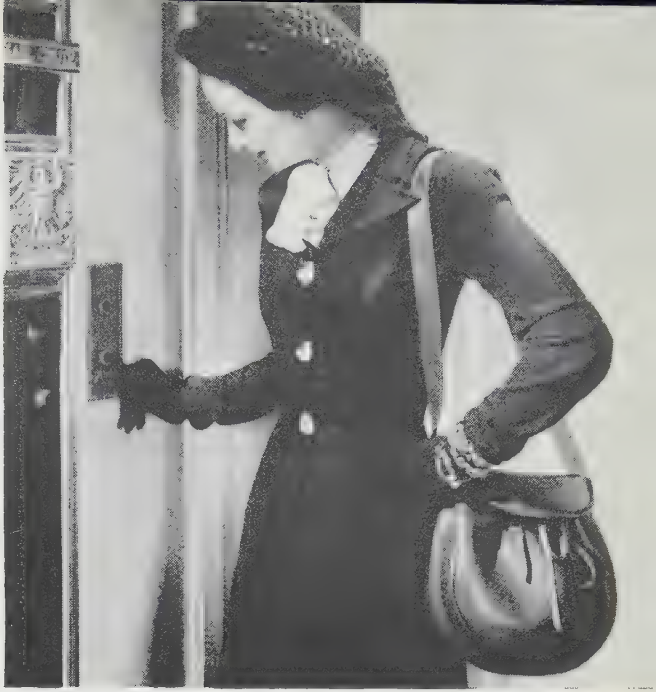
A DINING-OUT DRESS, summer of 1942, designed by Mainbocher. The skirt is of black linen, the short jacket of white linen trimmed with emerald green beads



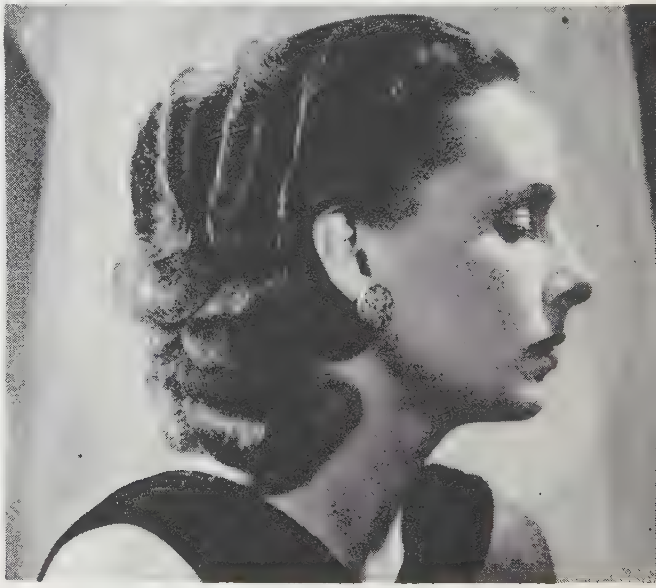
SHORT BULKY JACKETS, reminiscent of U.S. sailors' winter jackets, were worn by college girls in the autumn of 1942

SWING-BACK COAT, designed by Falkenstein, intended to look a little too big for the wearer. It is of black wool with a velvet collar





THE HANDBAG strung over the shoulder with a strap returned to favour in 1942



HAIRDRESS of 1942

"DIMOUT EVENING COAT" of 1942, of black wool studded with black paillettes, worn over a short evening dress. The net shawl is studded with the same paillettes

The U.S. government rulings directed at curtailing the use of materials urgently needed for the armed forces and their equipment, shortened dresses and jackets, banished over-full and accordion-pleated skirts, all unnecessary pockets, tabs and trimmings. These restrictions, plus woman's wartime instinct to intensify her femininity, forced manufacturers to a new virtuosity in designing and in cutting.

One outfit that could hold its own anywhere in the country—at a Texas airfield, an army camp in the Dakotas, or on the sidewalks of New York—was worth three with place limitations to women called upon to change their lives and their locales on short notice. Following a trend started by the uniforms of WAAC's, WAVES, Red Cross and A.W.V.S. workers, the suit—especially the gray flannel suit—became the personal daytime uniform of women out of uniform. Low-heeled shoes of polishable leathers, and shoulder-strap bags that left hands free for carrying bundles and getting out bus fares, had a sweeping popularity. The felt cloche hat—a memoir of the last war—suitable to debutante and dowager on the job or on the go, reappeared, and with it the inexhaustible beret. Based on the demands of trim-collared uniforms, and on the emphasis everywhere on neatness, hair was more and more swept up off the face, up off the neck.

Bright little ribbon bows, attached to clips or combs, were sold by the millions to tuck into the new coiffures.

After dark, in contrast to the daytime strictness, the eternal woman blossomed out in frilly blouses, and dresses with a flutter of ruffles. With an eye to unrehearsed evenings on dimmed-out and often taxiless streets, the short dinner dress almost entirely displaced the floor-length dress except for rare full-dress occasions and for cold country houses where legs were grateful for coverage. This short-skirted evening dress ran from the simplest long-sleeved black crepe to stiff formal satin with full decolletage—a fresh, underivative note in fashion. Satin evening suits that could be bought with both a long skirt and a short one to fill a variety of bills were a whole evening wardrobe in themselves. With all of these, the high-heeled, ankle-strap slipper, heightening the allure of legs and ankles, became a rage. The most important evening accessories were the crocheted wool shawl and the crocheted wool fascinator worn over the head—both usually spattered with bright-colored sequins.

The coat of the year was unquestionably the classic, velvet-collared Chesterfield in black or brown woollen, sometimes in fur. It even became an evening coat—in black tweed lined in white ermine or flecked with brilliant paillettes. The trench coat returned and went through almost as many transmutations. U.S. seamen's jackets, Winston Churchill jackets and a copy of a jacket worn by Gen. MacArthur were copiously adopted by the young.

Smartest of all the fingertip coats was one in black wool cut with a wide, circular back-swing.

The wool shortage, coupled with fuel rationing and the threat of heatless houses, hastened the development of revolutionary warm fabrics . . . notably aralac, made from skimmed milk, and nylon fleece. Cotton, which during the summer was handled with a sophistication that made it as city-bred as silk, was developed in new tweed-like textures and became a popular winter fabric as well. By November, the new rayon stockings and every conceivable mesh, rib and weave of cotton stocking solved the cold weather problem of women who spent the summer camouflaging their bare legs with make-up. The halted production of zippers and metal fastenings promoted a research into other methods of fastening that resulted in ingenious wrap-around, tied-on dresses and in the drawstring dress which became an easy favourite with the young. (*See* also Furs.) (C. Sn.)

Fawcett, Edward (1867–1942), British anatomist, was born May 18, and received his medical training at Edinburgh university and the Edinburgh school of medicine. He remained at the latter school as demonstrator in anatomy and later did similar work for Yorkshire college. He was professor of anatomy at University college, Bristol, 1893–1909, dean of the faculty of medicine at the college, 1905–09, and dean of the faculty of medicine at the University of Bristol, 1909–34. He was president of the Anatomical Society of Great Britain and Ireland, 1927–29. Dr. Fawcett made important contributions to the literature of anatomy and embryology, particularly on the development of the human skeleton, and he was an authority on church architecture. He died in Bristol, England, Sept. 22.

FBI: *see* Federal Bureau of Investigation.
FCC: *see* Federal Communications Commission.
FDIC: *see* Federal Deposit Insurance Corporation.

Federal Bureau of Investigation. During the fiscal year 1942, 7,448 convictions were secured in cases investigated by the Federal Bureau of Investigation, with sentences imposed totalling 1 death, 8 life, 17,163 years, 6 months and 4 days. Of these convictions 1,473 were secured in cases involving espionage, sabotage, un-American activities, and violations of the Selective Service act, as against 412 such convictions during the fiscal year 1941.

Three thousand eight hundred twenty-seven federal fugitives from justice were located and apprehended by special agents of the FBI during the year 1942. When their fingerprints were identified by a search through the fingerprint files of the FBI 7,506 fugitives were located for state, county and municipal law enforcement agencies.

The attack on Pearl Harbor, Dec. 7, 1941, found the FBI completely mobilized on a wartime basis. Its trained personne was increased almost two-fold, and every facility of the FBI wa taxed to the utmost during this period. In the fiscal year ending June 30, 1942, 218,734 national security matters were reported t the FBI for investigative activity as against 68,368 for the fisca year 1941 and 16,885 for the fiscal year 1940.

From the outbreak of war on Dec. 7, 1941, until Nov. 18, 1942 12,023 aliens of enemy nationality were arrested by the FBI an co-operating peace officers. Of this number, 5,018 were Japanese 4,736 were Germans and 2,253 were Italians. There were als eight Hungarians, seven Rumanians and one Bulgarian. Thos not immediately released were held for hearings before the enem alien hearing boards, which make recommendations to the attorney general as to whether the aliens should be interned, released or released on parole. Large amounts of prohibited material wer seized in widespread spot searches of the homes of alien enemie held by them in violation of presidential proclamations. Thi contraband, as of Nov. 3, 1942, included 4,155 guns, 257,91 rounds of ammunition, 2,497 short-wave receiving sets and 1 short-wave transmitting sets, 3,664 cameras and enough camer equipment to stock a photographic supply house. Among explosives seized were 2,340 sticks of dynamite, 2,828 dynamite cap and 3,787 feet of dynamite fuse. In addition, hundreds of photographs, maps, charts and documents containing confidential information about U.S. defenses were seized.

Fifty-six persons were convicted of espionage activities or fo failure to register as foreign agents during the fiscal year 194 resulting in sentences totalling 442 years, 11 months and 1 day Fines, savings and recoveries amounted to $48,217.90. Two majo spy rings were broken during the year and members of other were in custody and awaiting trial as the year ended.

While 218 persons were convicted of sabotage in the fiscal yea

1942, there was no evidence of any single act of foreign-directed sabotage. Those who were prosecuted for this crime acted willfully and not as the result of axis direction. The industrial damage which occurred was the result of malicious mischief, industrial accidents, and was in part due to the efforts of disgruntled employees. The 218 convictions resulted in prison sentences of 396 years, 11 months and 29 days.

Two convictions for sedition were secured during the year, and other persons were under indictment as the year ended.

In Selective Service violations, from the first registration day on Oct. 16, 1940, through Oct. 31, 1942, 2,062 violators had been convicted and received sentences totalling 3,792 years, 2 months and 15 days. In many aggravated cases the maximum sentence of five years in prison was pronounced. The primary purpose of investigations under this act is to enforce the law and to furnish manpower for the army rather than to take prosecutive action. As a result of this policy, 59,614 delinquent registrants were located who later complied with the provisions of the act.

As a result of investigations performed by the FBI, 35 aliens were deported from the United States and its possessions during the fiscal year 1942. They were involved in violations ranging from Selective Service irregularities to espionage. Consular offices of the German and Italian governments in the United States were closed July 15, 1941, as a result of FBI investigation at the request of the state department.

Pertinent information gathered by the FBI and co-operating peace officers is forwarded to the military intelligence service and to the office of naval intelligence for the assistance of the army and the navy in carrying on their functions in the war. The FBI also co-operates in a similar manner with other government agencies. Through this liaison arrangement hundreds of thousands of names were searched through the FBI files for other government departments during the fiscal year 1942.

The plant survey work of the Federal Bureau of Investigation was discontinued Jan. 5, 1942, when the war and navy departments assumed the responsibility for the survey of factories working on war materials. During the fiscal year 1942, 928 surveys were completed by the FBI.

Bank Robbery and Kidnapping.—Although emphasis was placed upon wartime work, the regular criminal investigations performed by the FBI were pursued as usual. There were 94 federal convictions in bank robbery cases during the fiscal year 1942. Prison sentences amounted to 764 years, 11 months and 17 days. Fines amounted to $42,000 while loot recovered totalled $15,952.16. Seventy-three fugitive bank robbers were located during the year. Since the peak year 1932, when 606 bank robberies occurred, there has been a decline of 91.4% in bank robberies.

From the passage of the Federal Bank Robbery act in 1934 to June 30, 1942, a total of 953 bank robberies were investigated by the FBI, resulting in 659 convictions in federal courts with the imposition of sentences totalling 2 death, 14 life, and prison terms amounting to 10,828 years, 3 months and 24 days.

Thirty persons were convicted during the fiscal year 1942 in kidnapping cases investigated by the FBI, resulting in one life sentence and prison terms of 425 years. For the ten-year period since the enactment of the Federal Kidnapping statute, June 22, 1932, there were 225 kidnapping cases and all but two were completely solved.

Fingerprints.—The identification division experienced the greatest growth in its 18 years of existence during the fiscal year 1942. There were 22,031,370 fingerprint cards received in this single fiscal period, which more than doubled the number received in the preceding 17 years. There were 42,874,078 prints on file June 30, 1942. The average number of prints received daily throughout the year was 52,470 as against 17,200 for the previous year.

Law-abiding citizens continued to take advantage of the opportunity to afford themselves a positive means of identification in case of amnesia, accident, death or disaster by voluntarily placing their fingerprints on file in the civil section of the identification division.

The war emergency caused the increase in the number of prints received with the ever-expanding use of this means of identification by the armed services, federal civil service, law enforcement agencies, and industrial plants employing workers on war production. A total of 1,523,438 prints were received from the federal civil service, and the value thereof can best be judged by the fact that a check of these prints against FBI records revealed that one out of every 19 persons seeking a position of trust with the government through civil service had a prior arrest record.

Research and Training.—The heavy increase in work for the FBI technical laboratory kept pace with the wartime work of the nation. In the fiscal year 1942, a total of 51,475 scientific and technical examinations were conducted by the laboratory in contrast with 14,589 examinations made during the fiscal year 1941. The 51,475 examinations involved 93,009 specimens of evidence. Research continued in scientific crime detection to devise new and better methods to solve the many problems arising in the handling of espionage, sabotage and other related investigations.

It was necessary for the FBI to intensify and enlarge its training programs to thoroughly equip the newly appointed special agents as quickly as possible. Three sessions of the FBI national police academy are usually held each year, but due to the war emergency it was necessary to cancel the academy session scheduled to start in Jan. 1942. A total of 702 carefully selected local law enforcement officers were graduated from the 20 sessions which had been completed. Following their graduation these men returned to their home communities and established police training schools.

Conferences are held with local peace officers four times each year throughout the United States, Hawaii, Alaska and Puerto Rico to afford instruction to officers in the investigative techniques and problems arising out of espionage, sabotage and other national security cases. Two specialized schools were conducted for police in every section of the country. A series of civilian defense courses for police executives and police was instituted in the fall of 1941 designed to educate American officers in all problems of law enforcement under wartime conditions.

In Feb. 1942 a series of war traffic schools was inaugurated on a nationwide basis to give officers specialized training in the problems arising out of increased traffic caused by the war. A total of 438 civilian defense and war traffic schools was conducted, attended by 39,658 police executives and police officers representing over 7,000 agencies.

Since Sept. 1930 the FBI has acted as a central clearinghouse for crime statistics. Data concerning offenses committed, crimes cleared by arrest, persons arrested and the number found guilty are forwarded to the FBI by local law enforcement agencies throughout the U.S. in the form of monthly and annual reports. The data are tabulated on a calendar year basis and published in the *Uniform Crime Reports* bulletin. (*See* also CRIME; KIDNAPPING; POLICE; SECRET SERVICE.)

(J. E. H.)

Federal Communications Commission.

The regulatory agency of the federal government over interstate communications, by wire and radio, underwent a revision in its work program during 1942 as a result of the United States' participation in World

War II. Emphasis was put upon conservation and limitation of peacetime facilities, while expansion was organized for communications services in military and defense areas.

The monitoring branch of the FCC, which informed the government of the content of foreign broadcasts, and the intercepting branch, which policed the air to prevent its use within the nation by the enemy or subversive groups, were materially expanded.

According to the analysis of the monitoring branch—the foreign broadcast intelligence service—the principal objective of enemy propaganda during the year was to spread defeatism and the feeling of futility throughout the United Nations. German, Japanese and Italian broadcasters spoke continuously of real or fancied deficiencies in the U.S. and British war effort. Conversely, the strength of the axis was emphasized and exaggerated. Reports of broadcasts were furnished to all government officials active in the prosecution of the war. Considerable information from this source was released to the public press through the Office of War Information (*q.v.*).

The intercepting branch—the radio intelligence division—collaborated with the intelligence services of the armed forces and law enforcement agencies in their programs of counterespionage and studies of enemy movements. Its field forces were expanded considerably during 1942.

Expansion of telephone facilities and other wire services was authorized in congested defense production areas. To fulfil the needs of U.S. world-wide operations, many new telegraph and telephone circuits to overseas points were instituted. Steps were taken to expand short-wave facilities used in psychological warfare.

On the other hand, the commission authorized new domestic radio stations and changes in existing facilities involving the use of critical material only to meet military or vital public needs.

Litigation with the National Broadcasting company and the Columbia Broadcasting system, over the commission's regulations designed to foster competition in network operations, continued through 1942 as the companies sought to enjoin enforcement. A three-judge district court in New York city first ruled it was without jurisdiction but after reversal by the supreme court ruled in favour of the commission on the merits on Nov. 16, 1942. The supreme court of the United States was to review this decision early in 1943. (*See* also RADIO.)

Section 606 of the Communications Act of 1934, as amended, which contained war powers over communications, was expanded by the 77th congress to extend over wire line communications the same control previously written for radio. Under this section the president was empowered to cause the closing of communications apparatus or authorize the use or control of any equipment upon just compensation to the owner. The president delegated these powers to the Board of War Communications, headed by James Lawrence Fly, chairman of the Federal Communications commission.

Congress considered two other bills which would have had considerable importance. The first, H.R. 5497, introduced by Representative Sanders of Louisiana, proposed to alter the present structure of the commission and to amend many important procedural provisions. It was the subject of hearings before the house Interstate and Foreign Commerce committee but the bill died with the adjournment of congress before reaching the floor. The second, S. 2445, as passed by the senate on June 22, 1942, would have amended the Communications act in order to permit merger of domestic telegraph operations. This permissive legislation as reported out by the house committee on Nov. 30, 1942, extended merger provisions to international radiotelegraph and cable companies as a separate venture, but congress adjourned *sine die* before the bill was acted upon by the house.

On Nov. 21, 1942, the commission ordered the American Tel
phone and Telegraph company to show cause why its long-di
tance toll charges should not be substantially reduced. Hearing
were begun on Dec. 16, 1942. (*See* also WAR COMMUNICATION
BOARD OF.) (J. L. FY.)

Federal Council of the Churches of Christ in America.

In 1942 the council consisted of
national denominations; one add
tional body, the Ukrainian Orthodox Church of America, cam
into the membership of the council during the year. The memb
denominations of the council included most of the major Protes
ant bodies and two churches of the Eastern Catholic group (th
Syrian Orthodox and the Ukrainian Orthodox). The total mem
bership of the constituent denominations in 1942 was 25,076,56
with local congregations of approximately 140,000.

Through the general commission on army and navy chaplai
the recruiting of ministers for religious work in the army ar
navy was carried on. Through the Christian commission for cam
and defense communities guidance was given to local church
facing new responsibilities because of their proximity to cam
or wartime communities. The commission on aliens and prisone
of war launched a program for securing the co-operation of loc
churches in the resettlement of Japanese Americans as they we
released from the government camps. The committee on forei
relief appeals continued its work in co-ordinating the work of t
churches in securing support for refugees, prisoners of war, Chi
relief, missionaries cut off from their normal bases of suppo
and other wartime works of mercy. The commission to study t
bases of a just and durable peace held a national conference
Ohio Wesleyan university to formulate basic principles for whi
the churches could stand. A new commission of the churches
democracy in racial and cultural relations was appointed for t
purpose of making a co-operative approach to racial problems
the light of the experience of the war.

A plan for uniting the federal council and seven interdeno
national agencies working in more specialized fields, such as t
Foreign Missions Conference of North America and the Ho
Missions Council of North America, was put forward and a
proved at the biennial meeting of the federal council held
Cleveland, Ohio, Dec. 8–11. If endorsed by the other interd
nominational agencies the plan was expected to go to the offic
governing bodies of the churches of both the United States a
Canada for final ratification.

The council continued its work in the fields of evangelis
worship, family life and social service. Ten religious progra
over national radio networks were presented each week throug
out the year. The *Federal Council Bulletin* (monthly) and
formation Service (weekly) continued to be published.
(S. McC. C.

Federal Crop Insurance Corporation: *see* AGRICULTU

Federal Deposit Insurance Corporation.

Insured banks of the United States continued during 1942
lend financial support to the country's war effort, meeting
financing needs of government and of industry as they arose.

Improvement in asset values and in earnings continued throu
out the year, with the result that only six insured banks fai
during 1942, the lowest number since the inception of depo
insurance on Jan. 1, 1934.

By the end of 1942 capital and surplus of Federal Depo

Insurance corporation had grown to more than $600,000,000. The corporation's income during the year amounted to about $60,000,000.

About $50,000,000 was derived from insurance assessments paid by banks and about $10,000,000 from income on investments.

From the beginning of deposit insurance through Dec. 31, 1942, there were 390 insured banks closed or merged with financial aid from FDIC.

These banks held deposits of $486,000,000, of which $477,000,000, or 98%, were made available promptly without loss to depositors. Of the 1,266,000 depositors in these banks, only 1,966, or less than one-fifth of 1%, held accounts in excess of $5,000 and were not fully protected.

These 390 cases involved outlays by the corporation totalling $251,000,000, of which it was estimated that 80% ultimately would be recovered.

There was no legislation during 1942 that altered the status, the functions, or the powers of Federal Deposit Insurance corporation. (*See* also BANKING.) (L. T. C.)

Federal Home Loan Bank: *see* NATIONAL HOUSING AGENCY.
Federal Housing Administration: *see* NATIONAL HOUSING AGENCY.

Federal Land Banks.

The land banks and local national farm loan associations operated after 1933 under the supervision of the Farm Credit administration which also supervised other federally sponsored co-operative lending institutions. The 530 production credit associations made production credit loans to farmer members and the 13 banks for co-operatives made operating capital, commodity and facility loans to farmers' co-operatives. The 12 federal intermediate credit banks acted as banks of discount for production credit associations, banks for co-operatives, and other agricultural lending institutions.

Federal land bank operations in 1942 reflected a marked tendency on the part of farmers to reduce their indebtedness. Large repayments on the principal of federal land bank and commissioner loans, totalling $303,011,459 with many farmers paying off their entire loan, and a decreased demand for new loans, reduced the amount of federal land bank and commissioner loans outstanding to $2,115,043,460, the lowest since 1933. However, other farm mortgage lenders reported a similar trend. As a result, the total United States farm mortgage debt at the beginning of 1943 was estimated to be about $300,000,000 less than on Jan. 1, 1942. About 33% of the total farm mortgage debt, estimated at about $6,400,000,000, was held by the federal land banks and Federal Farm Mortgage corporation.

Large repayments on the principal of loans gave the land banks ample funds to make new loans without issuing any farm loan bonds, the usual source of land bank loan funds, in 1942. Farm loan bonds outstanding on Dec. 31, 1942, aggregated $1,532,687,140.

The interest rate paid by farmers with loans through national farm loan associations and by commissioner borrowers in 1942 was 3½%. This rate was effective temporarily by act of congress, and the United States government reimbursed the banks and Federal Farm Mortgage corporation, which finances commissioner loans, for the difference between the contract rates and the reduced rate. The contract interest rate on most federal land bank loans made during 1942 was 4% and on commissioner loans it was 5%.

The total capital of the 12 federal land banks on Dec. 31, 1942, was $217,506,257, of which 46.1% was owned by national farm loan associations and individual farmers borrowing directly from the banks. The remaining amount was provided by and was owned by the United States government.

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Federal Public Housing Authority: *see* NATIONAL HOUSING AGENCY.

Federal Reserve System.

Manifold requirements of the rapidly expanding war program of the United States in 1942 imposed unusual demands upon the federal reserve system. Emergency aid was given in the form of relief to the banks, financing production of war munitions, alleviation of essential civilian needs, and co-operation with the treasury in the sale and distribution of war bonds and other obligations.

Congress was called upon to amend the Federal Reserve act to facilitate broader participation by the federal reserve system in the U.S. war effort. The Second War Powers act, approved March 27, 1942, contained a provision authorizing the Federal Reserve banks, during the emergency period and within certain limitations, to purchase or sell obligations of the United States directly from or to the United States.

An important executive order (No. 9112) was issued March 26, 1942, by President Roosevelt, empowering the war department, navy department and Maritime commission to guarantee loans made by commercial banks and other institutions for war purposes and to use the facilities of the federal reserve banks as fiscal agents to expedite such transactions. Operating under Regulation V, adopted April 11 by the board of governors to implement the executive order, 2,646 loans aggregating $2,662,000,000 were authorized through federal reserve banks during 1942. About 57% of such loans were for amounts of $100,000 or less.

Bank deposits, following the upward tendency of the preceding year, increased by $16,000,000,000 during 1942 to a total for all banks in the United States of $85,000,000,000 on Dec. 31, largely attributable to heavy accumulations of government securities. Bank credit continued to expand rapidly. At the close of the year, commercial banks held about $39,000,000,000 of United States government securities, an increase during 1942 of 80%. Federal reserve bank holdings amounted to $6,000,000,000. Together these purchases represented two-thirds of the increase in all marketable issues.

Ascendancy of war expenditures over normal business transactions toward the close of 1942 resulted in an increasing percentage of bank loans going for war purposes. For the entire year, the volume of commercial loans declined, reversing the 1941 trend.

Restrictions on consumer credit, initiated in Sept. 1941, were extended in 1942 by the board of governors of the federal reserve system. Through a revision of Regulation W, monthly charge accounts were brought under regulation, more articles were added to the restricted list, down payments were increased, and maximum maturities reduced. During the first ten months of 1942, the volume of instalment debt declined from $5,900,000,000 to $3,300,000,000.

Liquidation of automobile debts and rationing rules affecting automobiles accounted for much of the decline. (*See* also CONSUMER CREDIT.)

The rapid rate of currency outflow into circulation during 1940 and 1941 was accelerated during 1942, attaining a record monthly average of $500,000,000 during the last few months of the year, compared with a rate of about $200,000,000 a month in the corresponding period of 1941. On Dec. 31, 1942, money in circulation totalled $15,400,000,000, compared with $11,200,000,000 at the end of 1941. Major factors in the unprecedented outflow of money into circulation were the expansion in wages and salaries, heavy purchases by consumers, failure of many families with increased incomes to make use of banking facilities, and hoarding by some.

Holding of a large reservoir of idle reserves by banks of the United States—a common practice in normal times—was discouraged during the war period by a federal reserve policy of assuring banks of ample reserves through various devices undertaken by the system. The abnormal amount of money in circulation and the large increases in required reserves on account of the security purchases by banks contributed to a marked decline in the volume of bank reserves in excess of legal requirements during 1942. In August the excess reserves of New York city and Chicago member banks were the lowest since 1937. To maintain orderly conditions in the government security market and to provide reserves needed by banks as a basis for purchases of United States securities, federal reserve bank holdings of government securities were increased from time to time.

On Aug. 18, 1942, in accordance with provisions of an act of congress approved July 7, authorizing the board to change reserve requirements of member banks in central reserve cities without changing requirements in other reserve cities, the governors announced a reduction from 26% to 24% in reserve requirements against net demand deposits for central reserve city banks in New York city and Chicago. This reduction of 2 points was followed by two others of similar size, on Sept. 14 and Oct. 3, bringing the reserve requirements in those cities down to 20%, thus providing about $1,300,000,000 of additional excess reserves.

Rediscount rates at all reserve banks were lowered to ½ of 1% on government securities maturing within one year, and rates on other paper were also reduced. The Federal Open Market Committee pursued a policy of buying treasury bills at a rate of ⅜ of 1%, with a repurchase option available to sellers.

The board of governors in 1942 was composed of Marriner S. Eccles, chairman; Ronald Ransom, vice-chairman; M. S. Szymczak, John K. McKee, Ernest G. Draper and R. M. Evans. (*See* also BANKING.)

Federal Savings and Loan Insurance Corporation: *see* NATIONAL HOUSING AGENCY.

Federal Security Agency: *see* CIVILIAN CONSERVATION CORPS; NATIONAL YOUTH ADMINISTRATION; SOCIAL SECURITY.

Federal Works Agency.

In 1942 the Federal Works agency and its constituent units concentrated almost exclusively upon projects deemed to be essential to successful U.S. prosecution of the war.

In accordance with provisions of the Lanham act, under which $300,000,000 was appropriated to the agency for public works in defense communities unable themselves to supply such facilities, work was begun upon 1,700 projects approved by the president, costing approximately $275,000,000. Of this sum, about $65,000,000 was contributed by participating local communities. Included in the program were nearly 600 schools, 325 recreation facilities, 300 hospitals, 230 water systems, 210 sewer systems and a number of miscellaneous structures. Because of the scarcity of many materials essential to the primary war effort, the agency was forced to confine its activities largely to temporary construction. The war-housing phase of the Lanham act program was transferred to the National Housing agency by executive order of the president Feb. 24, 1942.

As of that date the Federal Works agency had completed 60,000 family dwelling units, and had placed 91,478 units under contract.

Twenty-nine new temporary buildings were erected by t Public Buildings administration in the District of Columbia f the use of expanding government departments, and constructi of the first 12 of 22 residence halls to accommodate governme employees in overcrowded Washington was begun. The 12 re dence halls were designed to accommodate 7,800 women. T administration removed 22 government agencies, or parts of age cies, from Washington to other cities in connection with the fe eral decentralization program.

The Public Roads administration completed, at a cost of $27 377,000 (of which 59% was furnished by the government), 10,1 miles of roads and eliminated 237 highway-railroad grade cros ings. The greater part of this work was on roads essential f military or war production purposes. The first of a number flight strips, to provide emergency landing and take-off faciliti for military aircraft, was completed. Late in the year throu traffic was moved for the first time over the Alaska highwa built as a joint undertaking by the Public Roads administrati and the army corps of engineers.

The Work Projects administration provided employment f an average of 1,000,000 persons in the fiscal year ended June 1942. The number of workers was reduced to 698,000 in Ju and further reductions occurred during the remainder of the ye All persons on the WPA rolls were reclassified late in the ye either for direct employment in private industry or agricultu or with a view to their training for employment in war produ tion. The appropriation ($875,000,000) for the 1942 fiscal ye was the smallest authorized in nine years of WPA operation. T appropriation for the 1943 fiscal year was still further reduced $275,000,000.

A fourth constituent unit of the Federal Works agency— Public Works administration—was in liquidation with the pectation that its career would be terminated by Jan. 1, 19 except for a few projects already begun but which could not completed because of wartime shortages of necessary materials

Programming of local public works for post-war execution, gun in 1941, was terminated July 20, 1942, for budgetary reaso (*See* also NATIONAL HOUSING AGENCY.) (P. B. F.)

Federated Malay States.

One of the three principal ministrative divisions of B ish Malaya, the others being the Straits Settlements and the U federated Malay States (*qq.v.*). There are four of these sta Perak, Selangor, Negri Sembilan and Pahang, of which the fi three are on the west coast of the Malay peninsula, while Paha is on the east coast. Area, 27,540 sq.mi.; pop. (est. 1941) 2,21 052, divided as follows: Perak, 992,691; Selangor, 70,552; Ne Sembilan, 296,009; Pahang, 221,800. Racially the populatio divided as follows: Europeans, 11,149; Eurasians, 5,286; Mala 722,626; Chinese, 989,635; Indians, 466,056; others, 17,300.

Ordinarily, the nominal ruler of each state is a native sul who receives political advice from a British resident, himself s ject to the instructions of the high commissioner, who is a governor of the Straits Settlements. Up to the time of the J anese invasion in Jan. and Feb. 1942, this joint office was h by Sir Thomas Shenton Whitelegge Thomas (appointed in 193 The sultans remained in their native states and presumably ca to terms with the Japanese.

Education.—Expenditure on education in 1940 was £437, sterling. There were 35 English schools for boys (13,564 pup and 14 English schools for girls (5,941 pupils). There were Malay schools (63,638 pupils) and 572 Chinese schools (58, pupils). There were 580 schools in Tamil (an Indian languag with 23,527 pupils.

Finance.—Revenue in 1940 was £11,493,060, expenditure

£9,166,303. Public debt at the end of 1940 was £9,950,000.

Agriculture and Mineral Production.—Rubber and tin are he most important products of Malaya. There were 1,699,459 ac. nder rubber cultivation in 1940, 251,960 ac. in coco-nut groves, 186,310 in rice-paddies, 40,629 ac. of oil-bearing palms. Mineral roduction in that year was as follows: tin 35,689 tons; gold 31,633 oz.; tungsten 90 tons; coal 781,508 tons. There were 0,145 miners.

(*See* also JAPAN; WORLD WAR II.) (W. H. CH.)

ederation of Labor, American: *see* AMERICAN FEDERAION OF LABOR.

eiler, Arthur (1879–1942), U.S. economist, born in Breslau, Germany, took his Ph.D. at Heidelberg niversity and taught afterwards at the University of Frankfurt. eiler was a member of the socialization commission of the reich conomic council and of the cartel court, 1920–33. He was economic ditor of the *Frankfurter Zeitung* and in 1932 was made professor f economics in the college of commerce at Koenigsberg university. His anti-nazi views compelled him to flee the reich in 933; he went to the United States, where he became professor f economics at the New School for Social Research at New York ity. He wrote widely on international political, economic and onetary problems. Among his works are *Fascism for Whom?* 1938) in collaboration with Dr. Max Ascoli, and *International ecurity* (1939) with Eduard Beneš and Rushton Coulborn. He ied in Riverdale, N.Y., July 11.

eldspar. Operations in the feldspar industry of the United States were reported to have progressed at a high ate during the first three quarters of 1941, but to have declined n the fourth quarter, but no statistics were available for comarison with the total of 290,763 short tons in 1940. Canadian roduction was 21,455 tons in 1940, 12,907 tons from Ontario and ,548 tons from Quebec; the Ontario output decreased to 11,822 ons in 1941, and that of Quebec increased to 14,218 tons, a total f 26,040 tons. (G. A. RO.)

encing. In 1942 five intercollegiate championships were decided. The Intercollegiate Fencing Association hampionship in three weapons was won by N.Y.U. thereby reaining possession of the I.C.F.A. three-weapon trophy, N.Y.U. laced first in the team épée and sabre while Columbia took rst place in the team foil. Arthur Tauber, individual star of the eet, lost his 1941 épée championship to Robert Harder of Penn tate but took the foil championship in a dramatic finish from harles Steinhardt (1941 champion) of St. John's. Chester utcher of the army won the individual sabre championship.

The National Collegiate A. A. championship was won by Ohio tate university thereby gaining the Yale trophy emblematic of he event. St. John's university of Brooklyn took second and llinois was third. Individual honours were divided between Andre eladrier of St. John's and Byron Krieger of Wayne. The former ook first in the sabre and second in foil and épée whereas the atter was undefeated in his 12 foil bouts. Ben Burtt of Ohio tate captured the épée title.

The Big Ten Conference championship was decided at the Uniersity of Illinois with Illinois winning the title. Chiprin of Illiois captured the foil championship with Lenkoff of Northwestrn taking the épée and Siever of Chicago the sabre titles.

The fourteenth annual Women's Intercollegiate Fencing Assoiation championships were decided on April 10 and 11 with New ersey State Teachers college of Jersey City surprising the field o take the title. Grace Acel successfully defended her individual championship won in 1941.

The Eastern Intercollegiate championships were swept by a sensational Seton Hall college (South Orange) team, which took four team titles and all nine individual places in foil, épée and sabre.

In the national championships, Warren Dow (N.Y.A.C.) took the foil and Henrique Santos (N.Y.A.C.) the épée title. Norman Armitage (Fencers' club) again took the sabre and Helene Mayer (San Francisco Fencers' club) repeated her Women's Foil championship. Miguel A. de Capriles (Salle Santelli) accounted for the three-weapon championship. The New York Athletic club won for itself the national foil, épée, sabre and three-weapon team championships, while the Fencers' club captured the National Women's Foil championship. (H. J. Z.)

Ferrero, Guglielmo (1871–1942), Italian historian and internationally recognized authority on the rise and fall of the Roman empire, was born July 31 in Portici, Italy. In 1922, Ferrero aroused the ire of fascist officials by his attacks on dictatorships and was not permitted to leave Italy until 1930; then he was allowed to accept a professorship in modern history at the University of Geneva. Among his later works are *Unity of the World* (1930), *Life of Caesar* (1933), *Women of the Caesars* (1935), *The Gamble; Bonaparte in Italy, 1796–1797* (1939), *The Reconstruction of Europe* (1941) and *The Principles of Power: The Great Political Crises of History* (1942). See *Encyclopædia Britannica* for a biographical note. He died in Geneva, according to a Berne dispatch of Aug. 4.

Fertilizers. The military operations in North Africa in 1942 for the most part prevented the movement of African phosphate rock to points other than axis-controlled Mediterranean ports and materially affected the flow even to those ports. Operations in the Pacific early in the war interrupted phosphate production on certain islands there, notably Nauru. Whether Japan began production from any of these properties was unknown.

In addition to many cargoes of rock, the United States furnished the United Kingdom large tonnages of concentrated superphosphate in order to conserve all possible cargo space. Russia had adequate resources of phosphates. In 1942, production and consumption of superphosphate in the United States rose to the greatest peak in history, with indications of further increases in 1943. The United Nations had in 1942 far greater resources of phosphates than the axis countries, where the shortage might be of critical importance.

German occupation of France placed most of the European production of potash under axis control. Russia was able to supply its own consumption, and Spain was slowly increasing production. Production of potash in the United States from four large and several smaller operations was sufficient to supply all domestic needs and to furnish Canada, Cuba and other nations of the Americas considerable quantities as well.

The magnitude of the munitions program required the use of all suitable chemical forms of nitrogen for that purpose, with corresponding dislocations in the supplies available for use as fertilizer. However, maximum steel output for war caused peak production of coke and consequently of its useful by-product, sulphate of ammonia. Large tonnages of nitrate of soda continued to be imported from Chile. Many new plants for the fixation of atmospheric nitrogen were in operation and others were nearing completion. The United States crop goals for food, feed and fibre production in 1943 brought about greatly increased requirements for fertilizer nitrogen. To insure its best distribution in the interests of the national economy, all supplies of chemical nitrogen were definitely allocated in the United States by the War Production board. Most, if indeed not all, of the requirements for agriculture were expected to be met.

The use of fertilizer in axis-dominated Europe was carefully controlled and directed. In Britain the strictest government control was exercised over potash and phosphates and nitrogen. In the United States, conservation orders of the War Production board specified the grades of fertilizer that might be manufactured and distributed and prohibited the use of fertilizers containing chemical nitrogen on certain crops not considered essential and on lawns and ornamental plantings. The maximum prices at which fertilizers might be sold were fixed by the Office of Price Administration, generally speaking, at the levels existing in the February–March 1942 period. (*See* also AGRICULTURE.)

(C. J. BR.)

Feuermann, Emanuel (1902–1942), Austrian violoncellist, was born Nov. 22 in Kolomea, Poland. A pupil of Julius Klengel, he made his debut when he was 11 years old with the Vienna Symphony orchestra under Felix Weingärtner (*q.v.*). At 16, he was made professor at the Cologne conservatory and later headed the violoncello department at the Berlin Hochschule, a post he held until Hitler's rise to power. He returned to Vienna for concert work, and his European success brought him an invitation to the United States in 1934. There he appeared with the New York Philharmonic-Symphony orchestra under Bruno Walter and also as soloist with leading U.S. orchestras. In 1938 he applied for his first U.S. citizenship papers. He died in New York city, May 25.

FHA: *see* NATIONAL HOUSING AGENCY.
FHLB: *see* NATIONAL HOUSING AGENCY.
Fiction: *see* AMERICAN LITERATURE; CANADIAN LITERATURE; ENGLISH LITERATURE; FRENCH LITERATURE; ITALIAN LITERATURE; RUSSIAN LITERATURE; SPANISH-AMERICAN LITERATURE.

Field, Rachel (1894–1942), U.S. author, was born Sept. 19 in New York city. After attending public schools, she was admitted to Radcliffe college in 1914 as a special student. At Radcliffe she wrote a number of one-act plays which were produced in Little Theatres over the country. She then turned to children's books and in 1929 won the Newbery medal for *Hitty, Her First Hundred Years*. Miss Field's first novel, *Time Out of Mind* (1935), put her on the best-seller list. *All This and Heaven Too* (1938), another best seller, was followed by *And Now Tomorrow* (1942). Among her children's books are *Taxis and Toadstools, Eliza and the Elves* (1926); *The Magic Pawnshop* (1927); *Little Dog, Toby* (1928); *Points East* (1930); *Calico Bush* (1931); and *Hepatica Hawks* (1932). Miss Field died in Los Angeles after an operation, March 15.

Fighting France (Free France): *see* FRANCE; FRENCH COLONIAL EMPIRE.
Fiji: *see* PACIFIC ISLANDS, BRITISH.
Financial Review: *see* BUSINESS REVIEW.

Finland. An independent republic of northern Europe. Area, 134,000 sq.mi. (land area, 121,000 sq.mi.), after cession of 13,500 sq.mi. to the U.S.S.R. in 1940. Boundary in 1942 fluctuating but expanded. Pop. (census of 1940) 3,887,217. Capital, Helsinki; pop. (est. Jan. 1, 1939), 304,965. Other principal cities are Turku (74,315); Tampere (76,730); Viipuri (74,247). Language and nationality, 90% Finnish, about 10% Swedish. Religion, Lutheran Christian. President in 1942: Risto Ryti; Prime Minister, J. W. Rangell.

History.—Finland's position among the states of the w stood revolutionized in 1942. Yet, peculiarly, it was the w situation which had changed more than Finland. In the wi war of 1939–40 between Finland and the U.S.S.R. the sympa of the world was overwhelmingly for Finland. But then "Bol vik Russia" seemed to be on the side of the nazi aggressors, had attacked Finland. In the struggle which broke out in J 1941 there was question whether Finland or Russia started shooting; certainly Finland had admitted German troops threatened Leningrad; the essential change was that now Rus Britain and the United States had been thrown into each oth arms. Yet the Finns thought of themselves as fighting only t own age-old conflict with the Russian bear. They maintai their democratic institutions intact; they insisted they w only using the Germans to help them; their war, they thou was a "local war" separate from the clash of the great pow They could not understand the coldness of the Swedes, the enn of the British and the growing antagonism of the United State all people with whom the Finns felt especially friendly.

On the other hand these same states, fighting desperately aga the nazi threat, knew that the Finnish conflict was not jus "local war." Sweden feared far-reaching repercussions from land's expansionist ambitions. Britain and the United States the Germans using Finnish air bases from which to attack t convoys to Russia, and to bomb Murmansk and Archangel; t saw Finnish forces holding thousands of Russian troops in north when they were needed on the southern front. In sh whatever the Finnish attitude, it was obvious that Finland aiding the enemy of the United Nations, and to many that m that Finland was herself an enemy. In Dec. 1941 Great Bri declared war on Finland. Through mounting tension the Un States maintained relations, but closed all Finnish consulate the United States in July 1942, and at the end of Decem stopped the dissemination of Finnish propaganda. The Fin legation in Washington continued to function, but in Decem the United States minister to Helsinki, Arthur Schoenfeld, called home "for consultation." This step may have been fluenced by reports that Finnish officials had participated celebration of Pearl Harbor Day at the Japanese legation in sinki.

Finland's war against Russia was continued through 1942 holding operation, neither nation making any great effort to cha the position. The Finns had conquered Karelia and were atten ing to carry on reconstruction work there. Even the front n of Leningrad remained essentially stable. Reports of Fin troops on the Stalingrad front were repeatedly denied, thoug was admitted Finnish volunteers might be there.

Economic and social conditions in Finland were bad, but proving slowly. The cost of living index, based on 100 for 1939, had reached 164 by June 1942; wage readjustments prescribed on a regular scale to meet mounting costs, and at end of the year the government gave its employees an e month's pay. Trade had declined disastrously and needed imp were maintained chiefly by special credit agreements with Sw and by German shipments of foodstuffs. Twenty-five thou children were sent to Sweden for varying periods, and 4,40 Denmark. This eased the problem of relief within the coun as did the resettling of 232,000 of those evicted from Kareli the winter war; 161,000 were not yet re-established. Pets was rebuilt with prefabricated buildings from Sweden. Food plies were low; no eggs were available for adults and only per month for children, but the harvest permitted an increas general food rations. Great stir was caused by the repor 20,000 deaths among Russian prisoners of war.

On the positive side of the ledger were such items as the over-subscription of a new "Fatherland Loan"; the making of motor fuel from wood, the successful lifting of iron ore from lakes, an unexpectedly high yield from the sales tax, and large ncreases in crops of vegetables, potatoes and fodder. Working bees (the *talkoo*) helped relieve the labour shortage; and wood-chopping became a national sport. Government rewards were given for increased farm production. All schools and colleges were authorized to open in October. And the government announced a new presidential election for Feb. 15, 1943.

Education.—In 1939 there were some 11,200 elementary schools, with 411,000 students and 13,500 teachers; 383 professional schools in 1937 with 20,583 students, 68 middle schools with 8,546 students, and 150 lyceums with 42,034 students. There were five universities, of which that at Helsinki was the largest (enrolment, 6,461 in 1938).

Finance.—The monetary unit is the Finnish markka (=2 U.S. cents approximately; at the last free quotation in 1939, 49 FM=$1). Proposed budget for 1943: Revenues 8,280,995,400 FM, expenditures 8,191,105,900 FM; foreign debt (Sept. 1939), 1,040,000,000 FM; internal debt (Sept. 1939), 2,810,000,000 FM; note circulation (April 1, 1941), 5,720,000,000 FM.

Defense.—Service in the army is compulsory for men between the ages of 17 and 60. Effectives in 1938 numbered 2,012 officers, 1,000 men; in 1941 reports varied between six and nine divisions 90,000–135,000 men). The navy in 1939 had two coast defense vessels of 4,000 tons, seven motor-torpedo boats, three mine layers and five submarines. In 1939 there were three air regiments of three squadrons each.

Trade.—Exports (1938) totalled 8,431,111,000 FM; (1940) ,870,000,000 FM; imports (1938) 8,612,283,000 FM; (1940) ,180,000,000 FM. Major export commodities, with their values in 1940 were as follows: pulp, paper, etc. 950,000,000 FM; timber and wood 1,200,000.000 FM; foods of animal origin 70,000,000 FM; metals and metal goods 200,000,000 FM; hides, skins, etc. 0,000,000 FM; minerals 80,000,000 FM. Major import commodities with values in 1938: metals and metal goods 1,420,500,000 FM; machinery and apparatus 1,120,300,000 FM; minerals 61,100,000 FM; colonial products 585,500,000 FM; oils, fats, waxes 503,300,000 FM; transportation equipment 482,900,000 FM. Great Britain, Germany and the United States were the leading importers of Finnish products, while the same three countries plus Sweden supplied most of Finland's imports.

Communication.—Railways (1938) totalled 3,530 mi. and carried 21,200,000 passengers and 15,710,000 tons of freight in 1937. Buses in operation numbered 2,500 in 1937; 20,300 mi. of main highways were maintained by the state. In 1938 there were 85,456 telephones in operation, 1,593 mi. of telegraph lines, 18 broadcasting stations and 293,790 radio sets.

Agriculture.—The chief crops in 1939, with their yields in short tons, were as follows: oats 879,635; wheat 250,222; barley 11,642; rye 364,861; potatoes 1,715,179. Livestock in 1937: 80,038 horses; 1,925,078 cattle; 1,072,307 sheep; 10,372 goats; 04,164 pigs; 100,356 reindeer; 2,814,960 poultry; 18,374 beehives.

Manufacturing.—In 1937 there were 4,264 establishments which employed 207,506 workers and produced goods valued at 1,076,045,000 FM. The chief products and their values were as follows: wood and paper 9,428,919,000 FM; food and luxuries ,453,956,000 FM; textiles 2,264,267,000 FM; machinery 2,113,-12,000 FM; metal 1,767,424,000 FM; leather and rubber 946,-71,000 FM.

In 1940, after the winter war, there remained to Finland 3,896 ndustrial establishments and 175,622 workers. Total industrial production was valued at 19,915,000,000 FM.

Mineral Production.—Following are the chief mineral products of Finland and their output in 1938: pyrite ores 113,514 tons; pyrites (sulphur content) 48,811 tons; copper ore 15,542 tons; copper 13,483 tons; gold 3,858 oz.; and silver 57,900 oz.

(F. D. S.)

Finucane, Brendan (Paddy)

(1921–1942), Irish aviator and ace of World War II, was at the time of his death the youngest wing commander of the R.A.F. He shot down five German planes during the Battle of Britain in 1940 and was decorated with the Distinguished Flying Cross. He added two bars to his medal in 1941 and before he was 21 was awarded the Distinguished Service Order. Finucane was wounded during a dog-fight between Spitfires and Messerschmitts over the channel in Feb. 1942. After a brief hospital furlough, he returned to service and was promoted to wing commander in June. The following month, while leading a mass formation over occupied France, Finucane was shot down. His death was reported in a London dispatch of July 17.

Fire Insurance: *see* INSURANCE.

Fires and Fire Losses.

The fire loss for 1942, using the statistics furnished by the National Board of Fire Underwriters, was $314,849,000. In 1941 it was $322,357,000, and in 1940 $306,409,000.

In the month of Dec. 1942 the losses were greater than those

THE FRENCH LUXURY LINER "NORMANDIE," renamed the "Lafayette" after its seizure by the U.S. navy for use as an auxiliary transport, burned at her pier in New York city Feb. 9-10, 1942. Listing from water in the hull, the ship finally rolled over on her portside

in any December since 1934. The fact that this substantial increase occurred in the month of December means that probably the pressure on industrial plants was gradually having its effect in an increasing number of fires. You cannot run a plant 24 hours a day without having the machinery affected as it would not be if it were run 8 or even 16 hours a day. There was a fair assumption, therefore, that 1943, purely from these causes, might show an increase in loss.

There was nothing to show any increase in fires from sabotage. Any campaign of sabotage might find a fruitful field in the U.S. industrial set-up when the demand for men is so great that practically anyone who applies may have a job. In World War I, with the exception of the Black Tom disaster, there was no undue fire loss to property because of sabotage; and up to the close of 1942 there was no outstanding fire in World War II comparable to the Black Tom fire. (*See* also DISASTERS.)

(E. R. H.)

Fish and Wildlife Service.

Wild life conservation in the United States faced during 1942 the grim task of waging a war while maintaining resources of long-time importance. Dr. Ira N. Gabrielson, director of the fish and wildlife service, the national agency in this field, called the fiscal year that ended on June 30, 1942 one of the most difficult in a history which, through parent agencies, extended well back into the 19th century. Still engaged at the year's opening in the task of organizing and co-ordinating the work of a governmental unit established by combining the bureau of biological survey and the bureau of fisheries on June 30, 1940, the service had at the same time to face adjustments required by the national defense program, adjustments which became all the more difficult in the middle of the fiscal year when war itself came to the United States. Soon thereafter the service had to prepare for the transfer of its national headquarters from Washington, D.C., to Chicago, Ill., which took place on Aug. 16 to relieve wartime congestion in the capital. Finally to the perplexities of these problems were added those of retrenchment when congress reduced appropriations for the year beginning July 1.

Nevertheless the service reported not only many contributions to the war but also considerable success in conservation programs and encouragement in the fact that a series of progressive years had placed the resources in good condition to face the hazards that come to peacetime pursuits in time of war. Similar observations can be made with reference to the state game, fish and fur administrations and regarding the experience of such private organizations as the American Wild Life institute, the National Audubon society, the Izaak Walton League of America, the American Nature association and the Outdoor Writers' Association of America, which like other such groups not only continued their activities to promote conservation but also helped in the war effort.

Outstanding war contribution was the work to make the U.S. fish products available for domestic needs despite exports to allies and military demands. Data collected for 1940, the latest available on an annual basis, showed that 125,000 fishermen employed then in waters of the United States and Alaska took 4,056,524,000 lb. of fishery products, worth about $238,000,000 to domestic primary fish handlers and processors. The service applied its fact-finding and experimental facilities to the effort of increasing these products to the prudent maximum. Haddock, cod, shad and salmon being harvested to capacity, fishermen were urged to land minor and less familiar species. The development of farm ponds for fish culture in southern states was encouraged. In connection with the use of fishery products, the service made contributions regarding curing, canning, drying, transporting and storing, assisted military procurement officials, and participated in supplying fish to allies in accordance wi the lend-lease program. So important did this phase of t service's work become that the president in July appointed t secretary of the interior as fisheries co-ordinator, with the direct of the fish and wildlife service as deputy co-ordinator, whereup these activities were continued and intensified by the spec wartime unit thus created.

Predator and rodent control took on an increasing importan Furs became a concern of the armed forces waging war in co climates, and the service rendered assistance illustrated by t appointment of its outstanding fur expert as a consultant of t quartermaster corps' cold climate section. Almost 1,000,000 a of national wild life refuge lands were put to military uses, ar wherever feasible, grazing, hay harvesting, crop production a other economic uses of refuge lands were permitted, thus maki many thousand additional acres available for food production.

The urgency of these activities led to the drastic curtailme of normal operations. Camps of the Civilian Conservation cor for example, which had provided labour for developing wild l refuges, were reduced from 36 to 12 early in the year, and furth curtailments were in process when congress abolished the CC Yet conservation programs as a whole were not abandoned.

Uppermost in the minds of many conservationists during t year 1942 was the need for keeping the wartime public inform of wild life problems, a need that gave added significance to t rapid growth of the Outdoor Writers' Association of Ameri comprising outdoor columnists of the daily press and magazi writers, concerning itself not only with professional matters b also with conservation campaigns. Public response to such ca paigns was indicated by the results of National Wild Life we observed under the sponsorship of the National Wild Life fede tion in April. Outstanding event was the Seventh North Americ Wild Life conference held by the American Wild Life institu in Toronto, Canada, from April 8 to 10, 1942, yet local obse ances of the week took place throughout the United States.

On many occasions during the year conservationists emph sized the importance of outdoor recreation to citizens of a nati at war, pointing out the benefits of sport and also calling atte tion to the fact that game, though valued more for recreati than for meat, did become a part of the U.S. food supply estimated as replacing enough meat annually to feed an ar of 5,000,000 for 77 days. Reports from state game commissio and the fish and wildlife service indicated that there was aga an increased supply of game in the United States, resulting fro the enforcement of strict hunting regulations, the administrati of national refuges totalling 272 with 17,643,915 ac., and t establishment of projects under the program of federal aid the states in wild life restoration. The service's annual wat fowl inventory in Jan. 1942 showed the number of ducks a geese to be about 100,000,000—more than three and one-h times the estimate for 1935. An inventory compilation of da from state and federal agencies showed that big-game numb in the country remained at about 6,000,000. The increasing nu ber of hunters was indicated by the 1941–42 sale of 1,420,2 federal stamps required of all over 16 who hunt waterfowl, compared with 1,260,810 in 1940–41. State reports showed th in the 1940–41 season—the latest represented in compilations there were 7,924,822 persons (an increase of 300,000 over 193 40) paying $14,464,478 for hunting licences. Of statistical a comparative interest during the year was a survey by W. Crouch, chief of the fish and wildlife service's division of ga management, which showed that in the 22 states with availa data there was an increase in wild life funds during World Wa —5% increase from 1916 to 1917, 8% from 1917 to 1918 a 20% from 1918 to 1919. Crouch's study also revealed a warti increase in the number of hunters—1.6% increase from 1916 to 1917, 2.6% from 1917 to 1918 and nearly 30% immediately after the war from 1918 to 1919.

Despite general progress, conservationists continued to point out the dangers of extermination still facing some forms of life. Most emphatic plea of the year was for controlling the take of Lake Huron whitefish, which produced only 114,000 lb. in 1941, or 2.8% of the 1931 catch of 4,140,000 lb. Extermination of this species is imminent, the investigators warned, because of the multiplied use of deep trap nets, which were introduced in 1928.

A notable step toward co-ordinated conservation efforts for all the Great Lakes fisheries was indicated in October in a report by an international board of inquiry of the United States and Canada. Established through the interest of the council of state governments, the board included a chairman from this council and members representing the Canadian Fisheries Research board, the game and fisheries department of Canada, and the U.S. fish and wildlife service. After a two-year study, the board's recommendations called for accurate statistics for each species and each district, common investigations by the governmental agencies concerned, and regulations formulated in accordance with the investigators' findings or, if findings were inconclusive, experimental regulations applied in common and tested for effectiveness. The international character of this inquiry was in accord with a trend begun a quarter of a century ago with the Migratory Bird treaty between the United States and Canada, duplicated in 1937 by a similar treaty between the United States and Mexico and considered as a forerunner of the more extensive though less specific Pan-American conservation commitments in the "Convention on Nature Protection and Wildlife Conservation in the Western Hemisphere," which became effective on May 1, 1942, having then been ratified by seven countries—the United States, Guatemala, Venezuela, El Salvador, Haiti, the Dominican Republic and Peru.

A most impressive book appealing for the preservation of threatened species was published in September by Macmillan. Entitled *Fading Trails,* edited by Charles Elliott, the volume was prepared by a committee of the fish and wildlife service and the national park service under the chairmanship of Daniel B. Beard. Discussing the threatened forms of American wild life, species by species, the volume presented the outstanding current needs in wild life preservation and suggested solutions. Another significant volume of the year, *Remaking America* by Jay Franklin, published by Houghton Mifflin, reviewed the social and economic reforms since 1930 and, as a basis for this, discussed throughout its first half the new national attitude toward natural resources.

The principal source for current and other information on wild life in the United States was the fish and wildlife service, United States department of the interior, Merchandise Mart, Chicago, Ill., which had available lists of federal publications and compilations, among them a list of national, international and state officials and organizations concerned with wild life protection. Private sources of information included the American Wild Life institute, Investment building, Washington, D.C., and the National Audubon society, 1006 Fifth avenue, New York city.

Top federal official concerned primarily with wild life in 1942 continued to be Dr. Ira N. Gabrielson, director of the fish and wildlife service. Charles E. Jackson continued as one of his assistant directors. Albert M. Day in October succeeded the retiring W. C. Henderson as the other assistant director. (*See* also FISHERIES.) (H. Z.)

Fisheries.

The fisheries of the world, according to the tabulation of the U.S. fish and wildlife service, annually yield about 17,500,000 tons of 2,000 lb. each, of food and industrial products, with a value of about $762,000,000. The fisheries conducted in the north Atlantic area by bordering countries produce 7,550,000 tons, valued at $374,000,000; with the production by eastern north Atlantic countries amounting to 6,100,000 tons, valued at $310,000,000, and by western north Atlantic countries to 1,450,000 tons, valued at $64,000,000. In 1942 the catch was below normal because of the difficulty of operating under war conditions. Prices, however, advanced sharply and fishermen received a high return for their catches. The species of importance in the north Atlantic area include herring, cod, haddock, mackerel, halibut, rosefish, swordfish, crabs, shrimp and oysters. In some of the warring countries conservation regulations were relaxed in an effort to increase fish production, without regard to the effect of unrestricted operations on the maintenance of fish supplies in the sea.

As a result of the war, generally, operations by warring nations were considerably curtailed. In Great Britain and the Union of South Africa it was estimated that well over one-half of the fishing fleet was taken over by the admiralty. The remainder found it difficult to conduct fishing on the usual banks. In order to make up for the deficiency of its domestic fisheries, Great Britain looked to other sources for fishery foods. Considerable dependence was placed on supplies of salted, frozen and canned fish from Newfoundland and Canada; salted, fresh and frozen fish from Iceland; and under the lend-lease program of the United States large quantities of canned salmon, sardines, mackerel and sea herring were sent to England from Alaska, California and Maine. Because of difficulties in securing refrigerated cargo space on transports and of holding chilled fish in cold storage in England, the importation of frozen fish was less than normal. A maximum price order was put into effect for most items of fresh and frozen fish, and zoning systems of distribution were established in an attempt to equalize the supply of fish in all sections of the country.

While the situation in many sections of the world was not conducive to normal fishing operations during 1942, many countries took renewed interest in exploiting the fishery resources. For instance, the cessation of imported canned fish in New Zealand caused local fish canners to expand the canning of mullet, kingfish and oysters. The Australian government continued its research program to increase activities likely to promote the production of marine foodstuffs which were urgently needed to replace the former imports of these items. In India the government issued instructions for curing fish. The government of Java, prior to occupation, continued experimental trawling studies to local new fisheries and technical work in fish preserving.

The shrimp fishery on the west coast of Mexico continued to expand and an important shark fishery was developed in this area. Livers from the sharks were exported to the United States where they were used in the manufacture of vitamin A fish-liver oils. However, a reducing plant was to be constructed at Guaymas, Mexico, so that the liver oil could be extracted at that point. Chile conducted a sizable fishery, a considerable portion of the catch being canned and marketed in other South American countries. Emphasis was placed on the development of a shipbuilding industry in Chile, and government assistance was assured for the building of large shipyards at Valparaiso. In Uruguay the government conducted a survey to determine whether local species of fish could support a fish-liver oil industry. It was found that a number of species yielded liver oils having a high vitamin content, and a plant to produce fish-liver oil on a commercial scale was constructed near Montevideo. The government of Venezuela developed a broad program to develop the food industries of the republic and the production of fishery products was increased during the year. However, the extensive fish canning industry of Venezuela was seriously hampered by a scarcity of tin-plate from which to make cans, and steps were taken to provide methods of preserving the catch by means other than canning. The principal method advocated was that of open-air drying. In connection with its program to develop its fishing industry the Argentine government authorized a freezing plant at Mar del Plata which would permit the storage of fish and would provide ice for the preservation of fish on board fishing vessels and while being shipped to distant consumers.

The fisheries of North America, which normally yield over 3,000,000 tons on both coasts and in the interior waters, were prosecuted less extensively in 1942 than in the previous year. The total catch of fishery products in the United States and Alaska was estimated to have totalled less than 1,500,000 tons compared with the record yield of about 2,400,000 tons in 1941. The Newfoundland catch of codfish was the smallest for any year during the 20th century. Declines in the catch were attributed to the requisitioning of fishing vessels by the armed forces, restrictions on the operation of fishing craft, and a shortage of fishermen and shore workers. In Canada fishermen were asked to put forth greater efforts to increase production since a large portion of the catch is sent to Great Britain. The 1942 pack of salmon in British Columbia amounted to about 1,800,000 cases, a decrease of about 450,000 cases, compared with the previous year. However, shipments of canned salmon to Great Britain were increased in 1942: 100% of the pack was sent to the British Isles, while in the previous year only two-thirds was sent across the Atlantic. Large shipments of canned herring were also sent to Great Britain from Canada and requests were received for considerable quantities of frozen cod fillets. On the Atlantic coast of Canada experiments were continued to develop a new type of dehydrated fish products for the warring countries to replace frozen and canned fish.

In Newfoundland the export market for salt cod, which is the main outlet for this product, was very good and no difficulty was experienced in finding buyers for the production, which amounted to about 39,000 tons. However, shipping space was difficult to obtain and stocks of salted cod in Newfoundland near the end of the year were considerably greater than those on the same date in 1941. During 1942 the Newfoundland fishing industry forme a co-operative marketing association and the fisheries boar granted it the sole right to obtain licences for the sale and export o fish to the Spanish market. The major portion of the 1942 production of salted cod was sold to Spanish and Portuguese buyer

The position of the fishing industry in the United States improved materially during 1942, brought about by a higher pric structure. During the year the United States government continued the purchase or charter of fishing vessels for conversio into naval craft, most of which were not replaced, causing serious reduction in the catch in some areas.

Because of the war, sealing operations on the Pribilof Islands i Alaska were greatly curtailed.

The production of canned salmon in Alaska was smaller i 1942 than in the previous year, amounting to about 5,015,00 cases. This was due mainly to war restrictions. Under government orders most of the pack was to be taken for military an lend-lease purposes. The total pack of canned salmon in Nort America (Alaska, British Columbia, Pacific coast states) amounte to 7,525,000 cases in 1942, compared with 10,080,000 cases i 1941. The total pack of canned fishery products in the Unite States and Alaska in 1942 totalled about 650,000,000 lb., compared with 924,000,000 lb. in the previous year. Reduced canning of salmon, sardines (pilchards), tuna and mackerel accounte for the major portion of the decline. Supplies of canned fis available to United States civilians were far below normal because of heavy government purchases of salmon, sardines an mackerel for the armed forces and for lend-lease shipment to th United Nations.

In various countries of South and Central America great interest was shown in exploiting local fishery resources. Attentio was directed mainly toward producing marine products for domestic consumption to replace foods from abroad. In this connection individuals from several South American countries mad investigations of the fisheries in the United States, and under th U.S. government's program for co-operation with other America republics several were assisted in fishery matters. In this connection a mission of fishery experts from the fish and wildli service conducted a survey of the Caribbean fishery resource (*See* also FISH AND WILDLIFE SERVICE.)

IMMOBILIZED FISHING BOATS crowded the harbour of Marseilles in 1942. Lack of gasoline for the boats reduced the production of French fisheries to a fraction of their normal peacetime output

Vitamins.—During 1942 interest was continued by various ountries in securing an adequate supply of fish oils potent in itamins A and D. Canada required that export permits be obained before fish-liver oils or concentrates could be shipped from he country. As a result of the intense commercial interest in itamin A, the fisheries board of Canada investigated the possiility of obtaining vitamin A from whale livers. However, due to he low vitamin content of the samples examined the results were ot encouraging. Manufacturers and importers of vitamin fish ils in the United States continued to exert efforts to augment omestic supplies. The fishery on the Pacific coast for soupfin harks, the liver of which is potent in vitamin A, was prosecuted ntensively. The meat of this shark has been little used commercially. However, a market for dressed soupfin shark was deeloped throughout the Pacific coast states and large quantities ere being landed at attractive prices. In the United States interest also was shown in the extraction of vitamin A and D conentrates from certain low-cost fish oils, without rendering the riginal oil unfit for its normal use in the manufacture of soap, aint and other products. Efforts also were made during the year o locate sources of vitamin-bearing fish oils in other American epublics.

Whaling.—During the two decades from 1920 to 1940 the hale fisheries of the world were prosecuted with renewed vigour. perations were centred almost entirely in the Antarctic. Previusly, little whale fishing was done in this area because of dangerus weather and ice conditions. In recent years, however, such dverse conditions were no obstacle to the staunchly-built factory hips and killer boats. The take was enormous. During the period rom the season 1919–20 (the inception of the fishery on a large cale in the Antarctic) to the 1938–39 season, inclusive, 421,708 hales were captured in this region, from which 32,741,897 bbl. f oil were produced. Due to war conditions complete data were ot available on the production in the Antarctic during the seaons 1939–42. (*See* also OCEANOGRAPHY.) (R. H. F.)

isheries, Bureau of: *see* FISH AND WILDLIFE SERVICE.

iske, Bradley Allen (1854-1942), U.S. naval officer, was born June 13 in Lyons, N.Y. A raduate of Annapolis (1874), he was commissioned an ensign. n 1877, he became interested in a then "infant" science—ericity—and later invented an electric range finder, an electric mmunition hoist, a torpedo-launching instrument and many ther devices widely used on warships. He fought under Dewey t Manila and also served as executive officer on various battlehips. He was promoted to rear admiral in 1911 and was presient of the U.S. Naval institute, 1911–23. A belligerent advoate of naval preparedness, he resigned in 1915 after a quarrel ver the issue with Josephus Daniels, then secretary of the navy. Among his works are an autobiography, *From Midshipman to Rear Admiral* (1919) and several books on naval affairs. He ied in New York city, April 6.

iske, Charles (1868–1942), U.S. bishop, was born March 16 at New Brunswick, N.J. Brought up as Presbyterian, he was confirmed in the Episcopal church in 1890 nd was graduated from the General Theological seminary, New York city, in 1896 and took his D.D. at St. Stephen's college, 1912. He was ordained deacon in 1896, became a priest in the Protestant Episcopal church in 1897, and served as rector in arious eastern churches, 1897–1915. He was consecrated bishop oadjutor of the Central New York diocese in 1915 and was ishop from 1923 until his retirement in 1936. He died in Baltimore, Md., Jan. 8.

Fiske, Harrison Grey (1861–1942), U.S. theatrical producer, was born July 30 in Harrison, N.Y. Fiske, who was dramatic critic and later proprietor of the *New York Dramatic Mirror,* married Minnie Maddern, famous actress, in 1890. He led the battle against the Klaw and Erlanger "theatrical trust," which controlled virtually every theatre of importance throughout the country, and won the support of David Belasco, Sarah Bernhardt and the Shubert brothers in his fight against the stage monopoly. Frequently Fiske productions were staged under tents because the "trust" refused to rent theatres to their "irreconcilable foe." Fiske directed his wife in many of her famous roles and starred her in Ibsen's plays, which he introduced to U.S. audiences. He was the author of several plays, including *The Queen of Liars* and *The Privateer,* and wrote *Fontelle* in collaboration with Mrs. Fiske. After her death in 1932, he retired from stage activities and he died in New York city, Sept. 2.

Fitzpatrick, Sir Charles (1851–1942), Canadian judge and politician, was born Dec. 19 in Quebec. Sir Charles won national prominence as chief counsel for Louis Riel, leader of the rebellion in the Northwest, 1885. Minister of justice, 1901–06, he was made a member of the Imperial Privy Council and its judicial committee in 1908. In the same year, he was appointed a member of The Hague peace tribunal. He was also lieutenant governor of Quebec province, 1918–23 and chief justice of Canada and deputy governor general. He died in Quebec, June 17.

Flax: *see* LINEN AND FLAX.
Flint: *see* ABRASIVES.

Floods and Flood Control. General flood control legislation provided, up to Jan. 1, 1943, authorizations totalling $930,400,000 for the construction of nearly 500 reservoirs and local flood protection projects widely dispersed throughout the entire United States, exclusive of the large project authorized separately for the alluvial valley of the Mississippi river.

The projects for general flood control were integral parts of comprehensive and co-ordinated plans for the beneficial development of the water resources of the United States, and they provided economic flood protection for a large number of centres of population and for many thousands of acres of rich agricultural lands. Many of the approved reservoirs were suitable for the advantageous development of multiple-purpose projects for flood control in combination with hydro-electric power and other water uses.

Construction work on the federal program for general flood control was begun in 1937, when the first funds for that purpose were appropriated by congress. Up to the end of 1942, 36 reservoirs and 89 local protection projects were placed in operation. During 1942, 41 dams and 105 projects for local flood protection were under construction.

The flood control program was thoroughly co-ordinated with the war effort of the United States. Although all flood control projects, being directly beneficial to the national economy, were directly or indirectly related to the war effort, the only new works initiated in 1942 were seven projects, determined to have direct value for the conduct of the war. Of these, three were multiple-purpose dam and reservoir projects to supply additional power for the war industries; one was a multiple-purpose dam and reservoir project to provide flood protection and increased water supply for an important steel-producing region, and two were local protection projects to give direct flood protection for indus-

THE POTOMAC RIVER reached a flood crest of 17.6 ft. at Washington, D.C., Oct. 17, 1942—a record high. In the background of this picture is the Jefferson memorial; in the foreground, part of a government tourist camp

tries supplying material for the army and navy.

In line with the federal policy of curtailing many activities not essential to the war, all projects which were under way at the beginning of the war emergency were being brought to completion or to a safe point of suspension as rapidly as possible, without interference with work of direct importance to the war, and with due regard to the necessity for protecting lives, the work already accomplished, and the federal investment in that work. In 1942, 17 local protection projects were completed and 14 reservoirs were placed in operation. Steps were taken to suspend construction work on all or parts of numerous other projects. Many of the suspended projects, however, provided substantial amounts of flood protection, even though they would not be fully effective until the construction work was entirely completed. Plans and drawings were being completed for the remaining portions of the suspended projects and for many additional projects not yet initiated in order that actual construction operations on a large s could be undertaken without delay at the end of the war to as in cushioning the inevitable shock of wide-spread unemploym

(J. L. S.

Great Britain.—The work of the catchment boards, subsidi by the government, not only increased the land under cultivat but saved many acres of arable land from flooding. At an offi inquiry dealing with the rivers of Southampton, it was stated t there were at least 20,000 ac. of land in the valleys of the ch streams which could be drained and used for the production foodstuff. Although the river Test, for example, flooded li except at its lower reaches, the bog-land there caused the flo ing of cultivated land and such flooding was increasing yea There were cases of flooding from the tributaries of the Test of other rivers, after heavy rains, which prevented the use many acres. In the valley of the river Hamble good grazing l had become useless owing to the condition of the river. Elsewh so-called water meadows had changed into marshes.

The Somerset Rivers Catchment board was actively engaged schemes covering three valleys, to prevent the extensive wir flooding, which some years previously did considerable dama and also by adequate drainage to bring nearly 100,000 acres land into cultivation.

A drainage scheme was in progress for Ellisland, near Dumfr over an area of about 4,000 acres, which is subjected to flo from the River Nith. It was to be carried out by the governm at a cost of £19,800. It was also proposed to divert the river.

British Guiana.—During 1942 a policy of rural reconstruct to ensure the future welfare of the people of the colony emp sized that the provision and central control of the water wer prerequisite to agricultural development of the coastal lands. scheme to promote the efficiency of use and control of irrigat and flood water was expected to benefit western Demerara, other to provide drainage for areas between the Mahaic (Mahaica) and Berbice rivers.

Sierra-Leone.—In order to increase the area available for a culture, surveys were made of low-lying coastal and inland swa areas, and schemes were in hand for the drainage of considera stretches of such lands in places where the population for wo ing it was immediately available.

Ceylon.—Projects were put forward for a comprehensive dra age and irrigation scheme to prepare for agricultural developm which would convert vast stretches of jungle into homesteads peasants and colonists. (*See* also DAMS; FORESTS; IRRIGATI METEOROLOGY; SOIL EROSION AND SOIL CONSERVATION.

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Florida.

An extreme southeastern state of the United Sta called the "Peninsula state" because of its pecu outline. Its coast line is greater than that of any other st extending 472 mi. along the Atlantic and 674 mi. along the G of Mexico. Area, 58,560 sq.mi., of which 4,298 sq.mi. are wa surface; pop. (1940) 1,897,414, of which 1,045,791 were ur and 851,623 were rural; 1,384,365 white and 513,049 Negr Only about 60,000 were foreign born. Capital, Tallahassee (240). The larger cities are Jacksonville (173,065), Miami (1 172) and Tampa (108,391).

Florida in the census of 1940 gained an additional represen tive, who was chosen from the state at large in 1942, the s not having been yet redistricted.

The state elective administrative officers, whose terms ex in Jan. 1945, were as follows in 1941: Spessard L. Holland, g ernor; R. A. Gray, secretary of state; J. Thomas Watson, at ney general; J. M. Lee, comptroller; J. Ed. Larson, state tre urer; Colin English, superintendent of public instruction; Nathan Mayo, commissioner of agriculture.

Education.—The biennial report of the state superintendent of public instruction, 1939–40, showed enrolment in the public schools through grade 12 as follows: white, 291,528; Negro, 105,460; total 396,988. There were 2,001 elementary and 828 secondary public schools in the state, with instructional staffs totalling 13,629 teachers, of whom 10,339 taught in the schools for whites and 3,290 in the schools for Negroes.

Public Welfare, Charities, Correction.—Florida appropriated for pensions, benefits and public welfare $16,979,252.88 in 1941–42. From grants by the federal government, the state received in 1941–42, for old-age pensions $3,425,684.76; for dependent children $711,704.38; and for pensions for the blind $262,459.93. Unemployment insurance collected from employers amounted to $6,350,000, from which benefits of $6,302,444.48 were paid out.

Florida has no state penitentiary, but in 1942 maintained a prison farm at Raiford, an Industrial School for Boys at Marianna and an Industrial School for Girls at Ocala. The appropriation for these institutions for 1941–42 carried the sums of $665,394.82, $240,943.17 and $87,587.68 respectively. The state also supported a state hospital for the insane, the Florida Farm colony for the feeble minded and the Florida School for the Deaf and Blind.

Communications.—The total highway mileage in the state in 1941 was 13,378.6 mi., of which 8,000 mi. were paved or hard-surfaced. In 1941–42 disbursements by the state road department, including federal aid, were $14,923,408.86. Florida in 1942 had about 6,000 miles of railroads.

Banking and Finance.—On June 30, 1942, there was a total balance in the treasury of $16,596,235.56. The state is constitutionally forbidden to incur a debt by borrowing except to put down rebellion or repel invasion. The constitution also inhibits the legislature from levying an income tax, and a constitutional amendment forbids the state from laying *ad valorem* tax on real estate. Homesteads are constitutionally exempted from taxation by local taxing units up to the value of $5,000.

On June 30, 1942, there were within the state 52 national banks with deposits amounting to $448,871,000 and 116 state banks and trust companies with deposits of $135,361,000, representing total deposits of $584,232,00, a gain in deposits of $43,050,000 in the fiscal year.

Agriculture.—In 1940 the U.S. Census showed that there were 62,248 farms with a total acreage of 8,337,708 ac., of which 1,751,275 were in crops, 462,248 were idle (fallow), 2,643,065 were in pasture, 1,649,960 were in farm woodland and the rest mainly in fruit.

The citrus production for the season 1941–42 and the estimates for 1942–43 were as follows: oranges (including tangerines) 39,300,000 boxes and 35,600,000 boxes; grapefruit 19,200.000 boxes and 25,000,000 boxes.

Principal Agricultural Products of Florida, 1942 and 1941

Crop	1942	1941
Corn, bu.	7,413,000	7,533,000
Tobacco, lb.	14,288,000	12,125,000
Potatoes, bu.	5,306,000	3,190,000
Sugar cane, short tons	104,700	119,000

On Jan. 1, 1942, the livestock resources of the state were as follows: 920,000 beef cattle, 121,000 milch cows, 553,000 swine, 24,000 sheep, 20,000 horses, 35,000 mules.

Manufacturing.—The more important manufactures of the state in 1942 were lumber, naval stores (turpentine and rosin) and cigars. Shipbuilding had developed considerably in 1941–42.

The cigars manufactured in Florida are valued at around $20,000,000 annually. Tampa and Jacksonville are the leading cities in this industry. Tung oil and the production of paper pulp and the manufacture of paper are also important industries. Florida in 1940 produced 610,796 short tons of paper and paper board from wood pulp.

In 1939 the state had 2,083 manufacturing establishments, paying $37,823,204 to 52,728 workers and producing $241,238,534 worth of goods.

Mineral Production.—Florida has only limited resources in minerals, but has large and rich deposits of phosphates, lime and limestone and less extensive, though highly valuable deposits of kaolin and fuller's earth. The mineral products of the state in 1942 were worth about $13,500,000. (J. M. L.)

Flour and Flour Milling.

In Great Britain the national wheat-meal program, according to the ministry of food's decision of March 23, 1942, temporarily at least, terminated the milling of flour of less than 85% extraction. Following this ruling, stocks of white flour were gradually depleted by allowing bakers to use white flour on a 25% basis up until July 13, after which a 12½% maximum was established.

Canadian millers expressed their willingness to furnish the 85% extraction flour for export, but raised the question of the wisdom of taking up valuable shipping space with bran-containing material when the same tonnage might well be devoted to shorter extraction flour having greater nutritive value and better storaging properties.

In general, there seemed to be some indication that the national wheat-meal bread had not met with the same degree of public acceptance that greeted the enrichment program in the United States. A well co-ordinated program of favourable educational publicity was succeeding in providing the American public with the nutritional facts of the enrichment program. In view of the success of the flour enriching movement there was little reason to believe that a long extraction flour or wheat meal would be considered as a wartime economic measure in the United States.

According to "revised list No. 4" of the Miller's National federation (of Sept. 1942), mills representing more than 65% of the total "family flour" production of the U.S. were pledged to carry on flour enrichment by their voluntary action.

Tremendous reserves of wheat in elevators throughout North America were adequate insurance in 1942 that there would be no shortage of flour in the Americas during 1943. The wheat forecast as of Sept. 1942, compared with 1941, and the preceding 10-year average, was as follows:

	10-year average	1941 crop	1942 crop
Winter wheat	569,417,000 bu.	671,293,000 bu.	697,708,000 bu.
Spring wheat	178,090,000 bu.	274,644,000 bu.	284,085,000 bu.
Durum	27,598,000 bu.	41,800,000 bu.	42,432,000 bu.

In spite of large exports of both wheat and flour, elevator capacity was seriously crowded throughout most of Canada and the United States.

With respect to flour production, the U.S. bureau of the census reported that for the crop year ending June 30, 1942, an average of 1,093 reporting mills produced a total of 104,827,744 bbl. of flour, compared to a production of 105,330,437 bbl. for 1,092 mills reporting for the corresponding period ending in 1941.

Cereal chemistry continued to command an increasingly important position in the milling industry. Basic research related to vitamin assay led to the establishment of control methods which would be fundamental to the control of vitamin content of flours and other cereal products. Outstanding examples of this type of research included: (1) "The Application of the Yeast Fermentation Method for the Determination of Thiamin to the Analysis of Enriched Bread, Enriched Flour and Other Cereal Products"; (2) "Vitamin Analysis in Control Work"; (3) "A Standard Thiochrome Assay for the Determination of Thiamin in Cereal Products"; and (4) "A Comparative Study of Methods for the Estimation of Vitamin B_1." Research chemists specializ-

BAGS OF FLOUR for U.S. warship stores in a depot at the Brooklyn navy yard in 1942

ing in this new and expanding field of biochemistry included: Charles N. Frey, D. J. Hennessey, Lawrence Rosner, Alfred S. Schultz and C. A. Elvehjem.

In the field of physical methods related to the control and study of the physical properties of flour, Dr. C. H. Bailey, director of the experiment station at the University of Minnesota, continued outstanding in the encouragement of this division of flour research. (*See* also BREAD AND BAKERY PRODUCTS; VITAMINS.)

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Fluorspar.

Shipments of fluorspar in the U.S. increased from 233,600 short tons in 1940 to 320,700 tons in 1941, while consumption increased from 218,500 tons to 303,600 tons. Imports continued the decline that had been under way after 1937. The normal world production is about 500,000 metric tons, of which the United States supplies one-third, Germany slightly less, with most of the remainder from U.S.S.R., France and Great Britain, but no current data were available from any of these except the United States. (G. A. Ro.)

"Flying Tigers": *see* CHENNAULT, CLAIRE L.

Fokine, Michel

(1880–1942), U.S. choreographer and ballet master, was born April 26 in St. Petersburg (now Leningrad), Russia. Schooled as a youngster in the traditional ballet technique of the St. Petersburg Imperial theatre, he later rebelled against the traditional postures and sought a more original and natural application of his own dances. He started an "underground" ballet, a revolt movement, to which ma great artists rallied, and developed a modern ballet. In 19 he married a young dancer, Vera Antonova, better known Vera Fokina, who remained as his dance partner throughout career. In 1909, Serge Diaghilev introduced the Fokine dan to Paris and in 1910, Anna Pavlowa introduced his repertoire American audiences. Fokine himself went to the United Sta to stage his ballet creations after World War I and became naturalized citizen in 1932. Among his more famous dance cr tions were *The Dying Swan* (which Pavlowa immortalize *Carnival, Fire Bird, Petrouchkka, Le Coq d'Or, Don Juan, T Elves, Prince Igor, Les Sylphides, Schéhérazade, Cléopâtre, Belle Hélène* and *Blue Beard.* Fokine, who also created the Bal Russe, died in New York city, Aug. 22.

Folk Dancing: *see* DANCE.
Food and Drug Administration: *see* DRUGS AND DR TRAFFIC.

Football.

The navy commissioned nationally famous coach such as Bernie Bierman of Minnesota, Jim Crowl of Fordham, Harvey Harman of Rutgers and Ray (Bear) W of North Carolina to assist in directing the physical fitness p grams for aviation cadets in the pre-flight schools at the u versities of Iowa, North Carolina, Georgia and St. Mar (California).

The army, too, assigned Lt. Col. Robert Neyland, forme of Tennessee, and Major Wallace Wade, coach at Duke, to ta charge of the two Army All-Star elevens which played prof sional clubs in the National Football league for the benefit of t Army Emergency Relief fund. The two teams played a total eight games, of which four were won and four lost, and $24 392.29 were realized for the fund.

There was more football played in 1942 than in 1941. A nu ber of smaller colleges abandoned the game for the duration the war, but there sprang up scores of service teams—arm navy, marine, coast guard and air base elevens.

Of these, the best, aside from the Army All Stars, were t Great Lakes Naval Training team, as in World War I, and Bi man's Iowa Seahawks. The Great Lakes and pre-flight eleve defeated some of the strong college teams, including Minneso Michigan, Alabama, Pennsylvania, Illinois, Iowa, Indiana, M souri and U.C.L.A.

Many problems confronted college football. First of all, as 1917 and 1918, there was a big exodus of players and coach into the armed forces. To fill the gaps in the squads, freshm were made eligible for the varsity in a number of sections. Coac ing staffs were short-handed in many cases. Dimout regulatio curtailed the length of practice sessions under floodlights f teams near the coastline.

Transportation problems arose with the rationing of gas a rubber in the east and, later in the season, with the barring railroad specials to sports events. Teams often had to travel day coaches instead of private pullman cars and take their tu in getting into dining cars. Scouts were unable to use plan adding to the handicaps of undermanned coaching staffs.

Attendance fell off sharply. For the country as a whole, the was a 19% decline. Some colleges, remotely located, suffered 50% drop. Princeton moved three of its games into New Yo and for the first time since the '90s played Yale there, at Colu bia's Baker field.

The Army-Navy classic was ordered transferred to Annapol for the first time since 1893. Instead of the usual crowd 100,000 that annually saw the game at Philadelphia, less th 12,000 attended. By presidential order, only residents within en-mile radius of Annapolis qualified to purchase tickets. The rmy cadet corps was not allowed to attend and the strange sight vas presented of half the midshipman regiment forming an army heering section.

The quality of the football was not as high as usual, but it was xciting football, providing more upsets than any season within nemory and the highest scoring average since 1930. Northvestern, habitually strong, lost nine games. Nebraska was beaten even times. Minnesota, national champion and unbeaten in 1940 nd 1941, lost four games and Duquesne, undefeated since 1939, ost three. Oregon State, which beat Duke in the Rose Bowl, vas humbled five times. Cornell, Texas A. & M., Duke, California, Stanford, Southern California and T.C.U. were other owers that lost three or more games and Notre Dame was eaten twice and tied twice.

Only one team playing a major schedule, Tulsa, came through he regular schedule without defeat. The biggest jolt came on e closing day of the campaign when the two top-ranked teams, oston College and Georgia Tech, were crushed by Holy Cross nd Georgia by scores of 55–12 and 34–0. The same day, Navy Annapolis) overwhelmed heavily favoured Army (West Point) o win by 14–0.

In the final ranking of the teams by the Associated Press poll, hio State was listed at No. 1. Then followed Georgia, Wisconn, Tulsa, Georgia Tech, Notre Dame, Tennessee, Boston college, ichigan and Alabama. The middle west and the south had the rongest teams. The Pacific coast and the southwest failed to ualify for the top ten.

The four southern leaders were all invited to bowl games. eorgia defeated the University of California at Los Angeles U.C.L.A.), 9–0 in the Rose Bowl at Pasadena. Tennessee deated Tulsa in the Sugar Bowl at New Orleans, 14–7. In the range Bowl at Miami, Alabama humbled Boston college, 37–21 nd Georgia Tech lost to Texas in the Cotton Bowl at Dallas, 4–7. The Second Army Air Force defeated Hardin-Simmons in e Sun Bowl at El Paso, 13–7 and the Eastern All Stars defeated e West in the Shrine benefit game at San Francisco, 13–12.

Ohio State won the Western Conference crown. Other sectional hampions were, Southeastern, Georgia; East, Boston college awarded Lambert trophy); Southern, William & Mary; Southestern, Texas; Big Six, Missouri; Missouri Valley, Tulsa; acific Coast, University of California at Los Angeles; Big even, Utah and Colorado tied; Big Three, Yale; Little Three, mherst.

Frank Sinkwich, Georgia back, was awarded the Heisman ophy as the outstanding player of the year. Paul Governali of olumbia was voted second best and won the Maxwell award. he coach of the year was voted to be William Alexander of eorgia Tech.

The record crowd of the season, 95,000, saw Notre Dame and outhern California at Los Angeles. Notre Dame, Michigan, ennsylvania, Ohio State, Southern California, U.C.L.A., Wisnsin, Army, Navy, Georgia and Boston college all played to g crowds and many games were sell-outs.

Professional Football.—In an upset comparable to the rout Boston college by Holy Cross, the Chicago Bears, scourge of e National Football league for three seasons and champions in 940 and 1941, were defeated by the Washington Redskins in e play-off, 14–6.

The Bears had gone unbeaten in 18 successive games and were pected to repeat the drubbing they gave the Redskins in the 940 play-off, a 73–0 debacle, but Sammy Baugh and a powerful e exploded the bubble of their invincibility before a sell-out owd. The Green Bay Packers finished behind the Bears in the estern division and the Pittsburgh Steelers and the New York Giants trailed Washington in the east.

Canada.—Football had a decided military tinge in the dominion, with the R.C.A.F., the army and the royal navy very much in the picture—particularly the flyers.

In the East-West play-off for the Grey cup and the dominion championship, the Toronto R.C.A.F. Hurricanes won the crown by defeating the Winnipeg R.C.A.F. Bombers, 8 to 5 at Toronto before 14,000 spectators. The superior running attack of the home team prevailed over the aerial operations of the western representatives. The Hurricanes had previously won the Eastern Canadian title by defeating the Uplands R.C.A.F. Flyers, stationed near Ottawa, 18–13 before 10,000 at Toronto and had beaten Toronto Balmy Beach for the Ontario Rugby Football Union Crown. The Winnipeg R.C.A.F. Bombers, selected from the three teams in the city league—the Bombers, R.C.A.F. Flyers and the University of Manitoba—were a composite service and civilian team, including R.C.A.F., army and navy men and civilians. They won the Western championship with a 13–6 victory over the Regina Navy.

For a long while it appeared that there would be no play-off for the Grey cup because of the restriction against airmen playing later than Dec. 1. Play in the Western Interprovincial union ended Nov. 7, but the O.R.F.U. carried out a full schedule and declared it impossible to accelerate its schedule enough to meet the Dec. 1 deadline.

The solution was reached when the R.C.A.F. extended the deadline to Dec. 5, the dominion championship was moved ahead to that date from Dec. 12 and the Toronto Hurricanes played three games in eight days to reach the East-West final by Nov. 29. "Sudden death" games were the rule for all championships.

The Winnipeg Bombers won the Grey cup in 1941 and 1939. There was no play-off in 1940 owing to a disagreement over the playing rules. (A. DA.)

Great Britain.—Taking the rugby union game first, four internationals were played, England playing Wales and Scotland both at home and away, and losing them all. As Murrayfield was not available, the Scotland "away" match was played on the equally famous Inverleith ground. The other grounds were Swansea, Gloucester and Wembley (for the return Scotland game). These internationals were, by the way, "services" matches *i.e.* with the teams recruited from members of the army, navy or air force, so that many famous players not in the services, like those who play for the hospitals, were not available.

Cambridge beat Oxford in March this making the fourth successive defeat for Oxford. The Middlesex "sevens" was won by St. Mary's hospital, after a desperate fight in the final with the R.A.F. The R.A.F. had an ample revenge on the army for their defeat earlier in the season, both matches being played at Richmond.

In the rugby league world Dewsbury won the championship, by beating Bradford, and Leeds the Challenge by beating Halifax. In association football, as in rugby, four international matches were played, England against Wales and Scotland, home and away. All the four games were won by the home countries, that at Hampden Park providing a most exciting game with a final score of 5–4. The league war cup final was won by Wolverhampton Wanderers, who beat Sunderland after a replay by 4–1. The London war cup final was won by Brentford, who beat Portsmouth 2–0. In Oct. 1942, England played Scotland at Wembley before a huge crowd that included the king of Norway and Crown Prince Olaf. The match was drawn, with no score. (D. R. G.)

Foreign Exchange: *see* EXCHANGE CONTROL AND EXCHANGE RATES.

Foreign Investments in the United States.

Foreign holdings of United States stocks, bonds, cash balances and other dollar assets, excluding gold, at the end of 1941 were estimated at $9,021,000,000, as compared with $9,791,000,000 a year earlier. The major portion of the decline of more than $750,000,000 in the value of these holdings during the year was directly attributable to circumstances growing out of the war and largely reflected the liquidation of the assets of allied countries.

The invasion of Norway and the Lowlands and the collapse of

France was followed by an abrupt increase in the demand for American supplies, produced a strain on British gold reserves, and necessitated the liquidation of some investments. By the early part of 1941 it was apparent that British gold reserves were practically exhausted and that further payments for current and future deliveries would have to be met by a large-scale liquidation of investments in the United States. For not only was the United Kingdom required to pay dollars for goods and services obtained in the United States, but payment for British purchases in other countries was also frequently required in dollars. In the early months of 1941, after a substantial portion of the mobilized security holdings of its citizens had been sold, plans were made to liquidate the United States subsidiaries and branches (direct investments) of British companies. Transactions of this type presented greater difficulties than the marketing of listed stocks and bonds. The latter were sold on the security exchanges or by special syndicates "off the market." On the other hand, foreign parent company ownership of a direct investment usually involved control of 100% of the voting shares, and consequently such investments had no established market.

The sale of one such investment, the American Viscose corporation, yielded the British a little more than $54,000,000, or about half of its book value. The passage of the Lend-Lease act, in March 1941, eased the burden of payments for future purchases. Nevertheless, large sums were still required to pay for orders placed before the act was passed and for purchases in third countries. In May 1941 the Reconstruction Finance corporation granted a $40,000,000 loan to the Brown and Williamson Tobacco company, another large British-owned subsidiary, of which $25,000,000 was available to the British. The Defense Plant corporation, a subsidiary of the RFC, purchased plants in the United States constructed by the British government before the United States entered the war and thus released about $46,000,000 of additional funds, and in July arrangements were completed for a loan by the RFC of $425,000,000 to the British government collateralled by investments in the U.S. with an appraised value of $700,000,000. At the end of 1941 about $350,000,000 of the loan had been advanced to the United Kingdom; the security for the loan was included in the figure of $1,708,000,000 of British long-term investments in the United States. Largely as a result of the liquidations described above, the value of British investments in the United States declined by about $335,000,000 during 1941. In the course of prosecuting the war, the investments of other allies were also subject to partial liquidation. Canadian holdings at the close of 1941 were $75,000,000 less than at the preceding year-end, Belgian holdings were $38,000,000 less, French holdi were $65,000,000 less, and Netherlands holdings had decli by $54,000,000. A small portion of the decline for all count reflected a decrease of about 17% in the average prices of co mon shares. Common share holdings of all countries decli from $2,056,000,000 at the end of 1940 to $1,658,000,000 a y later. Investments in preferred stocks and bonds were subject proportionately smaller liquidation. The value of total long-t investments on Dec. 31, 1941, was $5,303,000,000, as compa with $5,803,000,000 a year earlier.

The issuance of a series of executive orders in 1940 and 1 immobilizing the assets in the United States of the axis co tries and of those countries overrun by the axis (and the gra ing of licences to friendly and neutral countries to engage financial transactions in the U.S.) served to lessen greatly turnover of certain foreign capital in the United States. Initia the freezing of funds of the victims of aggression was in ef formal notice to the aggressors that any attempt to secure con of the dollar assets of invaded countries or of their natio by duress would be blocked by official action in the United Sta Subsequently, the freezing of axis funds in June and July 1941 the requirement that all foreign assets in the United States registered as of June 1, 1940, and June 14, 1941, laid the b for an effective machinery with which to control foreign fu

Prior to the attack on the United States on Dec. 7, 1 Japan, Germany and Italy—particularly Japan—had redu somewhat their investments in the United States. The mana ment of a number of these was placed in the hands of pers acceptable to the Treasury Department, and a number, products or services of which were not essential, were liquida In March of 1942, the president established the office of Alien Property Custodian, among whose functions were powers to manage, control or vest enemy-owned or -contro businesses operating in the United States. (*See* also Excha Control and Exchange Rates.) (M. Ab

Estimated Foreign Investments in the United States by Principal Countries and Areas, End of 1941
(in millions of dollars)

Country	Long-term						Short-term	Total
	Common stock (market value)	Preferred stock (par value)	Bonds (par value)	Direct (book value)	Miscellaneous	Total		
Canada	284	53	65	511	78	991	375	1,366
Belgium	38	5	12	74	11	140	119	259
France	101	25	40	66	64	296	455	751
Germany	–	1	1	55	29	86	7	93
Italy	3	–	–	12	22	37	15	52
Netherlands	323	47	210	221	12	813	187	1,000
Switzerland	395	103	55	109	34	696	349	1,045
United Kingdom	371	138	35	829	335	1,708	403	2,111
Other Europe	50	12	19	61	27	169	492	661
Total Europe	1,281	331	372	1,427	534	3,945	2,027	5,972
Latin America	43	14	22	19	22	120	426	546
Rest of world	50	12	18	51	16	147	890	1,037
Grand total	1,658	410	477	2,008	750*	5,303*	3,718	9,021*

*Includes estimated holdings of $100,000,000 of United States, national, state and municipal securities not allocated on a by-country basis.

Sources: Long-term data from International Economics and Statistics Unit, Bureau of Foreign and Domestic Commerce, Department of Commerce.
Short term data from Bulletin of the Treasury Department for March 1942, as adjusted by the Department of Commerce.

Foreign Missions. The broadening of the area of hos ties in 1942, in World War II, brou added complications to Christian foreign missions. The con between Japan on the one hand and the United States, G Britain and the Netherlands on the other engulfed additi areas in the far east. The consequences were especially felt Dutch and American missions. The Dutch East Indies, m field of the Dutch churches, both Protestant and Roman Cath were overrun by the Japanese, and almost no word made its out from the missionaries fected. Presumably their v was interrupted. From Bu whose Protestant missions v staffed predominantly by Ar icans, all missionaries forced to evacuate. Some fo occupation in India, a fev China and others returnec their native lands. In Thail missionaries, mostly Ameri were interned, and by the of the year several were rep ated. In the Straits Settleme British Malaya and the Br portions of Borneo presum all missionary operations halted. In the Philippi where the overwhelming ma ity of the missionaries

Americans, some were able for a time to continue at their posts, but before the middle of the year almost no news was obtainable from them. In Japan and the portions of China occupied by Japan, most of the American and British missionaries, both Protestant and Roman Catholic, were interned, confined to their own compounds, or, in Shanghai, partly restricted. By autumn, some had been repatriated. Japanese Protestant leaders, with the assistance and perhaps under the direction of their military authorities, were attempting to bring about the kind of union of Protestant churches in some of the portions of China occupied by their forces which had been achieved in Japan in 1941. In the United States missionaries were being appointed and trained against such time as far eastern lands should again be open to them. From the United States, missionaries, both Roman Catholic and Protestant, were being sent in increasing numbers to Latin America.

(K. S. L.)

Foreign Trade: *see* AGRICULTURE; INTERNATIONAL TRADE.

Forests.

Normal uses for wood were rapidly expanded as the U.S. mobilized for war. Tremendous quantities of lumber were required for barracks and other facilities for the enlarged army. Additional quantities were required for the rapid increase in industrial plant capacity and for housing to care for the workers in the new industrial developments.

Enormously increased requirements for the packaging and crating of food, equipment and supplies both for U.S. armed forces and for lend-lease shipments were one of the largest factors in extending the production problem to the lower grades of lumber. To offset this in part, scientific design and systematic testing at the U.S. Forest Products Laboratory, reduced the amount of lumber required for specific packages. Substantial economies in shipping and storage space were effected at the same time.

The military program included large demands for pontoons which call for high-grade structural timber from the Pacific Northwest. One of the critical factors in the ship-building program proved to be the supply of lumber suitable for decking. No other material was found satisfactory for the purpose.

Shortages of steel, aluminum and other metals caused engineers to turn again to the use of wood for many uses in which it had lost ground in the years preceding the war. Through more extensive use of timber connectors and other devices to permit fabrication of large structural members, wood was playing an indispensable part replacing steel in trusses for bridges, hangars, warehouses and factories. Wood also filled a great need in the construction of mosquito patrol boats, landing barges and small craft of other descriptions. The call for ship-timbers involved a search for oak of suitable size which reached into private residential estates in sections where commercial logging had come to be considered a thing of the past.

Perhaps the most dramatic of the fields in which wood was used was that of aircraft construction. When the available aluminum was found to be insufficient for the unprecedented number of aircraft which would be needed, advances in wood technology enabled wood to meet the need. Through new developments in the field of plastics and in the use of phenol-resin bonding, wood and wood products were given new physical properties which opened up important new uses. Blanks of variable density especially adapted to the manufacture of aeroplane propellers was one of the most interesting. Another was a paper plastic, suitable for use as wing covering.

Plywood proved superior in some respects for fuselage and wing covering. The demand for plywood suitable for aircraft construction stimulated an intensive combing of the northern hardwood forest region to bring out all the available yellow birch of high quality. The price for birch veneer logs was pushed to unprecedented levels.

An increasing scarcity of timber capable of meeting the rigid specifications for aircraft structural members was met by the use of a wider range of species. Inability of the Pacific coast states to supply the necessary quantities of spruce led to an emergency program to draw upon the Sitka spruce forests of Alaska.

In its chemical uses, wood was also rapidly increasing its field of usefulness. Output of domestic wood pulp, stimulated by curtailment of imports from northern Europe, continued at a high level and constituted a major drain upon the forests in some sections.

Pure cellulose, derived from wood, supplied an important part of the raw material entering into the manufacture of explosives. Although wood flour had long been used as a filler in phenol-plastics, an all wood plastic was finding its first large commercial outlet in the replacement of hard rubber for storage battery cases. The scarcity of rubber was also directing attention to wood as a source of alcohol for the making of synthetic rubber.

Shortages of other fuels in the eastern United States and the Pacific Northwest stimulated the use of wood for house heating. Development of a simple wood-burning conversion unit for household furnaces by the Connecticut Agricultural Experiment station opened the way for convenient substitution of wood for oil in the eastern states where the shortage of fuel might remain critical for many years.

Output of lumber, which accounts for about 65% of the cut of all trees of sawtimber size, reached 35,700,000,000 bd.ft. in 1941. While 40% above the 1936–1939 average, this output is no higher than the level which prevailed in the years prior to 1929. Yet, with requirements for 1942 estimated at 39,000,000,000 bd.ft., output fell some 5% below that of 1941. In contrast to the over-all situation, cutting of National Forest timber, which had increased some 70% since 1939 to an all-time high of 2,200,000,000 bd.ft. for the fiscal year ending June 30, 1942, continued at record levels.

Primarily responsible for the decline in lumber output in 1942, were such factors as weather, equipment and labour shortages, transportation problems and financial uncertainty. Yet back of all this, current production difficulties reflected in no small degree, the extent of depletion and deterioration of forests. Tolerance of destructive liquidation in the past meant that there was no longer abundant sawtimber supplies of good quality readily accessible throughout the country. Isolated remnants of timber had to be searched out for specialty uses.

Pressure to supply demands resulted in a wave of destructive cutting sweeping over the second-growth forests of the east and eating further into the old-growth stands of the west.

In addition to supplying critical needs for wood, forests in the United States assumed wartime significance in another way. Protection of forests from fire, ever a problem of first magnitude, was in 1942 a matter of military necessity, essential in national defense.

The danger of sabotage in the forests called for an intensification of protection in all vulnerable areas. For this purpose congress made special appropriations and both federal and state protective agencies adopted special precautions. Thousands of citizens, resident in forested areas, were enlisted and trained for immediate call in a voluntary Forest Fire Fighters service. Simultaneously, the country's forest fire lookout system became an integral and vital part of the army's far-flung air-raid warning system.

(E. H. Cl.)

British Empire.—Empire forestry suffered several losses owing to the Japanese invasion of Malaya, the East Indies and Burma. In Malaya the majority of the members of the forest department were unable to escape. In Burma, with the exception of one or two casualties, the majority escaped to India. In this evacuation sterling work was done by members of the forest department and of the big timber firms.

During the year, under the auspices of the Royal African society, a commission set up to study deforestation and erosion in tropical countries issued its report. It dealt with shifting cultivation, bush fires, grazing, preventive and remedial measures. The commission included representatives of the British, French and Belgian colonies, and of the Netherlands overseas territories. (*See* also LUMBER.) (H. R. BD.)

Formosa

(TAIWAN), Japanese colony, a large island in the western Pacific, separated from China to the west by the Taiwan straits and from the Philippines to the south by the Bashi and Balintang channels. Area, 13,429 sq.mi.; pop. (1938) 5,746,959, of whom 308,845 were Japanese; capital, Taihoku. The governor-general in 1942 was Admiral Seizo Kobayashi. Formosa is valued by the Japanese as a naval outpost, and there is an important base at Mako, in the Pescadores, off the western coast. Formosa served as a take-off point for the Japanese invasion of the Philippines in Dec. 1941.

Education, Trade, Agriculture, Mining, Industries.—In 1937 there were 143 primary schools, with 1,108 teachers and 43,671 pupils for the Japanese and 788 schools, with 7,242 teachers and 445,396 pupils, for the natives. The Japanese yen is the unit of currency, officially valued at 23.48 cents U.S. before the outbreak of the war in the Pacific. The Formosan budget was 183,014,971 yen in 1938–39, 260,530,226 yen in 1939–40. The overseas trade in 1939 was 592,938,000 yen (exports) and 408,650,000 yen (imports). Trade with Japan proper and its territories accounted for 509,745,000 yen of exports and 357,608,000 yen of imports. Formosa is one of the world's largest producers of camphor, and there is a government monopoly of this product. The sugar industry developed notably after the Japanese occupation, the output reaching a record figure of 2,364,570,096 *kin* (the kin is about 1⅓ U.S. pounds) in 1939. Other important products are rice, tea and jute. The island contains gold and iron, although mineral development is not on a large scale. There were 646.3 mi. of government and 316.8 mi. of privately owned railways in Formosa in 1937, besides 1,246.2 mi. of railways designed for the exclusive use of private firms. There were 217 telegraph offices in the island, with 734 mi. of line. There were 2,946 mi. of telephone lines. There were 633,053 savings-bank depositors in the island in 1937, and deposits in savings banks amounted to 27,136,748 yen. (W. H. CH.)

Foundations: *see* DONATIONS AND BEQUESTS and foundations under their specific names.

Four-H Clubs.

Goals of the 1,500,000 4-H club members in 1942 were directed toward doing their full share on the wartime needs of the United States. Because of previous training, experienced 4-H club members were able to expand their production activities in 1942 to help meet the nation's Food-for-Freedom goals. Local adult leaders of the clubs, working under the direction of extension agents, devoted additional time and effort to helping newly enrolled boys and girls with similar projects, so the results of the year's work reached a record total. Accomplishment of the 4-H club members in 1942 was estimated to include the raising of 2,000,000 bu. of garden products; production and care of 6,500,000 chickens, 300,000 head of hogs, 85,000 head of dairy cattle; cultivation of 11,000,000 lb. of peanuts, soybeans and other oil producing crops; an the canning of 14,000,000 jars of fruit, vegetables and meat Members also collected 146,000,000 lb. of scrap metal, 23,000,00 lb. of rubber, and 24,000,000 lb. of rags, burlap and paper; an bought $6,000,000 worth of war bonds and stamps, in addition t their regular 4-H activities.

The only national club event held during 1942 was the Nationa 4-H Club congress in Chicago, Ill. Because of wartime cond tions the National 4-H Club camp, usually held in Washingto D.C., was cancelled and the 4-H division of the National Dair exposition was combined with the 4-H Club congress. A Nationa 4-H Mobilization week was observed April 4–11, 1942 to encou age rural boys and girls in making their maximum contributio to the wartime needs of the nation. A National 4-H Achieve ment week, November 7–14, marked the accomplishments o Mobilization week goals.

Volunteer local leaders numbered about 155,000 in 1942. Ther were approximately 79,000 clubs representing practically ever county in the 48 states and in Alaska, Hawaii and Puerto Rico. (M. L. W.)

France

An occupied state situated in the west of Europe bordered N. by Belgium and Luxembourg, N.E. b Germany, E. by Germany and Switzerland, S.E. by Italy, S. b Spain, with the Mediterranean sea on its southeast coast, th Atlantic ocean on the west, and the English channel and th North sea to the north. Area, 212,736 sq.mi.; pop. (est. April 1941) 39,302,511, exclusive of war prisoners; provisional capita Vichy; chief of state in 1942 (since 1940): Marshal Hen Philippe Pétain (*q.v.*). By the armistice of June 22, 194 France was divided into two zones: the occupied and the unoccupied (*c.* 85,000 sq.mi.); the line of demarcation was drawn fro the Swiss frontier near Geneva to a point 12 mi. east of Tou and thence southwest to the Spanish frontier at St. Jean-Pied-d Port. Although the Germans at the end of 1942 occupied th whole of France (save portions of Savoy and the Riviera occupie by the Italians) the line of demarcation was still maintaine Language: French; religion: Roman Catholic; *c.* 1,000,00 Protestants.

History.—The history of France in 1942 was studded b dramatic and tragic events. As the year began, the country wa involved in still another collaborationist crisis. Pétain had a cepted the principle of collaboration in an interview with Hitl at Montoire on Oct. 24, 1940. Nevertheless, he dismissed Pier

THE DISTRESS AND POVERTY of occupied France in 1942 is indicated in th picture of women gathering stray pieces of firewood

Laval, notorious for his eager collaboration, on Dec. 13, 1940. Laval's eventual successor in power was Adm. Jean Darlan, who was appointed on Feb. 11, 1941 vice-premier and the eventual successor of Pétain. Although Darlan in a radio broadcast of May 23, 1941 praised "collaboration" and Hitler's "new order," by 1942 the Germans were evidently not completely satisfied with him. Still, Darlan collaborated sufficiently to be suspected of permitting the Germans to supply Gen. Erwin Rommel through Tunisia, a suspicion which strained Franco-American relations in February, as did also the rumour that Adm. Jean Decoux, high commissioner for French possessions in the Pacific, was turning over French merchant ships for the use of the Japanese. On Feb. o Pres. F. D. Roosevelt sent a personal message to Pétain, and n reply Adm. William D. Leahy, U.S. ambassador at Vichy until May 1, received on Feb. 24 written assurance that France would emain neutral and keep its fleet out of German hands.

At Riom on Feb. 19 began the trial of Edouard Daladier, Leon Blum, Maurice G. Gamelin, and Pierre Jacomet, who had been ontroller general of the army. The first three of these, as well s Paul Reynaud and Georges Mandel, had already been con- emned to life imprisonment by Pétain on Oct. 17, 1941. Al- hough the Germans had expected the trial to hinge upon the issue f war guilt, in reality it revolved about the issue of war pre- aredness. From the Vichy point of view, the trial was a fiasco; proved impossible to keep Marshal Pétain's name from being mplicated in the general responsibility for unpreparedness. The ourt held more than 20 hearings. On April 2, 1942, it adjourned or the Easter vacation, and on April 14 a decree suspended urther hearings.

German discontent, both with the Riom trial and with the rate f collaboration, brought about a crisis which was concluded on pril 18 by Pierre Laval's becoming chief of government. Darlan remained the marshal's designated successor, and became commander in chief of all of the armed forces, but he relinquished l his ministerial portfolios. Laval, who also became minister of oreign affairs, of the interior and of information, was required y constitutional act no. XI to submit his list of ministers to étain for approval and to account to him for all his acts (April 8). The Laval ministry was made up principally of his hench- en, most of them notorious collaborationists. His appointment, hich almost certainly was distasteful to Pétain and Darlan, was ot favourable to the "national revolution" of which Pétain reamed—a sort of pre-1789, Catholic, hierarchical state. Laval, n the contrary, in a broadcast of April 20, spoke of "the new urope, in which socialism will be installed." The year 1942, herefore, was less fertile than 1941 in projects for national re- onstruction, which, in any event, never got beyond the blue- rint stage.

The appointment of Laval was received most unfavourably y the U.S. government. In May there was added tension be- veen Washington and Vichy because of direct negotiations with dm. Georges Robert at Martinique concerning the neutralization f Martinique, Guadeloupe and French Guiana. These negotia- ons, which began on May 9, were conducted by Rear Adm. ohn H. Hoover and Samuel Reber of the U.S. department of tate, and were not finally concluded until Nov. 23. In June and uly there was a somewhat acrimonious exchange of correspond- nce between Vichy and Washington concerning the disposition f the French war vessels interned at Alexandria, which were hreatened at that time with possible capture by Gen. Rommel.

The first fruits of Laval's collaboration were seen in his broadcast of June 22. Having stated that he hoped for German victory because without it bolshevism would be established everywhere, e appealed to French labour to volunteer for work in Germany. The next day the formation of the Tricolour Legion was announced, which was designed to be a larger and official version of the French Volunteers to Fight Bolshevism. To encourage labour volunteering by causing unemployment, 1,300 factories were closed down, and all the resources of official propaganda were used, but without much success. By encouraging volunteering, Vichy hoped not only to placate Germany but also to rid itself of that element of the population which was suspected of being most hostile to the general policies of the government. On Aug. 11 Laval broadcast from Compiègne the announcement that 50,000 war prisoners (out of a total which, it is said, still stood in Aug. 1942 at 1,256,600) would be exchanged for 150,000 volunteer workers. Reports from Berne stated that 160,000 had volunteered for work in Germany up to June 22, 1942, but of these 90,000 had been for a short term and had refused to revolunteer. By the last of August, in spite of heavy pressure, only 45,000 more had volunteered. By this time Laval was trying to secure 350,000, of whom 170,000 were to be skilled metal workers. By a very important decree of Sept. 11 it was provided that all males from 18 to 50 and all unmarried women between 21 and 35 could be obliged to execute any work which the government might judge necessary. This was universally interpreted as legalizing conscription for work in German factories. By Oct. 4 the government began to designate complete groups of workers, ready organized with their foremen, to go to take over German factories. This policy, based upon the law of Sept. 11, occasioned in protest some resignations among high officials of the labour ministry, and was said to have been covertly resisted by some of the employers themselves. As for the workers, although all strikes had been declared illegal, they organized very effective ones, which began at Lyons on Oct. 15 and spread to Marseilles, Toulouse, Tarbes, Annecy, Perigueux, Venissieux, Limoges, Mont-Plaisir, Grenoble, Chambéry and Clermont-Ferrand. Widespread riots occurred on Oct. 16. Faced with this resistance, Laval made several broadcasts, and the government sent its propagandists to lecture to the workers in the factories, but strikes broke out again at the end of the month. In early December it was reported from Switzerland that 100,000 French skilled workers had gone to Germany.

LAVAL CABINET WORKING ON FRANCE'S FUTURE
BISHOP

"WITH A SINGLE-MINDED PURPOSE." The rubber-stamp Laval cabinet of 1942 as characterized by Bishop of the *St. Louis Star-Times*

On Aug. 26, meanwhile, a decree dissolved the permanent bureaus of the senate and the chamber of deputies, thus destroying the last vestiges of the French parliamentary system. Jules Jeanneney and Edouard Herriot, presidents of the senate and chamber of deputies, respectively, had the courage to write a letter of protest to Pétain, in the course of which they said: "It is impossible that liberty will die in the country of its birth, whence it spread over the world. . . ." For this daring Herriot was placed under house arrest.

As the crisis over labour volunteering heightened, apprehensions also increased about the defense of the empire. To the accompaniment of rumours of U.S. troops in the territories surrounding Dakar and of naval concentration at Gibraltar, Adm. Darlan began a tour of the African empire (Oct. 22). On Nov. 8, 1942, it was announced that U.S. and British forces were entering North Africa; landings were made simultaneously in Morocco and Algeria, principally at points near Casablanca, Oran and Algiers. On Nov. 8 Gen. Henri Honoré Giraud, who in April 1942 had escaped from the German fortress of Koenigstein and who was spirited from the unoccupied zone to North Africa just before the allied invasion, broadcast an appeal for all to rally round him "in support of this unexpected opportunity"; on that same day an armistice was concluded at Algiers, and the Vichy cabinet decided to sever relations with the U.S. On Nov. 9, Ambassador Gaston Henry-Haye received his passports, while Mexico and Canada broke off diplomatic relations with Vichy; also on Nov. 9 Laval conferred with Hitler in Munich. On Nov. 10 Oran was captured. On Nov. 11, the Germans began their occupation of the hitherto unoccupied zone, save for the naval base of Toulon, while the Italians began landing troops in Corsica, and took Nice and Chambéry. Pétain uselessly protested the occupation; Gen. Lattre de Tassigny, commander of the military district of Montpellier, tried to resist it, but was disarmed and was held for trial by the state tribunal. In North Africa the original U.S. intention had been to support Gen. Henri Honoré Giraud, but it was discovered that he could not command the allegiance of the Darlan-appointed commandants in North Africa. In consequence, the American command negotiated with Adm. Darlan, who happened to have been captured at Algiers when the invasion c menced, and on Nov. 11, 76 hours after the announcement the fighting had begun, Darlan issued the order to cease fi

So began an extremely confused state of affairs. Darlan clared that he assumed authority in the name of Pétain, wh turn promptly disavowed him. On Nov. 15 Darlan appoi Gen. Giraud commander in chief of all French sea, air and forces in North Africa. Meanwhile, British and Fighting Fr criticism of the arrangement with Darlan mounted, just as agreement caused widespread uneasiness in Russia and am many segments of American public opinion. For Darlan tainted with collaborationism, whereas Gen. Charles de Ga whose movement on June 25 had taken the name of the Figh French, never had been, and was moreover in effective con with the political underground organization in France of resist to the Germans and to collaborationism. On Nov. 17 Pres. Ro velt announced that the arrangement with Darlan was only temporary expedient." By the beginning of December, Darlan organized an imperial council; for a few days he called him chief of state, but later receded from this pretension and tented himself with the title of high commissioner in Fr North and West Africa.

On Dec. 24 Adm. Darlan was assassinated by a 22-year Frenchman whose complete identity had not been divulged the year's end. On Dec. 27 the imperial council appointed as successor Gen. Giraud, but this appointment, warmly welco by all as it was, certainly did not succeed immediately in br ing about the union of all elements of French public opinion cluding Gen. de Gaulle and his adherents. On Dec. 29 Giraud appointed Gen. Alphonse Juin as commander in chie the French armed forces serving under Giraud's authority.

After the Armistice day occupation of all France, few f were divulged in 1942 about events there. Daladier, Blum, naud, Mandel, and Generals Gamelin and Maxime Weygand said to have been taken to Germany. On Nov. 18 Pétain sig constitutional acts XII and XIII, empowering Laval, as chie government, to promulgate laws and decrees under his own si ture, and designating him as next in succession for chief of s

GUTTED RUINS of the Renault tank plant near Paris after the mass raid of British bombers on the night of March 3, 1942

On Nov. 19 Pétain broadcast an appeal to resist "Anglo-Saxon aggression," and on Nov. 20 Laval made a broadcast in which he said that he was sure of German victory.

In a letter to Marshal Pétain delivered on the night of Nov. 26–27, Hitler abrogated the terms of the 1940 armistice, and apparently decreed the disbandment of the French army and navy. At the same moment the Germans occupied Toulon and attempted to seize the French fleet lying there, but the French, commanded by Adm. Jean de la Borde and acting under orders issued in 1940, scuttled their fleet and blew up a substantial part of their coastal batteries and harbour installations. Three submarines escaped and subsequently joined the allies; aerial reconnaissance subsequently proved that about 50 ships at Toulon were permanently disabled or needed very extensive repairs; 15 warships and 5 tankers were afloat but may have been damaged internally. All the larger vessels were scuttled or seriously damaged. A total of about 25,000 tons of ships seemed to be intact, while the tonnage of the scuttled or damaged ships totalled about 95,000.

Throughout 1942 Pétain tried vainly to hold together what was left of the French empire. Early in the year there was great apprehension lest the axis be permitted to use Madagascar as a base. On May 4 the British, with U.S. approval, attacked the northern part of the island and on May 7 Diégo Suarez surrendered. On July 2 the British seized Mayotte Island in the Mozambique channel. On Sept. 10 the British began their second Madagascar campaign, and entered the capital, Tananarive, on Sept. 23. Hostilities ended with the total occupation of Madagascar on Nov. 5; on Dec. 14 the British handed over the administration of the island to the Fighting French. Gen. Paul Louis Legentilhomme became the high commissioner. On Nov. 3 French West Africa, including Dakar (*q.v.*), adhered to the cause of the United Nations. On Nov. 30 Fighting French troops captured the island of Réunion, and finally on Dec. 29 it was announced that French Somaliland, the last remnant of the Vichy empire, had joined the Fighting French and the United Nations.

In 1942 the lot of the Jews in France became ever more difficult, especially after Xavier Vallat was replaced as commissioner for Jewish affairs on May 8 by an even more notorious antisemite, Louis Darquier de Pellepoix. On Aug. 26 there began in the unoccupied zone a roundup of all Jews who had entered France since 1936; they were brutally deported to forced labour in eastern Europe. This policy was vigorously protested by both the Protestants and the Catholics in France, most notably in a letter to Pétain by Marc Boegner, president of the French Protestant federation (Aug. 20), and in a pastoral letter in September by the archbishop of Toulouse. The national council of the Reformed Church in France ordered a protest against Jewish deportations to be read from all pulpits on Oct. 4.

Through the device of collecting costs of occupation at the rate of 400,000,000 fr. (about $3,050,000) a day, a burden twice as heavy as the Versailles reparations was imposed upon a population half as large. Inasmuch as the actual costs of occupation were probably never more than 125,000,000 fr. a day, the Germans were able to buy up French property with the balance, while also maintaining an enormous cash deposit in the Bank of France; on Jan. 15, for example, it stood at 62,325,000,000 fr. Without exactly claiming it as a fact, Vichy had let it be understood that Darlan in his interview with Hitler in May 1941 had secured a reduction of the occupation costs to 300,000,000 fr. a day, but in March 1942, Swiss sources declared that there had been no change, save that France had to pay one-quarter of the daily charge in foreign currencies. Under all these circumstances it was impossible for the Vichy government to prevent disastrous inflation. By June 30, 1942, the Bank of France had advanced to the government 174,938,000,000 fr. for the defrayment of the costs of occupation. During the first six months of the year, armistice expenditures totalled 73,442,000,000 fr. and the total public debt increased about 93,000,000,000. On July 1, 1942, the public debt stood at 968,000,000,000 francs. The statement of the Bank of France for Aug. 27 reported that circulation had attained a new record of 328,239,000,000 fr. In late March the franc was quoted on the black bourse at 200 to the dollar (official rate, 43½), and in November, Swiss black bourses were quoting the French franc at 340 to the dollar.

ANTI-"NEW ORDER" papers had a French underground circulation of about 200,000 weekly in 1942

The budget estimates for 1942 foresaw an income of about 80,000,000,000, an increase over 1941 of 11,800,000,000; and ordinary expenditures of 105,500,000,000 (an increase over 1941 of 8,500,000,000), together with extraordinary expenditures (including a 3,000,000,000 subsidy between the price of wheat and the fixed cost of bread) of 33,000,000,000, a decrease from 1941 of 4,300,000,000 fr. Thus, whereas in 1941 a deficit of 66,000,000,000 had to be met by borrowing, it was anticipated that the deficit in 1942 could be met by borrowing 58,500,000,000. Up to May 31, budget receipts were 35,434,000,000 fr.; expenditures were 121,000,000,000. By June 30 receipts were 42,537,000,000, and by Sept. 1 they had reached 58,839,000,000 fr.

During 1942 French production became ever more dislocated and ever more closely tied to the German economy. Production and employment were made difficult because of the very real shortages of fuel and raw materials. The winter of 1941–42 was extremely cold, and the fall of snow was heavy. It is said that a rather severe drought in late summer cut down the size of the crops. The lack of insecticides, such as copper sulphate, also diminished the harvests. The food supply and the control of black markets were even worse problems than they had been in 1941. The whole French economy suffered grievously, too, from the lack of transport. It was officially estimated that France in 1942 had only 15% of its prewar transportation facilities. (*See* also FRENCH COLONIAL EMPIRE; INTERNATIONAL LAW; WORLD WAR II.)

(A. M. WN.)

France, Free (Fighting France): *see* FRANCE; FRENCH COLONIAL EMPIRE.

Franckenstein, Clemens von

(1875–1942), German composer, was born July 14 in Wiesentheid, Lower Franconia. A student of Ludwig Thuille and Ivan Knorr, he was a conductor at the court opera in Wiesbaden, 1902–07, and later at the Royal opera in Berlin. He was director of the Munich court opera from 1924 until his retirement in 1934. He composed the following operas: *Griseldis* (1898), *Fortunatus* (1909), *Rahab* (1911) and *Des Kaisers Dichter* (*Li-Tai-Pe*) (1920). His death was reported from Berlin, Aug. 22.

Franco, Francisco

(1892–), Spanish soldier and statesman, was born in Galicia. After military service in Morocco, he became a colonel in 1926, and served under the Spanish republic of 1931 in the Balearic Islands, being later transferred to Morocco again. In 1935, he was made chief of staff. On the outbreak of the civil war in June 1936, he flew to Tetuan, in Spanish Morocco, and there organized the transport of Foreign Legionaries and Moorish troops to the Spanish mainland, whither he soon followed. Upon the death of Gen. Sanjurjo, Gen. Franco became military leader of the insurgents. After his victorious conclusion of the civil war in 1939 he added the title of prime minister to the others he possessed, organized his cabinet, and began the task of reconstruction. Franco issued a declaration of "strictest neutrality" at the outset of war in Sept. 1939.

Internal problems continued to dog the *caudillo* throughout 1941 and 1942. The problem of food remained acute, and Franco saw fit in July 1941 to denounce the United States for refusing to ship grain to Spain. Franco signed a decree on Dec. 19, 1941, which proclaimed Spain's nonbelligerent status in the Pacific war.

On Sept. 3, 1942, Franco reshuffled his cabinet, ousted Ramón Serrano Suñer from the foreign ministry and replaced him with Gen. Francisco Gómez de Jordana. Following the entry of U.S. troops into French North Africa, Franco ordered mobilization of several classes of Spaniards on November 17. He affirmed his solidarity with Germany and Italy in a speech on Dec. 8; but he warily refrained from any statements which might compromise Spain's neutrality.

Fredendall, Lloyd R.

(1883–), U.S. army officer, was born Dec. 28 in Wyoming. A cadet at the U.S. Military academy, 1901–02 and 1902–03, he was commissioned a second lieutenant of infantry in 1907. He graduated from the Army Signal school in 1914, took a field officers' course in 1922, graduated from the Command and General Staff school with honours in 1923, and completed studies at the Army War college in 1925. During World War I, he served as General Pershing's staff assistant. From his post as chief of an army corps at Chicago, he went into active duty in 1942. He was chief of the U.S. landing operations at Oran, Algeria, Nov. 8, 1942. There his columns met bitter resistance, but French ground forces holding the key aerodromes were blasted by U.S. air for and finally broke under a mass assault by Fredendall's troo By Nov. 10 Oran's resistance collapsed, and an armistice v concluded.

Free France (Fighting France): *see* FRANCE; FREN COLONIAL EMPIRE.

Freemasonry: *see* MASONIC ORDER.

Freer Gallery of Art: *see* SMITHSONIAN INSTITUTION.

French Colonial Empire.

Total area (excluding Sy and Lebanon) (appro 4,579,000 sq.mi.; total pop. (est. Dec. 1939) 67,591,000. Cert essential information on the French colonies, protectorates a mandates is given in the table on p. 301.

The U.S. and British invasion of Morocco and Algeria on N 8, 1942, was followed by a proclamation by Admiral Jean Dar on Nov. 13 assuming responsibility for French interests in agr ment with the American authorities and stating "All governors residents must stay at their posts and continue the administrat in conformity with existing laws." On Nov. 17 Darlan, "act for Marshal Pétain," signed a proclamation stating that a cour had been formed to transact all the judicial, legislative and exe tive business of Algeria. President Roosevelt issued a statem the same day to the effect that the agreement with Darlan v only a temporary measure. On Dec. 1 Morocco radio repor that Darlan had assumed the powers of chief of state in Fren Africa and had set up an imperial council. After his assassi tion on Christmas Eve, he was succeeded by Gen. Henri Giraud

French Morocco.—All British subjects, including women a children, were ordered to leave the coast districts by March 1942. Alcohol distilling, oil refining and the production of s copper sulphate, shoes, paper and packing materials were amo new industries. A Société de Coton aimed at developing cot production and building new textile factories, while a freez industry for preserving foodstuffs was under development. T fishing industry was flourishing and expanding.

Algeria.—On April 28, 1942, the Vichy anti-Jewish law Aug. 1, 1941, ordering Jews to live in ghettos, came into for The same month a new railway was opened in southern Alge Several soap factories were reported to be operating and us olive oil as raw material. Distilleries, jam-making and fruit-dry factories were also in operation. The capacity of the textile dustries was enlarged to make use of Algerian wool. An incre was reported in sugar-beet and in coal production.

Tunisia.—Several large textile factories were reported to h been built, and paper, twine and sacks were being manufactu from alfalfa grass. A carbon disulphide factory was in operat north of Kairouan, and lignite mines at El Oudiane and O Douil produced between 12,000 and 15,000 tons monthly, wh was not, however, sufficient to supply the needs of La Goule electric power station and the Tunisian railways.

French West Africa.—A census was ordered to be taken Dakar in Sept. 1942 of all women and children with a view repatriating families with two or more children. On Nov. 3, 1,0 of them left Dakar for France. It was estimated that product of ground-nuts in 1942 would be 200,000 tons. Efforts were ma to develop production of dried fish. On Nov. 23 French W Africa placed itself under the orders of Admiral Darlan. In F ruary the Brong tribe, under King Koadio Adiomani, crossed i the British Gold Coast from the Ivory Coast to join General Gaulle. (*See* also DAKAR.)

French Somaliland.—This colony, with its important ou on the Red sea—Jibuti—joined the Fighting French late in D 1942 and thus became the last Vichy possession to line up w

French Colonial Empire

Country and Area sq. miles (approx.)	Population (est. Dec. 31, 1939) (000's omitted)	Capital, Status, Governors, Premiers, etc.
AFRICA		
French Equatorial Africa, 867,700	3,500	Brazzaville, *Secretary-General:* M. l'Administrateur en chef Laurentie. Brazzaville, *Governor-General:* M. Eboué.
Gabon, 106,500	410*	Libreville, colony, *Governor:* M. Assier de Pompignan.
Middle Congo, 159,700	747*	Brazzaville, colony, *Administrator:* M. Fortuné.
Oubangui-Chari, 214,600	834*	Bangui, colony, *Governor:* M. Sautot.
Chad, 386,900	1,432*	Fort Lamy, colony, *Governor:* M. Latrille.
Cameroons, 161,200	2,609	Yaoundé, mandated territory, *Governor:* M. Cournarie.
French North and West Africa	...	*High Commissioner:* General Giraud.
Algeria, 845,400	7,600	Algiers, colony, *Governor-General,* M. Chatel.
Morocco (F.), 165,800	6,600	Rabat, protectorate, under the Minister of Foreign Affairs, *Sultan:* Sidi Mohammed, *Resident-General:* General Nogues.
Tunisia, 48,800	2,730	Tunis, protectorate, under the Minister of Foreign Affairs, *Bey:* Sidi Mohammed el Tahar. *Resident-General:* Admiral Esteva.
French West Africa, 1,807,700	14,800	Dakar, *Governor-General:* M. Boisson.
Senegal, 77,000	1,790*	St. Louis, colony, *Governor:* M. Rey.
Mauritania, 330,000	383*	St. Louis, colony, *Governor:* M. Beyriès.
French Guinea, 97,000	2,011*	Conakry, colony, *Governor:* M. Croccichia.
Ivory Coast, 183,000	3,851*	Abidjan, colony, *Governor:* M. Deschamps.
Dahomey, 43,000	1,352*	Porto Novo, colony, *Governor:* M. Truitard.
French Sudan, 591,064	3,569*	Koulouba (Bamako), colony, *Governor:* M. Desanti.
Niger, 500,000	1,747*	Niamey, colony, *Governor:* M. Falvy.
Togoland, 20,000	781	Lomé, mandated territory, *Administrator-Superior:* M. Delpech.
French Somaliland, 8,380	50	Jibuti, colony, *Governor:* M. Dupont (acting).
Madagascar and Dependencies, 236,900	3,900	Antananarivo, colony, *High Commissioner:* General Legentilhomme.
Réunion, 920	210	St. Denis, colony, *Governor:* M. Robert.
AMERICA		
St. Pierre and Miquelon, 93	4	St. Pierre, colony, *Administrator:* Lt. de Vaisseau Savary.
French Guiana, including Inini, 34,740	37	Cayenne, colony, *Governor:* M. Chot-Plassot.
Guadeloupe, 690	310	Basse-Terre, colony, *Governor:* M. Sorin.
Martinique, 386	260	Fort-de-France, colony, *High Commissioner:* Admiral Robert.
ASIA		
French India, 190	300	Pondicherry, colony, *Governor:* M. Bonvin.
French Indo-China, 283,000	23,700	Saigon, *Governor-General:* Admiral Decoux.
Annam, 55,800	5,656*	Hué, protectorate, *Resident-Superior:* M. Graffeuil.
Cambodia, 69,200	3,046*	Pnom-Penh, protectorate, *Resident-Superior:* M. Thibaudeau.
Cochin-China, 25,400	4,616*	Saigon, colony, *Governor:* M. Veber.
Laos, 88,800	1,012*	Vientiane, colony
Tongking 43,800	8,700*	Hanoi, protectorate, *Resident-Superior:* M. Châtel.
Kwangchow Wan, 310	250	Fort Bayard, territory (leased from China), *Administrator:* M. Le Prévot.
OCEANIA		*High Commissioner of the Pacific:* Admiral d'Argenlieu.
New Caledonia and Dependencies, 7,310	55	Nouméa, colony, *Governor:* M. Montchamp.
New Hebrides, 5,700	50	Vila, Franco-British condominium, *Resident:* M. Kuter.
Pacific Islands, including Society Is., Tuamotu Is., Tubuai Archipelagos, etc. 1,540	45	Papeete, colony, *Governor:* Colonel Orselli.

*Population 1936 census.

he Allies. The agreement was signed between M. Dupont, acting overnor of the colony, and the British military commander in thiopia.

French Equatorial Africa and French Cameroons.—The ritish government, by an exchange of letters on March 18, 1942, greed to purchase the 1941–42 produce of French Equatorial frica and the French Cameroons and to facilitate the supply of ssential goods obtainable in the sterling area. The United States nnounced on April 4 its decision to establish an American con-ulate-general at Brazzaville and its recognition of Free French ater renamed Fighting French) effective control of Equatorial frica and the Cameroons. Communications were greatly developed, and the arrival of contingents of U.S. armed forces at razzaville was announced on Sept. 14.

French Pacific Islands.—On March 2, 1942, the United States announced its recognition of the authority of the Free French in the Pacific Islands, and on April 26 the arrival was reported of U.S. troops in New Caledonia. (*See* also Pacific Islands, French.)

Madagascar.—After the British invasion and the surrender of Diégo Suarez on May 7, 1942, a statement was issued on May 14 by the British foreign office that it was intended that the Free French national committee should play its due part in the administration of the liberated territory. Local French officials were reported to be collaborating with the British, who were endeavouring to maintain the French colonial administration. The island of Mayotte was occupied on July 2. A statement issued by the British government in September offered trading facilities, salaries and pensions to civilian and military employees who continued at their posts and guaranteed that Madagascar should remain French. M. Bech, member of the Vichy administration who agreed to act as secretary-general after the retreat of M. Annet, the governor-general, on Sept. 28 called a meeting of the administrative council, an advisory body to the governor, which had not met under the recent dictatorial regime. An armistice was signed on Nov. 5. The Fighting French national committee announced on Nov. 11 that General Legentilhomme had been appointed high commissioner. Madagascar was formally transferred by the British to Fighting France's administration on Dec. 14.

Réunion.—The occupation of the island by de Gaullist troops was announced on Nov. 29, 1942, and on Dec. 1 it was announced that the island had joined Fighting France. (*See* also Lebanon; Syria; World War II.)

French Possessions in America.—These possessions fall into three regional groupings: the small islands of St. Pierre and Miquelon (area, 93 sq.mi.; pop. 4,000) at the mouth of the Gulf of St. Lawrence; French Guiana and Inini (area, *c.* 34,700 sq.mi.; pop. *c.* 36,000) on the east coast of South America to the north of the Amazon river; some half-dozen islands in the Lesser Antilles, the most important of which are Martinique (area, 386 sq.mi.; pop. 241,000) and Guadeloupe (area, 580 sq.mi.; pop. 304,250). The population of the other small islands totalled approx. 23,000 in 1942.

Negotiations were started by the United States with the French governor of the French Caribbean possessions, Admiral Georges Robert, in May 1942, with the idea of permanently eliminating a weak spot in the U.S. Caribbean defense line (a tentative arrangement to preserve a neutral status for the islands had been reached in Dec. 1941). Conversations continued throughout the summer and until after the invasion of North Africa by the Allies; after this event Admiral Robert began acting independently of Laval and Vichy France. Some success was attained; the French war vessels were immobilized by storage of vital parts in the United States consulate and removal of fuel oil, and neutrality of the French West Indies was guaranteed in return. Shipments of nonmilitary supplies were continued so that the islands would not suffer from lack of necessities. The local administration apparently remained at least officially loyal to Vichy, however, and broadcasts late in 1942 were reported unfriendly to the Allied nations. So far as was disclosed, negotiations were unable to release for use 140,000 tons of French merchant shipping and tankers tied up at Martinique. During the summer 300 Martinique French escaped to join Fighting French forces.

The French possessions in America outside the Caribbean area received little mention during 1942. All importation of arms and ammunition at St. Pierre and Miquelon (where a Free [Fighting] French attack was unsuccessfully made in 1941) was forbidden.

Trade.—No statistics for 1942 were available. In 1940 St. Pierre and Miquelon imports were valued at 28,614,000 fr.; exports, 16,475,000 fr. Guadeloupe and Martinique imported from the U.S. in the first eight months of 1941 goods to the value of 3,223,401 fr. and exported to the value of 224,345 fr. French Guiana imports for the same period, $114,894; exports, $20,779.

Resources.—Main French Guiana products are: gold, cabinet woods, cacao, fish glue, rum. St. Pierre and Miquelon are dependent on fishing. The French West Indies produce sugar and rum, vanilla, coffee, bananas and cacao. (D. Rd.)

French Congo: *see* French Colonial Empire.
French Equatorial Africa: *see* French Colonial Empire.
French Guiana: *see* French Colonial Empire.
French Guinea: *see* French Colonial Empire.
French Indo-China: *see* French Colonial Empire; World War II.

French Literature.

French literature during 1942 passed through a period of transition and dispersal. The political chaos was mirrored by hesitancy and confusion in the field of letters, and no great new talent emerged. The caesarian division of the country into "occupied" and "unoccupied" zones was both an intellectual and a geographical reality, and the picture of an exile literature, a Vichy-France literature and a Paris literature was maintained until Nov. 11, when Hitler occupied the whole country.

In Paris the return of the famous *Nouvelle Revue Française* to its former editor, Jean Paulhan, was a literary event with encouraging implications. The nazi controlled *N.R.F.* which the invader had sought to impose on French readers under the editorship of the collaborationist Drieu La Rochelle simply was left on the shelves by those for whom it was intended. Paulhan in accepting the editorship, did so only on condition that André Gide and Paul Valéry become once more part of the editorial staff, a condition that was fulfilled.

The Académie Française distributed ten prizes: the literary Grand Prix to Jean Schlumberger for the sum of his works and the Prix du Roman to a newcomer, Jean Blanzat, for his novel *Orage du Matin,* concerning which Mauriac observed that "he would be surprised if this book did not announce a *maître.*" The 1942 Prix Goncourt was awarded to Marc Bernard, former *populiste* writer, for his novel *Pareils à des Enfants.* It was generally conceded, however, that the year was decidedly lacking in original prose works, that 1942 in literary Paris was a year of "eclipse, sleep, even death" (Mauriac); that the year's phenomenon was "the deliverance of poetic forces that had followed the earthquake."

Paul Claudel continued his monumental lifework with the publication of a volume entitled *Présence et Prophétie* by the Editions de la Librairie de l'Université de Fribourg in Switzerland. The aged poet, living in retreat at Brangues, on the Rhône, had been working for more than 20 years on his *apocalypse,* writing his brilliant glosses on Isaiah and Daniel and the Book of Revelations. *Présence et Prophétie* is a sort of preface to the main book still to be published, a book that he announced would be a poet's eschatology, aspiring towards a kind of "verticalism" or "angelism," which would open immense horizons to the future poet.

Across the Mediterranean, *Fontaine,* edited in Algiers by Max Pol Fouchet, created something of a sensation by its vitality and high literary quality. Jules Supervielle, Aragon, Ribemont-Dessaignes, Eluard, Jean Le Louet, Pierre Jean Jouve, Edmond Jaloux, Max Jacob and many others, appeared in this interesting review. Despite distance and exile, Jacques and Raïssa Maritain contributed, from New York, to a special number of *Fontaine* devoted to the subject: "Poetry as a Spiritual Exercise," which was widely read. From nearby Tunisia, Philippe Soupault, who was imprisoned during the summer of 1942, contributed a mo study of his friend, the late James Joyce. This was publishe the "Fontaine Collection" of the Editions Charlot, Algiers, a with volumes by Pierre Jean Jouve, Gertrude Stein, Rainer M Rilke, Pierre Emmanuel, Louis Aragon and many others. In *Cantique à Elsa,* Louis Aragon, the former Surrealist and c munist, who took part in the Battle of France, returned severely classical verse-form.

Among the exile publishing houses, by far the most active the Editions de la Maison Française, in New York city which the end of 1942, had more than 70 volumes to its credit. Am these were to be found such names as Julien Green, Jac Maritain, André Maurois, Jules Romains, Antoine de St. Exup etc. Brentano's, another New York publisher of French bo had a list of more than 50 books, among which were Deni Rougemont's *La Part du Diable* and Jean Schlumberger's *Ja* In the lists of Didier (New York), were books by Jean Pe Edouard Herriot, André Maurois, etc. Also in New York. Surrealist group gathered certain of its scattered forces under leadership of André Breton and published in June 1942, the number of a review entitled *VVV* (triple V). Two exiled Fr writers whose roles in pre-war France were important ones, from a political and a literary standpoint, revived their crea activities in the U.S. under unusual conditions. St. Jean P (*nom-de-plume* of Léger St. Léger, who played a decisive pa French international politics as permanent secretary of For Affairs, with the rank of ambassador) was living in Washing In 1942 he published in *Poetry, A Magazine of Verse,* the poem to come from his pen since he entered politics: "Exil long poem of striking beauty. Julien Green, the U.S.-born n ist writing in French (his *Varouna* appeared in New Yor 1941) revealed himself to be a bilingual writer. He publi during the year his first book written directly in English, *Me ries of Happy Days,* as well as a volume entitled *Charles Pé Basic Verities,* the latter volume in collaboration with his si Anne Green.

In Canada the Editions de l'Arbre (Montreal) published b by Professor Charles Rivet, Jacques Maritain, Mirkine-Gu vitch and others. *La Nouvelle Relève,* the French-Canadia view, published by the same firm, devoted an entire number "Hommage à Maritain," on the occasion of his 60th birth The Edition Quetzal, in Mexico City, published Jules Rom *Mission ou Démission de la France, Le Petit Bois et Autres Co* by Jules Supervielle, *Communion des Forts* by Roger Cai and *L'Orange Bleue* by Yassu Gauclerc. Farther south, in Bu Aires, Sur continued to publish the very excellent review *Le Françaises* (Roger Caillois, editor) as well as individual volu such as *Poèmes de la France Malheureuse,* by Supervielle. In de Janeiro Georges Bernanos completed a new novel, the titl which had not yet been revealed. In Manchester, England, Editions du Calame published a de luxe volume of forty *Le de Proust à Une Amie* and in Switzerland, along with the Frib publications, Albert Béguin published *Les Cahiers du Rhône* poems and essays by such well-known French writers and p as Jean Wahl, Aragon, Jouve, Pierre Emmanuel, etc. (E. Js

French Pacific Islands: *see* Pacific Islands, French.
French Somaliland: *see* French Colonial Empire.
French Sudan: *see* French Colonial Empire.
French West Africa: *see* French Colonial Empire.
Frequency Modulation: *see* Radio.

Friends, Religious Society of.

The Religious Soc of Friends was in composed of 54 yearly meetings and annual conference gr ith an approximate membership of 163,413, representing 30 ifferent countries. There were 114,405 members in the United tates and Canada and they comprised 29 yearly meetings. Seven f these yearly meetings were associated in the Friends' general onference with headquarters at 1515 Cherry street, Philadelphia. leven of the yearly meetings were associated with the Five ears meeting with headquarters at 101 S. Eighth street, Rich-iond, Ind. The Five Years meeting board of missions conducted chools, hospitals and meetings in Palestine, Africa, Cuba, Mexico nd Jamaica. Oregon and California Friends had mission stations n Bolivia, Honduras, Guatemala and Alaska.

In Europe yearly meetings of Friends were active in Den-ark, Ireland, France, Germany, England, Holland, Norway, weden and Switzerland. China, Japan, India, Syria and Pales-ne, Africa, Australia and New Zealand also had organized meet-gs.

The Friends World Committee for Consultation with head-uarters of its American Section at 20 S. Twelfth street, Phila-elphia, published a directory of the Society of Friends in 1941.

The American Friends Service committee in the United States o-operated with the Friends' Service council in England in recting humanitarian services of relief, child feeding, assistance refugees, social-industrial rehabilitation, peace education and vilian public service.

Projects for Young People.—In 1942 under the peace section, o young people volunteered for work in peace caravans and vilian training units. Some of the young people worked on the osquito control project in Vera Cruz, Mexico. Under the direc-on of the social-industrial section, 138 persons participated in work camps, where they worked eight hours a day and studied e social problems characteristic of their camp location. A spe-al unit was set up to study types of projects and work camps hich would offer to young people an opportunity to help meet e shortage of agricultural labor.

Civilian Defense.—The program of civilian defense encour-ged by Friends sought to sensitize the membership to general nd permanent community services such as new standards of utrition and public health, child care and those forms of social evelopment which, instead of creating a deeper sense of na-onalism, would build the structure and fabric of a new world ommunity. Post-war planning gripped the imagination of the ciety and through the 11 Institutes of International Relations program of fundamental education on the nature of the demo-atic idea was conducted.

Civilian Public Service.—After the outbreak of World War II nd the consequent draft for military purposes the Society of riends in co-operation with other historic peace churches organ-ed civilian public service for conscientious objectors. In 1942 here were 43 camps in which there were 4,000 men. Thirteen f these camps were operated by Friends and in these 13 camps here were 1,050 men, of whom about 30% were Friends. The en in these camps paid $35 a month for maintenance, received salary and worked on projects of a public nature, such as il conservation, reforestation and public health.

War relief operations included the furnishing of a daily supple-entary meal to 84,000 children in Unoccupied France. Milk was urnished for 5,000 babies and clothing and shelter provided for o children in colonies. A Friends' ambulance unit consisting of 5 men operated in China, where their chief function was the stribution of medical supplies.

Refugees and aliens continued to receive assistance, but fol-wing the internment of Japanese in the camps on the west oast, the Service committee served as convenor in bringing gether in the National Japanese-American Student Relocation ouncil the many organizations interested in the resettlement of American-born Japanese students.

The Wider Quaker Fellowship, with offices at 20 S. Twelfth street, Philadelphia, offered to persons who desired a spiritual fellowship with Friends an opportunity to be enrolled. The purpose of this fellowship was to promote the spiritual aims and purposes of the Quakers (Friends), who recognized the divine possibilities in all individuals and sought to give expression to this faith in humanity by sharing in social and spiritual reconstruction. (L. D. Sh.)

Fruit: *see* Apples; Bananas; Grapefruit; Grapes; Lemons and Limes; Oranges; Peaches; Pears; Plums and Prunes.

FSLIC: *see* National Housing Agency.

Fuel Briquettes.

Although the United States is only a minor producer of fuel briquettes, it was the only country from which data were received. Production increased from 1,050,870 short tons in 1940 to 1,298,606 tons in 1941, with 32 plants in operation. As a result of material shortages, and increased costs of labour and material, 22 plants were closed, some permanently, while others were shifted to war work. (G. A. Ro.)

Fuel Oil: *see* Business Review; Petroleum; Rationing.

Fuller's Earth.

In 1941 the production of fuller's earth in the U.S. broke the decline that had been under way for more than a decade, and increased to 207,446 short tons, 43% over 1940; however, most though not all of this increase was due to the inclusion in the figures of considerable tonnages of Texan material which had not heretofore been classed as fuller's earth. (G. A. Ro.)

Furniture Industry.

The 2,250 factories in the United States manufacturing wooden household furniture set the highest production record in the industry's 150 years of growth during 1942 by producing approximately $1,000,000,000 worth of materials for the public and the government, $620,000,000 of which was furniture for civilian use, a drop of 8% below the 1941 total of $675,000,000, due to conversion of 30% of the industry's production capacity to war work.

Furniture prices during 1942 rose approximately 20% before they were stabilized by price ceilings set by the Office of Price Administration at the March 15 level.

As 1942 drew to a close, 25% of the furniture factories formerly making wooden furniture had been converted about 75% to production of glider wings, PT boat hulls, army trucks and other war supplies while another 25% had been converted 25 to 50% to government work. Not to exceed 10% were fully converted because only the largest units were equipped for such work. By Nov. 1, 1942, 790 plants manufacturing upholstered furniture ceased making davenports and chairs with wire springs. Half of them were waiting at the year's end for some practical substitute, while the other half were producing upholstered furniture with wooden springs or with no springs at all, using hair and cotton padding only. The 200 or so plants manufacturing metal furniture ceased production of that commodity earlier in the year and most of them quickly converted either to wooden furniture or war work.

Warnings of wood shortages worried all household furniture manufacturers at the close of the year. Mahogany was the scarcest wood because of shipping difficulties. Supplies of walnut, an American wood, were plentiful but government requirements threatened to reduce the supply for civilian use to the lowest point in history. Maple, birch, gum and oak also were plentiful but labour shortages in lumber camps began to cut surplus stocks materially. With price ceilings set for all hardwoods, these coming shortages were expected to affect the supply rather than the price of furniture.

During 1942 approximately 50 furniture plants ceased operations or were sold outright for war work to interests outside the furniture field. Furniture markets were continued at Grand Rapids, Mich., Chicago, Ill., New York city, Jamestown, N.Y., High Point, N.C., San Francisco and Los Angeles, Calif., during 1942 but were reduced during the last half year from two (fall and winter) to one, at the request of the government.

The labour situation tightened and skilled workers left many plants for aviation centres, chiefly California. But only 4% fewer employees were on the pay rolls—10% higher than in 1941. Women were being employed in a large number of plants to do light work formerly done by men.

Europe.—Reports from Europe indicated that the furniture industry in England produced 80% war supplies and 20% for civilian use. Lumber shortages were acute, leading to "black markets" for timber. Some furniture was being made from heavy cardboard reinforced with wooden strips and finished like wood. In France, furniture making practically ceased. Germany's 1,000 plants were likewise making war supplies or were idle through lack of man power. Belgium, Italy and Switzerland produced only enough furniture for home consumption, about 25% of their peacetime output. Canada's 110 furniture factories were still operating at high speed to meet the war-boom demand but were being gradually curtailed by priorities and a shortage of labour. (*See* also INTERIOR DECORATION.) (J. A. G.)

Furs. The fur industry of the United States was seriously affected during 1942 by the abnormal conditions arising from the war. The minds of the merchants in the fur trade were confused and filled with uncertainty. As a result there was a steady decline in the values of fur skins. This continued, with minor fluctuations, for the first eight months of the year. Merchandise purchased during the first half of the year failed to move into consumption in expected volume. The decline in market prices brought a considerable loss of capital among skin merchants, dealers and to a lesser extent among manufacturers. The condition was further aggravated by the announcement of the maximum price regulation, fixing March 1942 as the price basis.

The fur trade applied for price regulation that would fit its peculiar needs. Not until July 1942 did the OPA issue a special price regulation applying to the fur trade. This regulation was subsequently amended and was generally considered fair and reasonable. Pending the establishment of this regulation the fur industry came practically to a standstill in April, May and June. By the end of July the fur trade was able to proceed with a fair idea of what the government required from it.

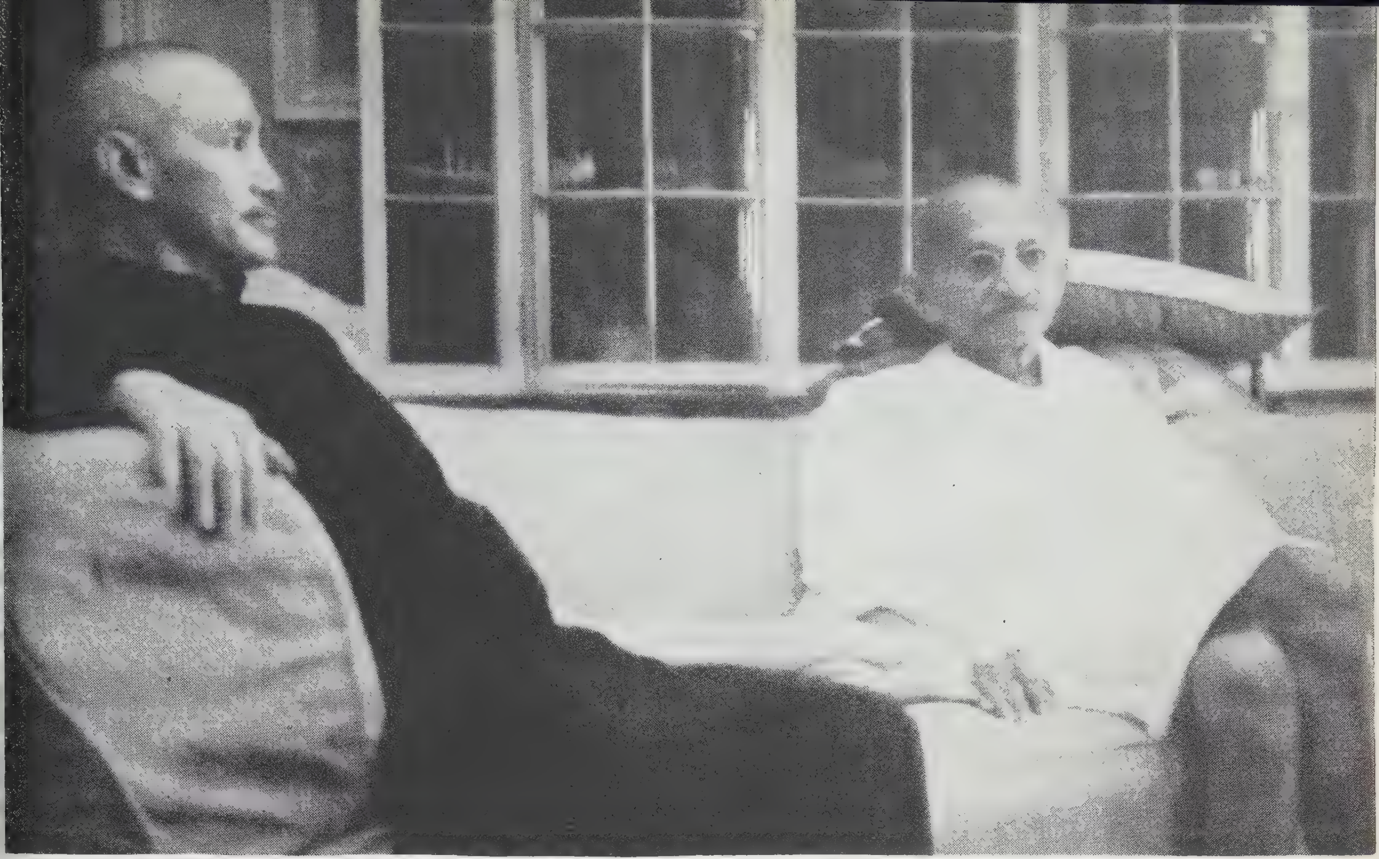
Skin prices, especially on the ranch-bred mink and the ranch-bred silver fox, declined from 25% to 30% compared with corresponding prices in 1941. Many fur farmers went out of business. Low market prices, increased production costs and loss of workers from the farm proved too much for them. Ranch-bred mink coats were sold in the fall at lower prices than ever experienced before for similar qualities. Silver fox garments were equally low in price. Persian lamb skins imported from South-West Africa and Afghanistan to the extent of several million skins reached this market during the 12-month period. The article sold freely but at declining prices. Russian lambskins were in short supply. Muskrat, dyed and blended, was the leading fur of 1942. The United States received imports of various furs from the South American countries, such as ocelot, nutria and spotted cat, fresh shipments of leopard skins from Italian Somaliland Ethiopia, following the conquest of these countries by the All Shipments of furs from Australia, New Zealand and India w greatly reduced. Chinese furs were cut off entirely. The Uni States imported heavily all kinds of furs from Canada. Expo of furs to Canada were curtailed because of war restrictions price control in the dominion. The government did not issue statistics on imports or exports.

Insolvencies for the period Dec. 1941 to Nov. 1942 total about 150 with liabilities of $3,806,952, compared with 83 solvencies in 1941 and liabilities of $1,656,356, according to statistics of the American Fur Merchants association, New Y city.

Consumer demand became very active in the fall and arrival of cold weather quickly depleted retail stocks in Novem and December. Production in the manufacturers market was n capacity during the last quarter of 1942. The revival in consu demand, especially in the war industries areas, quickly deple the rather heavy stocks of skins which had been carried by dealers and merchants for the greater part of the year. S prices improved somewhat and by the end of the year were n or had reached, the maximum price ceilings. Thousands trappers went into the armed forces and into war indust bringing about a noticeable reduction in the size of the wi catch of wild furs. Trappers who remained in the country co only cover part of their traplines because they lacked gasol for travelling and could not obtain new steel traps. This co tion was expected to become more acute in 1943 because government had notified the fur industry that it would gradua deplete it of manpower. This would also affect the produc capacity of the manufacturing end of the trade in 1943.

Worthy of note was the fur vest project, sponsored by War Emergency board of the fur industry. This project, w units in New York and other cities, manufactured and delive up to the end of the year more than 10,000 fur-lined vests the use of the merchant seamen of the Allied Nations. T vests were donated free of cost by the fur industry and International Fur and Leather Workers union. The fur

CONTRIBUTIONS OF OLD FURS to a project for making vests for United tions seamen. About 50,000 members of the Fur Workers union in 1942 e volunteered services of at least ten hours a week to piece together the fur v



IIANG KAI-SHEK and Mohandas Gandhi met for the first time Feb. 18, 1942, Calcutta, where the former journeyed to learn at first hand the extent of dia's war effort and willingness to resist Japanese aggression

ntributed by the fur trade and by the public in the form old fur garments. Distribution was through maritime agencies the east and west coasts. In Nov. 1942 all producing branches the fur industry in the United States convened in New York d formed the National Federation of the Fur Industry, Inc. was planned to co-ordinate the war efforts of all branches of e fur business with those of the United States government and the same time to act as a national body on behalf of the fur ade on matters affecting the welfare and business interests of branches. (W. J. Bt.)

WA: *see* Federal Works Agency.

ale, Henry Gordon (1874–1942), U.S. physicist, was born Sept. 12 in Aurora, Ill. After ceiving his Ph.D. degree from the University of Chicago in 1899, became assistant in the university's physics department. He vanced to full professor in 1916, serving until his retirement 1940. He was attached to artillery combat with the meteorolog- il service of the signal corps during World War I and was one a group of experts who developed the accuracy of U.S. artillery e by gauging the speed and direction of higher winds. For his rvice with the signal corps, he won a meritorious citation from en. John J. Pershing and promotion to lieutenant colonel. He ent back to the University of Chicago after the war to con- iue his work in physics. He collaborated with Dr. A. A. Michel- n in measuring the speed of light, in testing the rigidity of the rth and in confirming Einstein's theory of relativity by a series tests known as the ether-drift experiments. With Dr. R. A. illikan, he wrote several physics textbooks, now widely used as andard works. Prof. Gale became dean of the Ogden Graduate hool of Science, University of Chicago, 1922, chairman of the ysics department, 1925, and dean of the physical sciences divi- on, 1931.

He died in Chicago, Nov. 16.

ambia: *see* British West Africa.

Gandhi, Mohandas Karamchand (1869–), Hindu nationalist leader, was born at Porbandar (Kathiawar), India. For his biography, see *Encyclopædia Britannica.* On Jan. 22, 1937, Gandhi announced his retirement from active Indian politics, but by 1940 he was as prominent as ever in Indian affairs of state. The All-India congress on March 20, 1940, delegated to him the direction of negotiations with Great Britain for national independence. On Sept. 17, 1940, the congress committee elected Gandhi its leader. In April 1941 he announced that the congress had temporarily abandoned its aim of independence for India, but he reaffirmed his personal policy of nonviolence. On Dec. 30, 1941, Gandhi resigned from its leadership.

On Feb. 18, 1942, Gandhi conferred with Chiang Kai-shek in Calcutta; to Chiang's warning that passive resistance might not work against the Japanese, Gandhi replied that "God gives me guidance to react to situations as they arise." He conferred with Sir Stafford Cripps on March 27 and later rejected his proposals for post-war independence. On Aug. 9, Gandhi and 200 other Indian leaders were arrested, after the All-India Congress party had approved his proposals for a civil disobedience campaign. (*See* also India.)

Garbett, Cyril Forster: *see* York, Archbishop of.

Garfield, Harry Augustus (1863–1942), U.S. educator and son of President James A. Garfield, was born Oct. 11 in Hiram, Portage county, Ohio. He was graduated from Williams college in 1885, studied at Columbia university's law school and at Oxford. He was admitted to the bar in 1888 and began practice in Cleveland. He was professor of contracts at Western Reserve University Law school, 1891–97, and taught politics at Princeton, 1903–08. He was appointed president of Williams college in 1908, where he established the Institute of Politics. He was chairman of the price-fixing committee of the Food administration during World War I and in Aug. 1917, was named fuel administrator by President Wilson. Garfield retired from the presidency of Williams college in 1933. He died in Williamstown, Mass., Dec. 12.

Garnet: *see* ABRASIVES.

Garratt, Geoffrey Theodore

(1888–1942), British journalist and author, attended Rugby and Oxford and joined the Indian civil service in 1913. He served as an officer with the Indian cavalry in Mesopotamia during World War I and rejoined his civil service post in India after the war. Garratt, who had established a reputation as an authority on Indian affairs, had long urged Britain to give Indian youth equal economic opportunities as one of the measures necessary to solve the Indian problem. He left India in 1923 to join the *Westminster Gazette* as a foreign correspondent. He was later foreign correspondent for the *Manchester Guardian* in Ethiopia in 1936 and in the Russo-Finnish war in 1940. A bitter critic of Chamberlain's appeasement policies, Garratt wrote *Mussolini's Roman Empire* (1938), which enunciated his distrust of the axis and which sold 150,000 copies in England alone. Among his other works are: *An Indian Commentary* (1929), *Life of Lord Brougham* (1935), *The Two Mr. Gladstones* (1936), *Gibraltar and the Mediterranean* and *The Shadow of the Swastika* (1939), and *What Has Happened to Europe* (1940). Garratt, who was a Pioneer corps captain in World War II, died while on active duty, according to a London announcement of May 1.

Garrett, John Work

(1872–1942), U.S. diplomat, was born May 19 in Baltimore. He studied for the foreign service at Princeton and graduated in 1895. He was sent to The Hague as secretary of the legation, 1901–03, and later served as secretary in the Berlin and Rome embassies. He was minister to Venezuela, 1910–11, to Argentina, 1911–14, Holland and Luxembourg, 1917–19, and ambassador to Italy, 1929–33. During World War I, Garrett was assigned by the state department as special agent to assist the U.S. ambassador to Paris. There he took over the tasks of aiding stranded Americans abroad, and of welfare work among civilian prisoners of war in France. He died at his home in a Baltimore suburb, June 26.

Gas, Natural.

The total production of natural gas in the United States in 1941 was estimated at 3,800,000,000,000 cu.ft.; after deducting losses and amounts pumped back into the ground for either storage or repressuring the field (usually 18–20% and 5–10% respectively of the total), the marketed total amounted to 2,770,000,000,000, an increase of 4% over 1940. The various leading uses took the following percentages of the total: light, fuel and power in the producing field 23%; domestic use 16%; carbon black plants 13%; electric power and public utility plants 7%; petroleum refineries and commercial uses each 5%; the remaining 31% included a wide variety of minor industrial uses and a small amount exported, mainly to Mexico. Natural gas was piped to and sold in the following states, in addition to the 26 states in which it is produced: Alabama, Arizona, District of Columbia, Florida, Georgia, Iowa, Maryland, Minnesota, Nebraska and North Dakota.

In 1941 a total of 2,900,000,000,000 cu.ft. of natural gas was treated for the recovery of natural gasoline vapours, resulting in the production of 2,697,000,000 gal. of natural gasoline.

(G. A. Ro.)

Gasoline: *see* PETROLEUM; RATIONING.

Gaulle, Charles de

(1890–), French soldier and leader of the forces of Fighting France after the armistices of June 22–24, 1940, graduated from St. Cyr military college at Paris shortly before the German invasion of France in 1914. Wounded three times during World War I, he was captured by German troops at Verdun in 1916, but escaped and saw further action on the western front and in the near east. Fore ing the future tactical importance of tanks and combat cars waged a one-man campaign to persuade France to mechanize infantry after 1918, but army officers preferred to place t trust in such measures of immobile defense as the Maginot The first several days of Germany's lightning thrust through gium and the Netherlands in May 1940 proved the correctnes de Gaulle's theories, and he was belatedly made undersecretar war in Reynaud's cabinet. He parted ways with Marshal Péta government when it elected to surrender, and he fled to Lon There on June 23, 1940, he announced formation of the Fre National committee, an expatriate military and political organ tion. Much of French Equatorial Africa, French Oceania, Fre India and Caledonia rallied to de Gaulle's banner despite the that the Vichy government had condemned him to death *in sentia* for treason. After an abortive attempt to capture Da Senegal, with the support of British warships Sept. 23–25, 1 de Gaulle landed troops at Libreville Nov. 9 and within three c had secured all of Gabun.

The year 1941 saw an expansion of de Gaulle's Free Fre movement (as it was called prior to 1942)—geographically by addition of Syria and Lebanon July 12 and St. Pierre Miquelon Dec. 24, militarily by additions to its army and na and politically by formation Sept. 23 of the Free French Nati council. De Gaulle named himself president of the council appointed a regular cabinet. During the Germans' mass execu of French hostages in Oct. 1941 he appealed to the French discontinue violence and to remain inactive for five-min periods instead as a protest against the slayings. In Septem de Gaulle concluded a military and political alliance with U.S.S.R.; in November he secured lend-lease aid from United States; on Dec. 8 he announced that the Free Fre National council was at war with Japan.

During 1942, the French underground factions united accepted de Gaulle's leadership in the struggle against the axis Gaulle was opposed to Washington's approval of Admiral Darlan as ruler of French North Africa, but he refrained f splitting French unity on this issue and on Dec. 6 urged all Fre men opposing Hitler to unite. After Darlan's assassination on 24, de Gaulle paid tribute to Gen. Henri Giraud and on Ja 1943, he disclosed that he had suggested a meeting with the high commissioner of French Africa for a discussion of poli problems.

Gems and Precious Stones.

The United States tained its position as world's leading market for gems, but sources and supplies being restricted by the current of events. Burma, Thailand Indo-China were inaccessible in 1942, and the European cut industry was disorganized. Imports of gem stones into the Un States are shown in the following table.

Imports of Gem Stones into the United States
(Thousands of carats or dollars)

	1940		1941 (9 mo.)	
	Carats	Value	Carats	Val
Diamonds: rough or uncut	227.9	$11,596	124.2	$5,
cut but not set	321.5	22,002	182.7	13,
Emeralds: rough or uncut	14.4	7	..	..
cut but not set	16.1	304	18.5	
Pearls: natural	..	224	..	
cultivated	..	356	..	
Other gem stones: rough or uncut	..	154	..	
cut but not set	..	2,192	..	2,
Imitation or synthetic gems	..	819	..	
Marcasites: real	..	8	..	
imitation	..	18	..	
Total value	..	$37,680	..	$22,

A large variety of semiprecious stones is produced in the Un tates, most of these being various members of the quartz family –agate, jasper, rock crystal, moonstone, rose quartz, etc. Aside rom the quartz varieties, turquoise is the most important, though any others are recovered in small amounts, such as amethyst, arnet, kunzite, lapis lazuli, rhodonite and tourmaline. The only em stone mined in the United States that can really be classed s a precious stone is sapphire, of which 44,640 troy oz. were roduced in Montana in 1941; this material is primarily for inustrial use, but some gem stones are found. The entire domestic em industry is, however, of comparatively minor importance, the otal valuation of crude material being less than $250,000. (*See* lso MINERALOGY.) (G. A. Ro.)

eneral Education Board: *see* ROCKEFELLER FOUNDATION.

eneral Federation of Women's Clubs: *see* WOMEN'S LUBS, GENERAL FEDERATION OF.

enetics.

Genetics and Biochemistry.—The most important advance of 1942 was the work of Beadle and atum. They assumed that X-raying the fungus Neurospora ight result in mutant strains incapable of synthesizing certain ubstances necessary to growth, which the normal fungus produced n a minimal medium. X-rayed single spore cultures were grown n media enriched with substances normally synthesized by the ungus. Later, subcultures of these strains, grown on minimal edia, showed the presence in some of new mutants incapable of ynthesizing such factors as vitamin B_6 and para-aminobenzoic cid. The method not only made possible the study of gene ction but supplied test strains for the discovery of hitherto unnown vitamins, amino acids or other growth-promoting factors.

Irwin and Cumley demonstrated that species-specific antiens in the bloods of ring-dove, pearlneck-dove and common igeon are transmitted to the hybrids between two of these pecies and may later segregate in backcrosses. Thus protein diferences between species were proved to be inherited in a Menelian pattern.

Genetics and Evolution.—Patterson, Stone, Griffen, Wharton, ainland and Crow presented data on 24 new species and subpecies crosses in the genus *Drosophila,* most of which give parially fertile hybrids. They found a great variety both in the ature and strength of isolating factors leading to speciation. obzhansky and collaborators continued work on genetic variaility in wild populations of *Drosophila pseudo-obscura.* Silow reorted on the inheritance of colour characters in crosses between hree species of cotton. He concluded that some species differnces are adaptive and others purely fortuitous.

Cytogenetics.—By treating salivary gland chromosomes of *rosophila* with sodium hydroxide, Goldschmidt and Kodani preented evidence that these giant chromosomes are each made up f four chromonemata rather than larger numbers, and that the hromonemata are coiled in the visible bands. Piza described ouble spindle attachments in the chromosomes of a Brazilian corpion. Kaufmann concluded that heterochromatin varies qualiatively in its mottling effects. Lindegren and Lindegren found hrough linkage studies on Neurospora that there are locally speific patterns of chromosome and chromatid interference. Swanson howed that after radiation a nonrandom distribution of chroatid breaks occurred in nuclei of Tradescantia pollen tubes. Newombe induced breaks in chromosomes of hyacinth, tulip and radescantia by X-raying. He found that after multiple breaks xchanges occurred most frequently within chromosome arms, ext between arms of the same chromosome, and least often beween chromosomes. Rhoades described a case where an abnormal hromosome in corn was preferentially segregated to the ovule.

Human Genetics.—The year 1942 saw the presentation and subsequent publication of an outstanding symposium on human genetics. Snyder discussed the mutant gene in man, outlining its chromosomal, physiological and genic relations in the individual and its frequencies in populations. Cotterman presented a summary of biometrical methods by which human genetic factors can be accurately studied even from data involving a single generation. Strandskov stressed the value of population genetics in an eventual check of potential health and manpower of a nation. Penrose suggested future advances in human genetics through cooperative work using clinical, chemical, immunological and metrical techniques.

In *New Paths in Genetics* (see *Bibliography*) Haldane presented an up-to-date summary of human genetic research, emphasizing the interrelationships of genetics, biochemistry and embryology. He outlined clearly modern and accurate statistical approaches to a study of inherited human characters and to the mapping of human chromosomes.

BIBLIOGRAPHY.—*Genetics,* vol. 27 (1942); *Journal of Genetics,* vol. 43 (1942); *Journal of Heredity,* vol. 33 (1942); "Genes and Chromosomes—Structure and Organization," Cold Spring Harbor Symposia on Quantitative Biology, vol. 9 (1941); J. T. Patterson and colleagues, "Studies in the Genetics of Drosophila II. Gene Variation and Evolution," University of Texas Publication No. 4228 (July 1942); J. B. S. Haldane, *New Paths in Genetics* (1942); "Symposium on Human Genetics," *American Naturalist* (March–April 1942). (W. P. S.)

Genthe, Arnold

(1869–1942), U.S. photographer, was born January 8 in Berlin, Germany. A student of classical philology, archaeology and philosophy, Genthe received his Ph.D. at Jena university in 1894. The following year, he went to San Francisco as a tutor for a German baron's son, made his home in California and became a naturalized citizen in 1918. He turned professional photographer, and his photographs of the San Francisco fire in 1906 became famous. He was one of the first photographers to break away from the formalized studio photograph and early in his career began to make natural shots of his subjects, playing up the pattern of light and shadow. He took numerous photos of dancers, and his studies of Isadora Duncan appeared in book form in 1929. He wrote his autobiography, *As I Remember,* in 1936. Genthe died in New Milford, Conn., August 9.

Geographical Society, American: *see* AMERICAN GEOGRAPHICAL SOCIETY.

Geography: *see* AMERICAN GEOGRAPHICAL SOCIETY; NATIONAL GEOGRAPHIC SOCIETY.

Geology.

The impact of the war resulted in the cancellation of the annual meetings of most of the geological societies. The intensive search for strategic minerals led to the greatest demand for geologists in history. As a result of the entrance of many teachers and advanced students into the armed forces the number of graduate students in geology in the educational institutions fell off materially.

Important new mineral deposits were discovered and the limits of known deposits extended. However, the discovery of new oil reserves lagged and greater attention was being devoted to secondary recovery practices and to conservation of known U.S. oil resources.

Scientific interpretation of aeroplane photographs by the armed forces as well as by industry called for the services of many geologists well grounded in geomorphology. Some of the applications received attention in Eardley's book *Aerial Photographs: Their Use and Interpretation,* which fills a long-felt need in geology.

General Geology.—The stimulating paper by Croneis entitled *Geology in War and Peace* published by the American

AS MAUNA LOA, famed Hawaiian volcano, burst into new activity April 26, 1942, U.S. army planes dropped bombs in the paths of lava flows to divert them from the city and harbour of Hilo. In the photograph, one bomb is exploding below and to the right of the descending flow. All danger to Hilo was past by May 10

Association of Petroleum Geologists considers the status of this branch of science. The appearance of *Biography of the Earth* by Gamow in 1941 represents a sound treatise written in a style intelligible to the layman. A review of the problem of the origin of limestone caves entitled *Vadose and Phreatic Features* *Limestone Caverns* came from the pen of J. Harlen Bretz.

Geomorphology.—New text books in this field in the Unit States were by Henry Hinds and by Oskar Dietrich von Enge and a new edition of the classic work on the subject by Charl Andrew Cotton, the eminent New Zealand geomorphologist. T latter author's new book entitled *Landscape* is also noteworth

The *Origin of the Carolina Bays* by Douglas Johnson trea exhaustively of these much discussed craters.

Sedimentation.—A report of the conference sponsored the research committee of the American Association of Petroleu Geologists was issued, entitled *Sedimentation,* in November. T publication of *The Oceans* by Harald Ulrik Sverdrup was timel

Two articles by Krumbien attracted attention, namely: "Pri ciples of Sedimentation and the Search for Stratigraphic Trap in *Economic Geology,* and "Criteria for Subsurface Recogniti of Unconformities" in the *Bulletin of the American Associati of Petroleum Geologists.* A report by Atwill in the latter pub cation on the "Progress of Stratigraphic Studies in California" significant in that it emphasizes the applications of sedimentati in exploring for oil and gas.

Regional Geology.—The leading contribution of 1942 in t field was Schuchert's comprehensive work on *Stratigraphy of t* *Eastern and Central United States.*

Mining Geology.—The subject of structural control of d deposition was treated in *Ore Deposits as Related to Structu* *Features,* edited by Newhouse, a comprehensive symposium 65 leading students of the problem. The new book *Econom* *Mineral Deposits* by Alan Mara Bateman promised to be wide accepted as a text and reference work. From the same auth came a thought provoking article published in *Economic Geolo* on "Magmas and Ores."

Petroleum Geology.—"Trends in Petroleum Geology" w discussed by Arville Irving Levorsen in *Economic Geology.* T recognition by petroleum geologists of the need for stimulat of discovery of new reserves of oil and gas was reflected in *Symposium on Petroleum Discovery Methods* published by t American Association of Petroleum Geologists. The Janua 1942 issue of the *Bulletin* of the Association contained an exc lent article with 121 references on the "Problem of Well Sp ing" prepared by a study group of the Houston Geological socie

Important practical aspects of petroleum geology were broug out in the books *Oil Well Drainage* by Herold and *Oil Prope* *Valuation* by Paine.

Hydrology.—The latest and most authoritative work on t subject appeared as a symposium under the title *Hydrolo* edited by Meinzer and prepared by 24 authors under the dir tion of the National Research council.

Engineering Geology.—The development and use of engine ing geology were excellently summarized by Nickell in the *Bulle of the American Association of Petroleum Geologists.*

The rapid increase in interest in the problem of the deterio tion of concrete as a result of reactions between rocks or miner of the aggregate and cement was manifested by the appeara of several articles on the subject during 1941 and 1942. A c tribution by Coombs in the April 1942 issue of the *Ameri* *Journal of Science* was particularly apt in this connection.

Military Geology.—The applications of geology to warf are briefly pointed out by Price and Woodward in the *Bulle of the American Association of Petroleum Geologists* for D 1942.

An exhaustive bibliography on military geology and geogra compiled by the Division of Geology and Geography of National Research council was issued jointly by that organizat and the Geological Society of America, late in 1941. (*See*

Mineralogy; Palaeontology; Seismology.)

(F. M. V. T.; B. H. P.)

George VI (1895–), king of Great Britain and Ireland (see *Encyclopædia Britannica*) and Queen Elizabeth continued during 1942 to keep in close contact with their subjects throughout the country, visiting factories, hospitals and bombed areas, inspecting troops and decorating war heroes. One award of particular interest was the bestowal by the king of the George cross upon the much-bombed island of Malta, shortly after he had accepted the colonelcy-in-chief of the Royal Malta artillery. (*See* Mediterranean, British Possessions in the.)

Many distinguished visitors were received and entertained at Buckingham palace in 1942; on Oct. 24 Eleanor Roosevelt, who had arrived in Britain to gain first-hand knowledge of British women's war activities and to visit U.S. forces in Britain, was welcomed at Paddington station by their majesties, whose guest she was for the first few days of her stay.

Among the customary ceremonial messages exchanged by the king with friendly rulers and statesmen, two were of special significance. One at the end of 1941 to the president of the Lebanese republic sent best wishes for its prosperity and progress, and this message constituted in fact a full recognition by Great Britain of the independence of the Lebanon. An exchange of New Year greetings between the king and President Kalinin of the U.S.S.R., expressing harmony of views in the main problems of the present struggle, marked another step in Anglo-soviet relations.

During 1942 the king nominated for election two new archbishops (*see* Canterbury, Archbishop of, and York, Archbishop of); and on March 28 he broadcast a special message calling the whole nation to prayer on March 29, "to dedicate ourselves anew" to face "the critical months ahead."

The entry into public life of Princess Elizabeth, heiress to the throne, on April 16, her 16th birthday, was marked by a special birthday parade at Windsor castle where she reviewed the Grenadier guards. The king had appointed her colonel of the regiment a few weeks earlier.

Other members of the royal family were also very actively engaged during 1942. The duke of Gloucester made a six months' tour of war areas, and on June 12, after his arrival in India, he broadcast from New Delhi, on behalf of the king-emperor, a message to the Indian people. He returned to Britain on Aug. 6. Until his tragic death on active service on Aug. 25, the king's youngest brother, the duke of Kent (*q.v.*) had for some time devoted himself to the welfare of the troops. His loss was deeply felt not only by the king and other members of the royal family but also by British subjects everywhere.

George II (1890–), king of Greece, was born at Tatoi near Athens on July 20, the eldest son of King Constantine, and succeeded to the throne for the first time in 1922. Deposed March 25, 1924 after a series of uprisings, he spent the next 11 years in exile until his recall by the Greek assembly in 1935. For his biography, see *Encyclopædia Britannica.* On Oct. 28, 1940, the day that Italy began its invasion of Greece through Albania, George assumed command of the army. His popularity increased in proportion to the Greek successes in Albania. On April 23, 1941, when nazi troops approached Athens, George fled with his government to Crete after declaring that the fight would continue. A month later, he was evacuated by a British destroyer, after narrowly escaping capture, and was taken to Cairo. He reached London Sept. 22, 1941 and formed his government-in-exile. In March 1942, he pledged to restore democratic rule in Greece after the war (prior to the nazi invasion, a dictatorship was in power in Greece). He visited President Roosevelt in Washington, June 1942, for conferences to plan aid for Greece.

George, Harold H. (1892–1942), U.S. army air officer, was born September 14 in New York city. A lieutenant in the air corps during World War I, he won the distinguished service cross for downing five German planes. He sailed for duty in the Pacific in April 1941. After Pearl Harbor, he was promoted to brigadier general and was assigned to Gen. MacArthur's forces in the Philippines, where he commanded the U.S. air force during the Philippine campaign. Gen. George was an outstanding figure in the Bataan battles. He started the "bamboo fleet," a squadron of four ancient commercial planes, which flew desperately-needed food and medicine to Bataan from the southern islands. He was expert at concealing grounded planes, and none of his planes on Bataan were ever destroyed on the ground. Gen. George, whose death in a plane accident was reported on April 30, was posthumously awarded the distinguished service medal.

Georgia. A southern state, bounded by South Carolina, North Carolina, Tennessee, Alabama, Florida and the Atlantic ocean; one of the original states of the United States; popularly known as the "Empire State of the South." Area, 58,876 sq.mi. (including 358 sq.mi. of inland water); pop. (1940), 3,123,723; urban, 1,073,808 (34.4%); rural, 2,049,915 (65.6%). Capital, Atlanta, 302,288. The next largest cities are Savannah, 95,996; Augusta, 65,919; Macon, 57,865.

History.—The state legislature was not in session in 1942. The principal political event of the year in Georgia was the Democratic party gubernatorial primary of Sept. 9, in which Attorney-General Ellis G. Arnall successfully challenged the renomination of the incumbent Governor Eugene Talmadge to the first four-year term for a Georgia governor. The popular vote was Arnall, 174,198; Talmadge, 127,488; in Georgia's peculiar unit vote system the final vote was Arnall, 261; Talmadge, 149 (206 votes necessary for nomination). The nomination of Arnall was ratified in the November general election The chief issue was the loss of the accredited rating of Georgia's university system on the charge of political interference by Governor Talmadge. Arnall pledged that he would take the necessary steps to restore the accredited rating.

Other successful candidates were Homer C. Parker, comptroller-general; T. Grady Head, attorney-general; Richard B. Russell, Jr., U.S. senator. Principal state officials for the year 1942 included: Eugene Talmadge, governor; John B. Wilson, secretary of state; Ellis G. Arnall, attorney-general.

ELLIS ARNALL, governor of Georgia. He was elected Nov. 3, 1942, on the Democratic ticket

Education.—The elementary schools of Georgia had an enrolment (1941–42) of 626,053 students and a teaching staff of 16,822 (10,912 white, 5,910 Negro); secondary schools, 141,880 students, 5,957 teachers (5,067 white, 890 Negro).

Public Welfare, Charities, Correction.—Typical figures indicating the extent of the public welfare program are as follows: WPA, average employment per month for the year ending June 30, 1942, 21,908; total expenditures for the year ending June 30, 1942, $16,879,000 on works projects and $655,000 for administrative purposes. Relief: expenditures, 1941, $488,189.11; Jan.–June 1942, $241,260.02. Old-age assistance: June 1942, 66,195 awards amounting to $585,952. Blind pensions: June 1942, 2,033 awards amounting to $23,544.50. Unemployment insurance: Jan. 1939–June 30, 1942, 237,000 persons received a total of $15,026,744. Aid to dependent children: June 1942, 11,529 children aided with a total expenditure of $106,629.

Surplus commodities: for the year ending June 30, 1942, a total of $5,402,103.21 in goods was distributed.

The state prison population as of June 30, 1942, amounted to 6,194. The state's seven eleemosynary institutions had a total expenditure for the year ending June 30, 1942, of $2,232,823.10. There were 28 county almshouses with a population of 740.

Communications.—For the year ending June 30, 1942, there were 99,143 mi. of highways in Georgia (13,224 state, 85,919 county). The department of highways budget appropriations amounted to $18,501,261.95. As of Dec. 31, 1941, steam railways owned 6,242 mi. of road (first main track). Water-borne commerce in Georgia in 1940 amounted to 4,410,797 short tons; in addition, total traffic on the intracoastal waterway (Beaufort to Cumberland sound section) amounted to 501,312 short tons. Airway mileage, 369; number active airports, 39 (including army fields).

Telephones, 283,077 stations (Southern Bell Telephones: 123 exchanges, 258,296 stations; independent: 103 companies, 24,781 stations).

Banking and Finance.—On June 30, 1942, there were 240 state banks with deposits of $219,383,000 (exclusive of interbank deposits); loans, $109,205,000; investments, $49,358,000. There were 50 national banks with $351,044,000 in deposits (exclusive of interbank deposits); loans, $159,333,000; investments, $140,613,000. Total state treasury receipts for the year ending June 30, 1942, amounted to $56,453,937.21 from taxes alone; from all sources (exclusive of federal funds and earnings of agencies), $58,893,568.09. Total budget appropriations for the year ending June 30, 1942: for operations, $48,754,341.26; for debt payments, $8,321,890.93.

Total fixed debt of the state outstanding on June 30, 1942, was $26,266,139.76.

Agriculture.—Total value of Georgia crops in 1942 showed a 45% increase over 1941; $268,475,000 compared with $185,093,000.

Manufacturing.—No census of manufactures had been compiled since the federal census of 1939. There were, in 1939, 3,150 manufacturing establishments in Georgia which produced goods valued at $677,402,657 and paid $132,188,496 in salaries and wages.

Mineral Production.—Total value of mineral production fo 1940 was $16,932,000; 1939, $14,633,361; estimated value fo 1942, over $20,000,000.

Table I.—*Leading Agricultural Products of Georgia, 1942 and 1941*

Crop	1942	1941
Cotton, bales	860,000	624,000
Cottonseed, tons	384,000	278,000
Corn, bushels	39,160,000	42,000,000
Oats, bushels	10,152,000	10,516,000
Tobacco. pounds	59,860,000	55,430,000
Hay, tons	832,000	746,000
Peanuts, pounds	675,000,000	487,500,000
Peaches, bushels	6,177,000	7,100,000

Table II.—*Principal Industries of Georgia, 1939 and 1937*

Industrv	Value of Products	
	1939	1937
Cotton broad woven goods	$131,627,016	$164,173,283
Food and kindred products	39,454,548	*
Cotton yarn and thread	38,200,073	49,929,575
Paper and allied products	24,457,566	*
Meat packing	23,648,314	24,987,606
Fertilizer	19,049,712	21,711,717

*No comparable figures.

Table III.—*Principal Mineral Products of Georgia, 1940 and 1939*

Mineral	Value of Products	
	1940	1939
Stone	$5,034,288	$4,838,623
Raw clay	4,859,826	4,162,127
Clay products (other than pottery and refractories)	2,582,000	2,375,225

Georgia led the U.S. in 1942 in production of ochre, kaolin barytes and fuller's earth. (E. C. Gr.)

German-American Bund.

Late in the year 1941 the attorney general of the U.S. formally named the Bund as "the official spearhead of the nazi fifth column in America." He insisted that the Bund had not been, a announced shortly after Pearl Harbor, disbanded. Proceeding were begun to revoke the naturalization of many members on th ground that they had obtained citizenship with mental reservation when they swore allegiance. Two Bundists, summoned to appea before the federal grand jury in New York which was inquirin into the citizenship issue killed themselves rather than appea for questioning. The citizenship of many was revoked. In June 1942, eight members of the Bund who had gone to Germany t be trained in the arts of sabotage returned. Four landed at Amagansett, on the south shore of Long Island, N.Y., and four lande at Ponte Vedra beach, Florida. They had large sums of America money and a quantity of explosives. They buried the explosive in the sand on the beach, planning to recover them when it wa convenient. They were all arrested through the efforts of th FBI, and tried by court martial in Washington, D.C. The cour found them guilty of conspiring to interfere with the war efforts c the United States. Six of them were sentenced to death and executed and two, who had assisted the prosecution, received sentences of imprisonment for life. They all admitted their guil Gerhard Wilhelm Kunze, head of the Bund, and several other were tried in Hartford, Conn., on the charge of sending militar information to Germany. Kunze fled to Mexico before the tri but was brought back. Dr. Otto Willumeit of Chicago and D Wolfgang Ebell of El Paso, Bund leaders in Illinois and Texa respectively, and Dr. K. E. B. Molzahn, pastor of a Germa Lutheran church in Philadelphia, were among those tried wit Kunze. All but Dr. Molzahn pleaded guilty and the jury convicted the clergyman. He was sentenced to imprisonment for te years. Kunze was sentenced to 15 years in prison and th others received shorter sentences. Kunze and 25 others were lat tried in New York on the charge of refusing to register under th selective service act and with advising others to refuse to registe Twenty-four of them were found guilty and Kunze received an additional sentence of five years in prison to be served consecutivel with the Hartford sentence. (G. W. Do.)

German Literature.

Literature is more inseparably linke with social and political history Germany than is the case in any other country. This was particularly true of the latest period of national socialist totalitaria domination. All authors must be members of the nazi writer association, must submit their books for approval to nazi author ties before they are printed, and must conform strictly to nazi ideology. This situation, together with the fact that virtually all persons were forced into military service or war work, explains why few notable works of literature were being produced in Germany.

It was therefore to the refugees outside the reich that one looked for German literature today. Many of them sought to explain present conditions in Germany. Three of the best of these were: Franz Neumann, *Behemoth, The Structure and Practice of National Socialism;* Sigmund Neumann, *Permanent Revolution;* and René Kraus, *Europe in Revolt.* Paul Hagen, a former German labour leader who retained contact with the underground opposition movement, examined in his very careful and readable book, *Will Germany Crack?,* the forces working against Hitler and the ways in which they might be strengthened. Hermann Rauschning, who was formerly president of the Danzig senate and who later repudiated Hitler, continued his record of interesting conversations with various German personages in *Makers of Destruction.* Heinrich Hauser's *Time Was: Death of a Junker* is a poignant account of the decline and disappearance of the old German Junker class.

Notable among the novels by German refugees were Franz Werfel's *The Song of Bernadette,* a story of Lourdes and its miracles; Ruth Feiner's autobiographical novel, *Young Woman of Europe;* Anna Seghers' *The Seventh Cross,* a stark story of escape from a concentration camp; and Alfred Neumann's dramatic account of the French defeat in 1870 and the Paris Commune in *The Friends of the People.*

BIBLIOGRAPHY.—More than a hundred German war novels were interestingly analyzed and interpreted in William K. Pfeiler's scholarly *War and the German Mind.* For brief reviews of German literature, see *Books Abroad,* a quarterly published by the University of Oklahoma. (S. B. F.)

Germany.

A totalitarian state or dictatorship, known as the "third reich," in central Europe south of the North and Baltic seas and north of the Alps, Italy and the Balkans. Flag, black hooked cross (swastika) in a round white centre on a red background. Capital, Berlin (*q.v.*). Chief cities (1939 census): Berlin (4,332,242); Vienna (1,918,462); Hamburg (1,682,222); Munich (828,325); Cologne (768,426); Leipzig (701,606); Essen (659,871); Dresden (625,174); Breslau (615,006); Frankfurt-on-Main (546,649); Düsseldorf (539,905); Dortmund (537,000). Religion (1933): Protestants 62.7%; Catholics 32.5%; Jews 0.7%; others 4.1%. Reich chancellor and leader (fuehrer), Adolf Hitler (*q.v.*).

Area and Population.—The area of the old reich was 181,742 sq.mi.; population (census of May 17, 1939), 69,622,483. The area of "Greater Germany," prior to the annexations of 1939–42, was 225,199 sq.mi. and the population 79,364,410, including the populations of the following *Länder:* Prussia 41,762,042; Bavaria 8,280,092; Wurttemberg 2,907,168; Mecklenburg 910,828; Baden 2,518,105; Saxony 5,206,863; Thuringia 1,760,597; Hesse 1,469,911; Oldenburg 582,402; Brunswick 599,210; Anhalt 436,215; Lippe 188,600; Hamburg 1,682,222; Schaumburg-Lippe 54,164; Bremen 400,088; Saarland 863,738; Austria 7,009,016; Sudetenland 2,945,263.

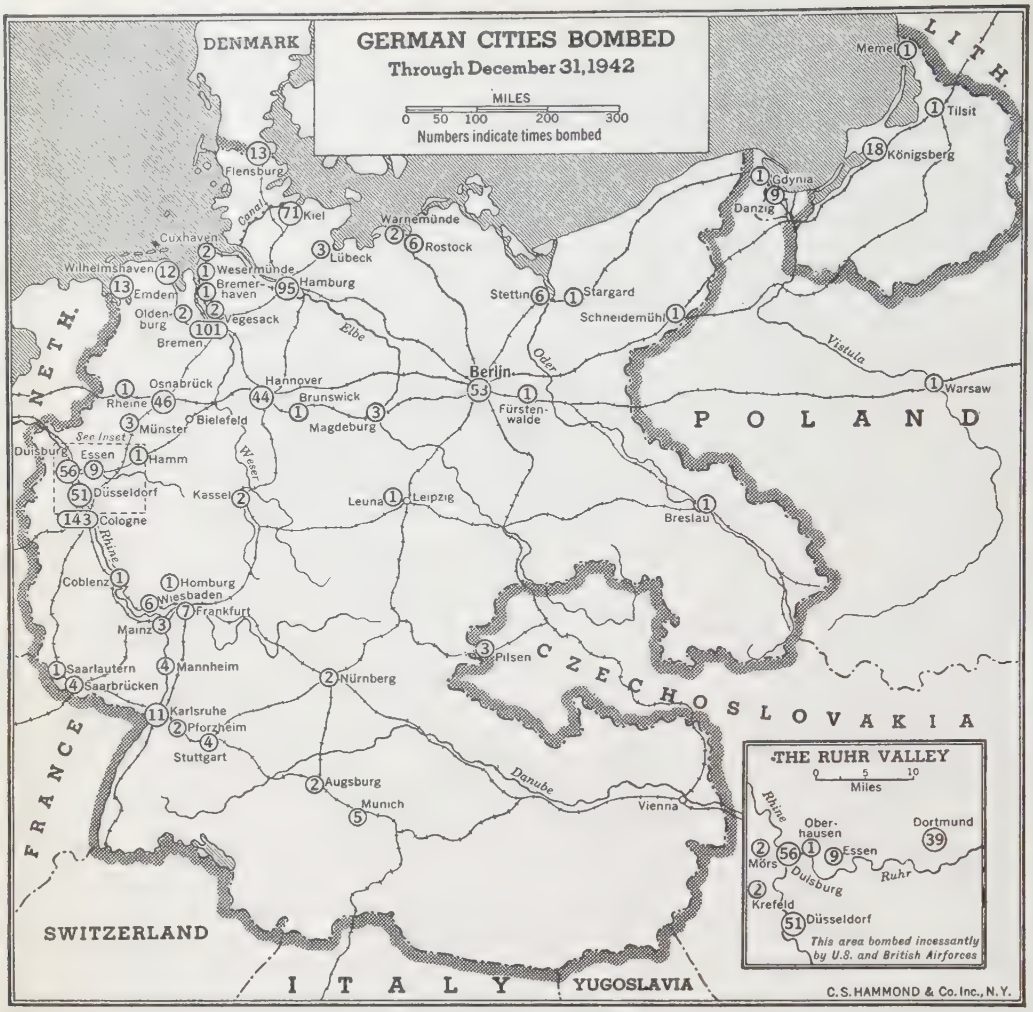
The population of "Greater Germany" in 1942 was approximately 98,582,000 as a result of the annexation during 1939–42 of the following territories: Bohemia-Moravia (6,805,000); Memel (153,000), Eupen-Malmédy (60,000); Polish lands (Danzig, Polish Corridor, Silesian border districts, totalling about 10,000,000); Alsace-Lorraine (1,900,000); and Luxembourg (301,000). This figure of 98,582,000, however, made no allowance for decreases in population caused by Germans killed in war, Poles expelled or killed, and Jews deported or exterminated, or for the increase from prisoners of war and imported foreign workers.

Outside "Greater Germany," Hitler also controlled millions of people in lands which were conquered and occupied by his armies, but which were not directly annexed to the reich: the Gouvernement General of Poland (15,000,000) under the administration of Hans Frank; Denmark (3,777,000); Norway (2,900,000); Netherlands (8,640,000); Belgium (8,386,000) and France (40,000,000), the northern three-fifths of which was "occupied" in June 1940, and the remainder in Nov. 1942, after the Anglo-American occupation of French North Africa. Alsace-Lorraine (1,900,000) was incorporated directly into the reich on Nov. 30, 1940. In addition, by the infiltration of German troops and secret agents, Germany gradually acquired domination over Slovakia (2,653,564) in 1939, and over Hungary (12,708,439), Rumania (19,934,000) and Bulgaria (6,078,000) in the winter of 1940–41. In April 1940 a blitzkrieg brought Yugoslavia (15,703,000) and Greece (7,109,000) under nazi domination. This brought the total population under German domination, both in "Greater Germany" and the occupied lands, to more than 240,000,000. Even this figure did not include the indeterminate population in the vast regions of the U.S.S.R. which Hitler conquered in 1941–42 but was beginning to lose in Nov. 1942.

History.—The chief fact in German history during 1942 was that Hitler lost the offensive both in the air and on land, and was forced to stand on the defensive. In the first years of the war, Goering's superior luftwaffe had subjected Britain to terrible bombing, but in 1942 the tables were turned. Britain's air strength outmatched that of the reich, and the R.A.F. was able to deal devastating blows from the air on Germany's cities and transportation system. Similarly, for more than two years Hitler had carried his blitzkrieg offensive steadily forward, but in 1942 his armies at Stalingrad began to be driven back, and his Afrika Korps under Gen. Rommel was routed.

British air experts had come to the conclusion that small raids directed exclusively against such specifically military objects as

ADOLF HITLER—"from paperhanger to crapehanger," by Shoemaker of *The Chicago Daily News*



MAP showing number of times German cities had been bombed by British and other allied air forces through Dec. 31, 1942. The figures are estimates only, as even official reports varied in specific cases

munition plants, oil refineries and railway centres were not sufficiently effective. Such local damage could be quickly repaired. But raids that wiped out the larger part of a whole city had far more permanent and disrupting effects on war production and on civilian activities and morale. This was a part of the lesson they had learned from the German raids on Britain. They could not take advantage of the lesson, however, until the spring of 1942, when they had greatly increased their own aircraft production and could count on the rapidly increasing production in the U.S.

The new British use of intensified mass area air attack, which would destroy whole military areas instead of local objectives, was used against Luebeck on the night of March 28, 1942. This fine old Hanseatic town, made delightfully familiar in Thomas Mann's novel, *Buddenbrooks* was important as a submarine base and as a German port through which passed the iron ores from Sweden and military supplies for the Baltic Photographs taken two weeks later showed that 40% of the streets were still choked with debris and were impassable.

Rostock, a Baltic port of 90,000 population, some 60 mi. east of Luebeck, was important as a shipping centre and because of the neighbouring Heinkel plane factories and the Neptune Shipbuilding company, manufacturers of submarines and other small naval craft. It was bombed on four successive nights beginning April 24 with the greatest weight of explosives which the R.A.F. had ever let loose to that date. Gigantic fires started on the first night were visible for 90 mi. and were still burning on the fourth night, so that the last wave of raiders had no need to drop flares to distinguish the objectives. In April also giant Lancasters, flying in daylight 1,000 mi. ove enemy territory, bombed Augsburg, where half the Diesel engines for submarines were made

The heaviest blow of all wa delivered on Cologne on th night of May 30. This Rhin city of nearly 800,000 was on of Germany's most importan arterial centres, with bridge over the Rhine, railway an barge transfer facilities, an numerous chemical, armamen and other munitions works During the 90-minute raid 3,000 tons of high explosive were dumped on it by a "four figure" air fleet of 1,130 planes The cloud of smoke rising fron it could be seen from the Dutc coast. For several days no aeria photographs of the damag could be secured because of th pall of smoke still hanging ove the stricken city. Finally it wa clear that six great gaps ha been laid waste, covering abou 5,000 acres, or eight squar miles. One gap included th great union railway station, bu the famous Gothic cathedra only a block away was onl partly damaged. Something o the psychological effect could b seen in a letter from wife t husband later found in th pocket of a dead German soldier on the Russian front: "It is more than frightful. When think of it, I cry and cry. Cologne is just a cloud of smoke. Flame came from everywhere. The trams do not run. The trains d not run. The cinema and music hall are closed, and half th people have left. We have no department stores any more. The have all gone. All the factories, all the big hotels are burnin The number of casualties was very great. If you came here o leave, I shouldn't be able to meet you at the station, becaus there is no station left."

During the summer and autumn similar attacks, though on smaller scale, were made on Mainz, Osnabrück Hanover, Breme Hamburg, Kiel, Flensburg, Mannheim, Karlsruhe, Stuttgar Frankfurt-on-Main, and on the great industrial cities crowde together in the Ruhr district. These mass area raids cut dow German war production by 10% or more, by destroying plant tying up transportation, frightening workers, and weakenin morale. American Flying Fortresses, with very effective hig altitude precision bombing, joined the R.A.F. in destructiv attacks on the Lille steel and locomotive works, the Schneide Creusot munitions plant, truck factories near Paris, submari bases at St. Nazaire and Lorient, and other vital French poin used for German war production.

Individual planes made daring low-level attacks on Germa locomotives, switches, bridges, railway stations and canal system because lack of transportation facilities had become one Hitler's most vulnerable points. Even small shells bursting an where near a boiler or firebox will usually wreck an engine, sinc the boiler is under 200 or 300 pounds pressure per square inc nd carries its own explosive charge of steam. A wrecked engine s likely to derail or wreck the whole train. It is estimated that n 1942 the Allies shot to pieces more locomotives than the German and French locomotive shops had built in two years. Hitler started the war badly deficient in locomotives and rolling stock, because he neglected the railways in his frantic effort to build up armaments. The distant war in Russia and the lack of uel for trucks had greatly increased the strain on the railways y the end of 1942.

The Russian and African Campaigns.—In Jan. 1942 Hitler's Russian front extended for more than 1,000 mi. in an irregular orth-south line from the Baltic at Leningrad, passing west of Moscow, Voronezh and Rostov, to the Sea of Azov and the Black sea. Owing to the unexpectedly firm stand of the Russians nd to the winter cold for which the Germans were not prepared, e had failed in his primary aim of annihilating the soviet rmies in 1941. During the spring of 1942 he was forced to tand on the defensive and even to retreat at some points.

As his vast army was tied down by the Russian winter and ounter-attacks, Hitler could not transfer soldiers back to civilian roduction in the munitions factories, as he had done after his revious blitzkriegs. To produce new war equipment and to ather new forces for his 1942 campaign in Russia required early six months, so that he was not ready for another great ffensive until the end of June. Meanwhile Britain and the United tates had had time greatly to increase their armaments and y Oct. 1942 had sent to Russia vast supplies, including 3,052 lanes, 4,048 tanks and 30,031 vehicles, though not all these eached Murmansk, because some were sunk by the Germans. talin likewise had been turning out great quantities of army quipment in factories already located in eastern Russia and artly supplied with machine tools which had been successfully emoved thither before the German conquest of western Russia n 1941.

In 1941 the Germans had carried on their offensive along the hole 1,000 mi. front, their main, though unsuccessful, effort eing at the centre to capture Moscow by direct attack from he west. In the 1942 offensive, which started from Kursk and Kharkov on June 28, the Germans concentrated their effort on 200-mi. front and directed it toward the southeast. To most bservers it seemed that Hitler's primary aim was not, as in 941, to annihilate the soviet army, but rather to secure economic nd strategic advantages by occupying more territory, seizing he Caucasus oil fields and then penetrating into the middle east. t was thought that he intended to threaten the British in Pales-ne and Egypt by a great sweeping pincers movement from the ast, while Rommel made a corresponding pincer attack upon Egypt from Libya in the west.

Stalin, however, in his great speech of Nov. 7, 1942, based n information gathered from dead and captive Germans, in-icated that Hitler's real main aim was to capture Voronezh, talingrad and Saratov, get control of the Volga, and then swing round in a circle westward to capture Moscow from the rear, *i.e.* from the east.

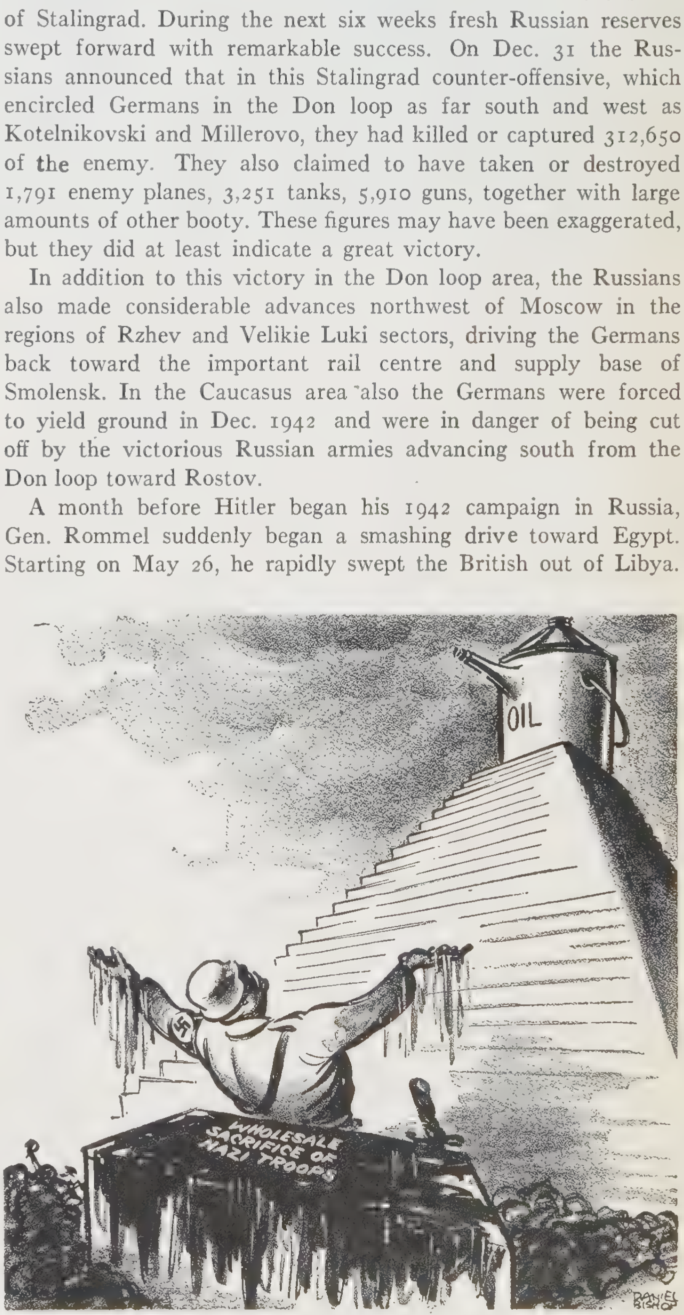
In any case, soon after advancing against Voronezh and fail-ng to capture it, Hitler made the fatal mistake of dividing his orces. One German army under Gen. Fedor von Bock, who was ater replaced by Gen. Hermann Hoth, turned east against Stalin-rad. The other continued southeastwards toward the Caucasus. t captured the relatively small Maikop oil fields, but failed to each the more important Grozny oil area, and never came within oo mi. of by far the richest oil supplies at Baku. To protect its ight flank another German army under Gen. Fritz Erich von Mannstein gradually occupied the Crimean peninsula, and on uly 1, after a very bloody 25-day siege, captured the Russian naval base at Sevastopol.

Stalingrad lies along the west bank of the Volga where the river makes a great loop to the west and comes within 40 mi. of the Don river which makes a great loop to the east. Stalingrad is of enormous strategic and economic importance, because it controls the vast traffic on the Volga and is the seat of essential steel and munitions factories. Hitler had several times announced that he would take it, but Stalin was determined that it should be defended at all costs. By using great masses of tanks, dive bombers and infantry, the Germans, aided by Hungarian and other axis troops, were able to penetrate into the city. In almost incredibly fierce hand-to-hand fighting, with the front lines often only 20 or 30 yds. apart, the attackers fought from building to building for nearly four months. But the Germans were never able to get possession of the whole city.

Finally, on Nov. 19, the Russians began a great counter-offensive to outflank the Germans to the north and the south of Stalingrad. During the next six weeks fresh Russian reserves swept forward with remarkable success. On Dec. 31 the Russians announced that in this Stalingrad counter-offensive, which encircled Germans in the Don loop as far south and west as Kotelnikovski and Millerovo, they had killed or captured 312,650 of the enemy. They also claimed to have taken or destroyed 1,791 enemy planes, 3,251 tanks, 5,910 guns, together with large amounts of other booty. These figures may have been exaggerated, but they did at least indicate a great victory.

In addition to this victory in the Don loop area, the Russians also made considerable advances northwest of Moscow in the regions of Rzhev and Velikie Luki sectors, driving the Germans back toward the important rail centre and supply base of Smolensk. In the Caucasus area also the Germans were forced to yield ground in Dec. 1942 and were in danger of being cut off by the victorious Russian armies advancing south from the Don loop toward Rostov.

A month before Hitler began his 1942 campaign in Russia, Gen. Rommel suddenly began a smashing drive toward Egypt. Starting on May 26, he rapidly swept the British out of Libya.


OIL
WHOLESALE SACRIFICE OF NAZI TROOPS
DANIEL BISHOP

"THE NEW PAGANISM." German willingness to sacrifice unlimited numbers of troops to capture the oil fields of the Caucasus in 1942, as seen by Bishop of the *St. Louis Star-Times*

THE SEVENTH MEETING between Mussolini and Hitler was held April 30, 1942, at Salzburg. In this picture Mussolini is inspecting the guard of honour

Within a month he had crossed the border into the western Egyptian desert and captured 25,000 British prisoners in Tobruk and 6,000 more at Matruh. The badly mauled British Eighth army, which had lost 80,000 men, was then prudently withdrawn further back into Egypt, received reinforcements hurried up from the Nile, and was able to make a firm stand in July at El Alamein.

During the summer and early autumn of 1942 the British stood solidly at the El Alamein line, where the 40-mi. ridge between the Mediterranean and the impassable Qattara Depression to the south afforded a good line of defense. Rommel made repeated efforts to break through, but without success. Meanwhile the British had been strengthened by new war material sent from the United States and by a visit from Winston Churchill, who placed Lieut. Gen. Bernard L. Montgomery in immediate command of the Eighth army, with orders to take or destroy Rommel's army at the first opportunity.

On Oct. 23, Gen. Montgomery started his carefully planned attack, digging up land mines and slowly pushing forward his infantry into the forward German positions. Then the British tanks, strongly supported by superior air forces, forced Rommel into a retreat which rapidly became a rout. As the British had sunk many of his supply ships, he lacked gasoline for his tanks and planes. Hitler, who needed most of his planes and men on the Russian front, sent him very little aid. As a consequence Rommel continued his flight westward for a thousand miles, closely followed by the British. By the end of December he appeared to be trying to reach Tunisia to join with axis forces attempting to hold Tunis and Bizerte against the newly-landed Anglo-American North African expedition.

Education.—In the old reich in 1938 there were 51,118 public elementary schools (*grundschule*) with 7,596,437 pupils; 1,563 elementary "middle schools" teaching English and French with 272,635 pupils; 2,282 secondary schools with 670,895 pupils; 10 technical high schools with 9,554 students; and 25 universities with 48,139 students. The nazis established many special schools for training "leaders," with emphasis on comradeship, sports, nazi ideology and leadership.

Defense.—After 1935 the German army was based on the principle of universal military training for two years, in addition semimilitary training in the Hitler Youth (eight years) a Labour corps (six months). The army in 1942 consisted of nea 400 divisions of 12,000–14,000 men each if at full strength, b by Dec. 31 many divisions had become skeletal by total w losses of more than 700,000 killed and missing and 1,500,0 wounded.

The navy in 1942 consisted of the 35,000-ton battles "Tirpitz," two 26,000-ton battleships, two 10,000-ton "poc battleships," eleven cruisers, about 50 destroyers, probably m than 400 submarines, and perhaps two incomplete aircraft carri Figures for the air forces were not available.

Finance.—The unit of currency is the German mark, nomin equivalent to 40.3325 U.S. cents. The Germans also issued spe paper marks (*reichskassenscheine*) of varying value for use the occupied territories. Revenues and expenditures had not b published since 1935. The reich debt at the end of 1942 estimated at 190,000,000,000 marks, and the note circulation 22,000,000,000 marks.

Trade and Communications.—As a result of the war. many was cut off from world trade and was confined to tr with the occupied countries in Europe and a few neutrals Sweden, Switzerland and Turkey.

Her prewar trade, for which alone figures are available, is gi in Table I.

Table I.—*Imports, Exports and Balance of Trade, 1932–39*

	Total Yearly			Monthly Average		
	Imports Million marks	Exports Million marks	Balance Million marks	Imports Million marks	Exports Million marks	Balan Milli mar
1932 . . .	4,667	5,739	+1,072	389	478	+8
1933 . . .	4,204	4,871	+ 667	350	406	+5
1934 . . .	4,451	4,167	− 284	371	347	−2
1935 . . .	4,159	4,270	+ 111	347	356	+
1936 . . .	4,218	4,768	+ 550	352	397	+4
1937 . . .	5,468	5,911	+ 443	456	493	+3
1938* . .	6,052	5,620	− 432	504	468	−3
1939† . . .	2,755	2,814	+ 59	458	468	+1

*Figures do not include Austria and Sudeten area.
†Figures are for the first six months of 1939 only.

The German state railway (*reichsbahn*) in 1938 inclu 53,330 km. (33,076 mi.) of standard-gauge lines and 879

(546 mi.) of narrow-gauge lines. Privately owned lines included 3,732 km. (2,313 mi.) of standard and 752 km. (476 mi.) of narrow gauge. In spite of Germany's stripping the conquered territories of much of their rolling stock, the German railways during the war were put under a very heavy strain and in 1942 were in worse condition than in 1939. In 1938 there were 132,094 mi. of road in Germany, and by the middle of 1939, 2,264 mi. of the new concrete automobile highway network (*reichsautobahn*) were opened to traffic. This new highway had been partly designed for strategic purposes, but owing to lack of fuel for trucks was of little military value in 1942.

Agriculture, Manufactures and Mineral Production.—Germany's prewar agricultural and mineral production is shown in Tables II and III.

Table II.—*Agricultural Production from 1932 to 1939*
(In thousands of metric tons)

	Rye	Wheat	Barley	Oats	Potatoes	Sugar Beets	Fodder Beets
1932 . . .	8,363	5,003	3,214	6,650	47,016	7,875	34,486
1933 . . .	8,727	5,604	3,468	6,952	44,071	8,578	30,716
1934 . . .	7,607	4,532	3,203	5,452	46,780	10,394	33,804
1935 . . .	7,478	4,667	3,387	5,385	41,015	10,567	34,711
1936 . . .	7,386	4,426	3,399	5,618	46,323	12,095	37,826
1937 . . .	6,920	4,580	3,640	5,920	53,600	15,701	40,538
1938 . . .	8,463	5,502	4,177	6,274	48,700	17,200	41,700
1939* . . .	—	—	—	—	54,540	17,400	39,500

*Figures for 1939 are estimated. The total grain harvest was estimated at 27,430,000 metric tons, *i.e.*, 6.4% more than the total for 1938

Table III.—*Production of Minerals and Manufactured Products, 1933–37*
(In metric tons)

	1933	1934	1935	1936	1937
Coal . . .	109,532,600	125,405,600	143,491,300	159,756,600	184,500,000
Lignite . .	126,756,600	137,223,400	147,162,100	161,426,900	184,700,000
Iron ore . .	2,592,000	4,343,000	6,044,000	7,570,000	9,792,000
Lead . . .	91,000	98,400	122,300	139,000	158,500
Zinc . . .	162,000	212,800	205,000	207,700	194,300
Rock salt .	1,841,300	2,024,200	2,077,200	2,383,800	2,767,000
Potash . .	7,362,800	9,616,700	11,672,500	11,764,600	14,460,000
Pig iron . .	5,246,500	8,716,700	12,846,200	15,302,500	15,960,000
Steel . . .	7,393,200	11,601,700	16,013,500	18,590,900	19,387,000

Owing to the recruiting of men from fields and factories for the army and to the demand for increased production caused by the war, and also to the greater amount of labour required to produce substitute instead of natural products, Germany was suffering a severe labour shortage by 1942. This was partly met by the increased employment of women and children, and partly by the use of prisoners of war and of foreign workers who were compelled by lack of food at home to accept "slave work" in Germany. Goering stated on Oct. 5, 1942, probably with exaggeration, that there were 5,000,000 prisoners of war and 6,000,000 foreigners thus employed by the nazis.

(*See* also AIR FORCES OF THE WORLD; ANTI-SEMITISM; BOHEMIA AND MORAVIA; CZECHOSLOVAKIA; EDUCATION; FASCISM; RELIGION; ROMAN CATHOLIC CHURCH; SLOVAKIA; UNITED STATES; WORLD WAR II; YOUTH MOVEMENTS.)

BIBLIOGRAPHY.—See *Statistisches Jahrbuch für das Deutsche Reich* (annual, to 1939); Joseph C. Harsch, *Pattern of Conquest* (1941); William L. Shirer, *Berlin Diary* (1941); Douglas Miller, *You Can't Do Business with Hitler* (1941); Louis P. Lochner, *What About Germany?* (1942); Howard K. Smith, *Last Train from Berlin* (1942); Paul Hagen, *Will Germany Crack?* (1942); Max Werner, *The Great Offensive* (1942). (S. B. F.)

Gest, Morris (1881–1942), U.S. theatrical producer, was born January 17 in Vilna (then in Russia) and emigrated alone to the United States when a mere boy of eight. Young Gest made his start in the theatre as a property man for a Yiddish theatre group and at 19 years of age became a producer in Boston. For a short time he was associated with Oscar Hammerstein, and from 1905 to 1928 was in partnership with F. Ray Comstock, with whom he produced more than 50 plays. Gest introduced to U.S. audiences the Russian ballet, Balieff's *Chauve-Souris* and the Moscow Art Theatre; he brought Eleonora Duse and Max Reinhardt to the United States. During World War I, Gest staged *Chu-Chin-Chow,* with which he established his reputation as a producer of lavish spectacles. In 1924, he engaged Reinhardt to produce *The Miracle,* a massive production that cost more than $600,000. Some years later he produced the Freiburg Passion play. In the 1930s, however, the public lost its taste for the spectacular in the theatre. His last New York effort was with a village of midgets called Little Miracle Town, at the New York World's Fair, 1939. Overtaken by illness in his last years, the familiar figure in the big black hat and the flowing cravat had disappeared from 42nd street. He died in New York city, May 16.

Ghormley, Robert Lee (1883–), U.S. naval officer, was born Oct. 15 in Portland, Ore. He was graduated from Annapolis in 1906 and was in command of U.S. forces during the Nicaraguan campaign of 1912. During World War I, he was decorated for his work as assistant director of the overseas division of the Naval Overseas Transportation division. In 1931, he was appointed assistant chief of staff to the navy's commander-in-chief, and in 1932 he headed the tactical section (fleet training division) in the office of the naval operations chief. Made a rear admiral in Oct. 1938 and a vice admiral in 1941, he returned to active duty in March 1942. He was ordered to Auckland on April 22, 1942, to set up a joint U.S.-New Zealand naval command and was appointed commander of Allied land, sea and air forces in a South Pacific zone. Adm. Ghormley directed the landing of marines on the Solomon Islands on Aug. 7, 1942, and the ensuing land-sea-air operations there until Oct. 24, when he was relieved of his post by Vice-Adm. William F. Halsey.

Gibbs, George (1870–1942), U.S. novelist and painter, was born March 8 in New Orleans. Following in the footsteps of his father, a naval surgeon, Gibbs attended the Naval academy for three years. While at school, however, he showed talent for writing and drawing; he left Annapolis to study at the Corcoran School of Art in Washington. He spent his spare time writing for New York newspapers and in 1901 produced a best-seller, *In Search of Mademoiselle,* a book dealing with the conquest of Florida. He wrote more than 50 books, including *The Bolted Door* (1911), *The Yellow Dove* (1915), *The Secret Witness* (1917), *The Splendid Outcast* (1920), *Fires of Ambition* (1923), *The Up-Grade* (1927), *The Road to Bagdad* (1938), *The Silver Death* (1940) and *The Sleeper Wakes* (1941). He also painted portraits of many notable Americans. Gibbs died in Philadelphia, Oct. 10.

Gibraltar: *see* MEDITERRANEAN, BRITISH POSSESSIONS IN THE.

Gilbert and Ellice Islands Colony: *see* PACIFIC ISLANDS, BRITISH.

Gilmore, John Washington (1872–1942), U.S. agronomist and educator, was born May 9 in White county, Arkansas. He took his bachelor's degree in agriculture at Cornell university in 1898. He went to China to establish the agricultural college at Wuchang. He later established similar schools in the Philippines. After his return to the United States, he was assistant professor of agriculture at Cornell and professor of agriculture at Pennsylvania State college. He was president of the College of Hawaii, which later became the University of Hawaii, 1908–13. He was professor of agronomy at the University of California after 1913. He died in Woodland, Calif., June 25.

Ginger: *see* SPICES.

Giraud, Henri Honoré (1879–), French army officer, was born Jan. 18 in Paris and attended St. Cyr Military academy and the École Supérieure de Guerre. Early in World War I, he was wounded and captured by the Germans, but escaped in 1915 and returned to the front. In June 1917, his battalion captured Fort Malmaison. Toward the end of the war, he was chief of staff of a Moroccan division. He participated in the Riff campaign, and Riff leader Abd-el-Krim surrendered to his forces in Jan. 1926. After the German breakthrough at Sedan in May 1940 during World War II, General Giraud took command of the Allied armies in northern France; but he and his entire staff were captured and interned in Koenigstein prison, Saxony. In April 1942, Giraud staged another daring prison break and escaped to Vichy via Switzerland. The Germans offered a 100,000-mark reward for his capture. Disguised as an old woman, Giraud then fled Vichy, went to Algeria and offered his services to the U.S. armies at the start of the North African campaign. On Nov. 15, 1942, Admiral Jean Darlan, self-proclaimed protector of French interests in Africa, named Giraud commander of all French armed forces in North Africa. Marshal Pétain berated Giraud as a "traitor" for joining the Allies. After Darlan's assassination, Giraud was named as his successor as high commissioner of French North Africa, Dec. 27.

Girl Scouts. The Girl Scouts in 1942 put special emphasis on doing jobs that freed U.S. adults for other war work, on defense activities suited to girls from seven to eighteen, and on aiding the sale of war bonds and stamps. Older girls cared for young children so that mothers could volunteer their time elsewhere; served as farm aides, helping to save the crops in many parts of the country; acted as plane spotters and OCD messengers. A new program for Seniors, Wing Scouts, was launched in July 1942 to prepare girls for all types of aviation work.

Younger Scouts cultivated victory gardens and canned the produce; collected scrap metal, fat, rubber and miscellaneous items needed by relief organizations; kept USO cookie jars filled; and with older Scouts contributed more pennies than ever before to the Juliette Low memorial fund set up in memory of the founder of girl scouting in the United States to foster friendship among girls of all nations. Because of the spread of war to the western hemisphere, no hemisphere encampment was held in 1942, but funds were used for the relief of children in Britain, China, the U.S.S.R. and Greece. They also contributed war stamps to the Girl Scout Victory fund which, with the U.S. treasury department's permission, was to be used later for "the alleviation of distress among the children of the world." At the end of 1942 there were approximately 720,000 registered members of the Girl Scout organization in the United State Of these, approximately 130,000 were adults and the rest we girls.

(C. M. R.)

Glands: *see* Endocrinology; Medicine.

Glass. The U.S. glass industry proceeded toward more com plete adjustment to wartime conditions in 1942. Som technicians and many other employees entered military servic and the replacement of men by women increased. Certain co oured glasses and much of the lead glass entering luxury war went out of production on account of material shortages. Insuf ciency of the cleaner fuels brought gas producers back into ser ice. Lack of arsenic and cobalt created problems in decolourizin The essential heavy chemicals remained abundant, but the u of metallic oxides for colours was restricted.

In striking contrast with the situation in 1917, World War found the U.S. ready to produce sufficient optical glass of hig quality. A new plant financed by the government began produ tion at Parkersburg, W.Va., in 1942.

Plate glass, declining to one-third the output of 1941, filled a important military role. Laminations of toughened plate wi plastic binding sheets produced panes with better resistance bullets and to explosion shock than any previously made. Wi dow-glass production maintained the high level of 1941. In t U.S. glass industry as a whole, prices remained stable; employe numbered 81,000 in 1942 as compared with 93,000 in 1941; t total value of product exceeded $470,000,000.

Bottles and containers scored a record production of 77,000,0 gross. This gain reflected the replacement of tin cans by gla jars, as well as the expanded national income. Attempts to r place metal and rubber in caps and closures were partially su cessful.

Glass continued to find more new technical and military use Glass wool and fibre, by virtue of the properties of heat a electrical insulation and high chemical resistance, became i creasingly important. Cellular glass (foam glass) was advanc as a material for life-rafts and buoys.

A sweeping federal court decision ordered nine important co porations to relinquish holdings of each other's stock, and thre open for licence without royalty all the essential patents on gla feeders and bottle-forming machinery. Appeals were taken fr the decision, which, if it were to stand, presaged tremendo changes in the patent monopolies of other large industries.

(S. R. S.)

Gliding. Practically all gliding activities in the U.S. duri 1942 were of a military nature. The army and na glider programs absorbed nearly all experienced glider designe builders and pilots. Brought into production were the army's and 15-place gliders, both as large as twin-engined transports

U.S. AIR-BORNE TROOPS entering a big transport glider, under test during 1942 at Wright field, Ohio

ombers. These gliders were in use at army schools as advanced rainers.

A development of importance in this glider program was the se of the pickup. This device, in service for air mail for about hree years, was applied to picking up gliders by an aeroplane in ight. Expected to provide a hitherto unobtainable flexibility to oth military and commercial air transport, the pickup was exected to make possible the retrieving of gliders which have unded and been unloaded in fields far too small for the landing nd take-off of the towing transport plane. In other words, it ould make possible the aerial delivery as well as take-off of men nd materiel almost anywhere.

Despite the almost eclipsing of civilian gliding activities by the ar effort, interest in glider training in high schools steadily inreased. Local glider training programs were started in the states f Minnesota and New York, the cities of Detroit and Los ngeles, and the University of Denver. (L. B. BA.)

-Men: *see* FEDERAL BUREAU OF INVESTIGATION.

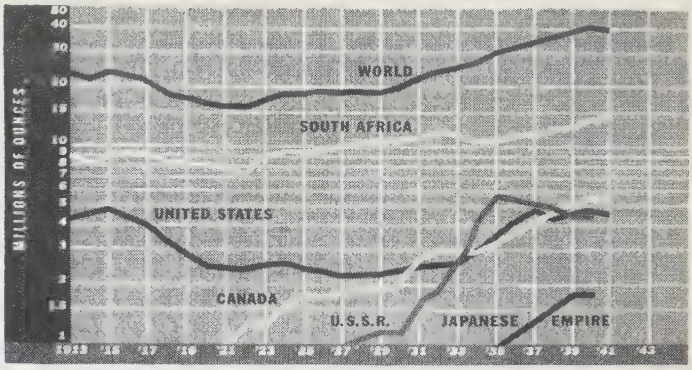
oering, Hermann Wilhelm (1893–), German reichsmarshal and statesan, was born at Rosenheim, Bavaria, on Jan. 12 and was comander of the famed Richthofen squadron in the German air rce during World War I after Richthofen's death. Goering was n early member of the nazi party and became air minister and inister of the interior in 1933 upon Hitler's accession to the ancellorship. (See *Encyclopædia Britannica.*) On July 19, 1940 itler conferred the newly created title of marshal of the reich n Goering. Goering, appointed head of the economics general aff on Jan. 4, 1940, had supreme control over Germany's ecoomic life.

As usual, Goering spent much time in 1941 at the various fightig fronts; in addition, he took over some of the diplomatic duties rmerly reserved to Hitler and Ribbentrop. On Jan. 11, 1941, oering said that the luftwaffe could do "one hundred to one ousand times more damage" than the R.A.F. During 1942 the .A.F. punctured this boast with raids on the reich, climaxed by e great 1,000-plane attacks on Essen and Cologne, that were r more destructive than any luftwaffe attack on England. Goerig thereafter slipped into relative obscurity, save for a speech n Oct. 4, 1942, when he assured his countrymen, fearful of nother winter campaign in Russia, that they would be fed, if ecessary, at the expense of the conquered nations.

old. Next to the decline in world production, the outstanding development of 1942 with respect to gold was the termiation of the eight-year rise in the gold reserves of the United tates, a phenomenon which had added no less than $18,701,00,000 to the U.S. monetary stocks.

When 1941 ended, U.S. gold reserves stood at $22,737,000,000; n Dec. 31, 1942, they stood at $22,726,000,000. In amounts as reat as these this decline of $11,000,000 is, of course, purely ominal, but any decline at all constitutes a striking contrast ith what occurred during the preceding eight years. The smallst net addition to U.S. gold stocks in any of these years was 742,000,000, recorded in 1941, while at the peak of the gold ovement to the United States, in 1940, the figure reached the rodigious total of $4,351,000,000. In 1934 the increase, at $4,02,000,000, was almost as large as that of 1940, but in the rmer year the rise was accounted for in large part by the official evaluation of the statutory price of gold from $20.67 an ounce o $35.

Monetary gold stocks are affected by four factors; namely, exorts, imports, gold newly mined in the United States and gold earmarked for the account of other countries. When gold is placed under earmark the effect is the same as if it had been exported, so far as gold stock is concerned; when gold is released from earmark the result is the same as if that much additional gold had been imported or produced by U.S. mines. Thus, in Table II, which shows the major changes in the gold stock of the United States from 1934 through Oct. 1942, a plus sign before the total of earmarked gold indicates a net release of the metal from earmark, and a minus sign a net increase in the amount under earmark.



GOLD PRODUCTION: world total and output of the principal producing countries, as compiled by *The Mineral Industry*

The United States, it will be seen from Table II, did not lose gold in 1942 through actual exports of the metal. The "loss" was a bookkeeping loss, and not a physical one, and was accounted for by earmarking gold for foreign account. No figures were available on the country's imports in 1942, but they could be computed approximately for the first ten months of the year. Earmarkings during that period amounted to $417,000,000 but domestic gold production and net imports, since they produced a net increase in the gold stock of $4,000,000, must have totalled $421,000,000. Since we know that domestic gold production was $111,000,000 this indicates that net imports must have been about $310,000,000.

The United States lost gold on balance in 1942 mainly because the countries debtor to it on lend-lease either had no gold to send or lacked the means of sending it, while the U.S. continued to make gold available to those having favourable trade balances. The data in 1942 were neither complete nor up to date as to the ownership of the gold placed under earmark, though it was fairly

Table I.—*Value of Gold Produced, 1900-42*

(In millions of old dollars, $20.67 an oz.)

Year	South Africa	Russia	Canada	U.S.A.	Australia	All others	Total
1900	6	20	28	79	73	48	254
1910	155	35	10	96	65	93	454
1915	186	27	19	99	48	89	468
1922	144	3	27	48	18	78	317
1929	215	21	40	46	12	71	403
1933	227	54	61	45	16	120	523
(In millions of new dollars, $35 an oz.)							
1934	367	135	104	94	30	228	958
1935	377	158	115	110	31	249	1,040
1936	396	185	131	130	40	275	1,157
1937	410	180	143	143	47	298	1,221
1938	425	184	165	151	54	337	1,316
1939	448	190	178	165	56	358	1,395
1940	492	140	186	210	56	335	1,419
1941	504	150	187	209	51	334	1,435
1942:							
Jan.	43	.	14	15	4*	13	89*†
Feb.	40	.	13	10	3*	10	76*†
March	43	.	15	11	4*	12	85*†
April	42	.	15	11	4*	10	82*†
May	43	.	15	11	4*	10	83*†
June	42	.	15	10	3*	11	81*†
July	43	.	15	12	3*	12	85*†
Aug.	41	.	14	10	3*	12	80*†
Sept.	41	.	14	11	3*	11	80*†
Jan.–Sept.	378	.	130	101	31*	101	741*†

*Preliminary.
†Production outside Russia.

Table II.—*Analysis of Changes In Gold Stock of the United States*

(In millions of dollars)

Period	Gold stock at end of period	Increase in gold stock	Net gold import	Ear-marked gold	Domestic gold production
1934*	8,238	4,202	1,134	+ 83	93
1935	10,125	1,887	1,739	.	111
1936	11,258†	1,133	1,117	—86	132
1937	12,760†	1,503	1,586	—200	144
1938	14,512	1,752	1,974	—334	149
1939	17,644	3,132	3,574	534	162
1940	21,995	4,351	4,745	—645	170
1941	22,737	742	982	408	169
1942:					
Jan.	22,747	11	‡	— 39	15
Feb.	22,705	—42	.	109	10
March	22,687	—17	.	— 66	11
April	22,691	3	.	— 20	11
May	22,714	24	.	— 38	11
June	22,737	22	.	— 15	10
July	22,744	8	.	— 24	12
Aug.	22,750	11	.	— 22	10
Sept.	22,754	— 1	.	— 28	12
Oct.	22,740	—14	.	+ 56§	10‖
Jan.–Oct.	22,740	4	.	—417	111

*Figures based on rate of $20.67 a fine ounce in Jan., 1934, and $35 a fine ounce thereafter.

†Includes gold in the inactive account.

‡Net gold import figures were not published in 1942.

§Gold under earmark for foreign account on Oct. 31, 1942, totalled $2,632,000,000.

‖Preliminary.

obvious that the Latin-American countries had been accumulating the metal because the United States had not been able to sell them goods in sufficient quantities to offset its imports from them. Evidence of this was to be seen in the fact that in the first ten months of 1942 Venezuela's gold reserves were up $23,000,000 while in the first nine months those of Brazil were up $12,000,000, Chile $6,000,000, Colombia $5,000,000 and Peru $3,000,000. Switzerland, Sweden and Turkey showed the largest increases in gold holdings, with Swiss holdings rising $140,000,000. Most of the increase in the case of Switzerland was at the expense of U.S. stocks, and much in the case of Sweden. It was not clear whether Turkey's acquisitions were from the United States or Germany. (*See* also EXCHANGE CONTROL AND EXCHANGE RATES.)

(E. H. Co.)

Production.—Each year since 1929 a new record high in world gold production has been announced, but this advance seems to have come to an end with 41,200,000 oz. in 1940. Although the publication of gold data was not suspended in any country, war conditions slowed down the distribution of information, so that it was scanty; definite information was lacking for 1941 from all of Asia and Europe, and from many of the less important producers elsewhere, but such data as were available indicated a reduction of output in 1941 to about 40,400,000 oz., South Africa and Canada were the only important sources not showing a decrease.

During the first half of 1942 production in South Africa was approximately at the 1941 level, but later months showed a slight decrease; the total for the year was expected to be about 200,000 oz. less than the 14,386,000 oz. of 1941.

Canadian production to the end of July 1942 was 2,915,500 oz., against 3,093,000 oz. in the same period of 1941, and 5,328,300 oz. for the full year 1941.

Nothing was received from Mexico after early in 1942, but the January–February total was 6% less than the average return of 1941, which in turn was 10% less than that of 1940.

In the United States the 1942 output was expected to show a heavy drop from that of 1941. While no late statistics were received, as early in 1942 as the end of the first quarter, production had dropped one-third below the corresponding level of 1941, and in October an order of the War Production board declared the mining of gold an industry "unessential" in the war program, and instructed that all mines be closed down in the shortest possible time, in order to make the manpower used in these mines available for use in mining operations more essential to the war pr gram. Small mines, treating less than 100 tons of ore monthl were exempted from the order, as were also mines that produce along with gold substantial amounts of other metals that are e sential to the war program. This order was expected to fre 3,000–4,000 miners for work considered more important, and seemed possible that some of the idle machinery might also b transferred to active mines. It was difficult to estimate to ju what extent this action would reduce the gold output of the cou try, but in 1940 apparently not more than 15% of the tot gold output was made in association with other metals, thoug this figure was expected to be increased to some extent by th exemption of small mines. (*See* also FEDERAL RESERVE SYSTEM MINERAL AND METAL PRICES AND PRODUCTION.) (G. A. Ro.)

Gold Coast: *see* BRITISH WEST AFRICA.

Golf. Within a month from the time that the Japanese attacke Pearl Harbor, the United States Golf association, gover ing body of the game, announced that championships held ann ally under its sponsorship would be discontinued for the duratio At the same time the association began to develop plans for orga izing the brotherhood of golfers as an auxiliary force to contribu to the nation's war effort.

A short time later, the War Production board announced th war conditions made necessary restrictions on the use of rubber the manufacture of golf balls. This, in turn, was followed by ban on the further use of steel in the manufacture of golf clu and eventually on the use of the metal for repairs and repla ment of parts.

Meanwhile the U.S.G.A. was undertaking a twofold plan utilizing interest in the game and facilities created as adjun thereof. First was the collection of funds for various organiz tions and services identified with the war effort, and the prom tion of the sale of war bonds and stamps. Second was the u of the thousands of clubhouses and courses throughout the cou try as recreation centres for men in the military services.

Full reports on the results of these efforts were not availa by the close of 1942. Various fund-raising plans were devised a recommended to clubs. It is not possible to detail them he but results from one such plan may be cited. This consisted three special holiday contests among club members, on Mem rial day, Independence day and Labour day. Proceeds from the tournaments netted more than $100,000, which was turned ov to the Red Cross. The Hale America tournament, played in C cago under the joint sponsorship of the U.S.G.A., the Professio Golfers' association and the Chicago District Golf associati netted more than $25,000, donated to U.S.O. and Navy Em gency Relief.

The Professional Golfers' association collaborated fully in t general plan, handling details for a large number of exhibiti matches, which saw dozens of wellknown amateurs taking pa These exhibitions brought back famous heroes of the game of decade and more ago, including Bobby Jones, Tommy Armo Walter Hagen and others, as well as links enthusiasts from t stage and screen, Bob Hope and Bing Crosby among them. was estimated that from all sources golf raised at least $1,000,0 for patriotic purposes, and promoted the sale of four to fi million dollars in war bonds.

Throughout the country, particularly where they were ne military concentrations, golf clubhouses and courses served recreation centres for men in uniform. Free driving ranges we constructed in many instances. More than 14,000 golf clubs we donated to men in the services along with many thousands golf balls.

The green section of the U.S.G.A. contributed a notable and valuable service in another way. Recognized for many years as a leading source of reliable information on the production of fine turf, this organization was helpful in producing satisfactory turf on flying fields.

Dr. John Monteith, director of the green section, was in 1942 a civilian employee of the army engineering corps.

While none of the championships sponsored by the U.S.G.A. was held, tournament competition of a major character was not wholly suspended. The Hale America Open tournament was in fact a kind of unofficial Open championship, attracting the outstanding amateurs and professionals, some of whom took part by grace of leaves or furloughs from their military organizations.

Top honours in this tournament went to golf's Mighty Atom, Ben Hogan, who won with a 72-hole total of 271, three strokes better than Jimmy Demaret and Mike Turnesa, who tied for second place. Hogan's total was the lowest ever scored in competition of such proportions, although it was generally conceded that the Ridgemoor Country club course, over which it was played, was less severe than courses usually named for the official Open championship.

The tournament contributed further to the tradition of finishing disappointments, which had characterized Open championships over the years. Smiling Jimmy Demaret was the victim this time. With only four holes of the final round remaining, Demaret was leading the field by 2 strokes and appeared the probable winner. However, a poor tee-shot at the 15th unnerved him, and he dropped five shots to Hogan over these last four holes.

The Professional championship was the other important competition, and carried the sanction of the Professional Golfers' Association. Played at the Seaview club of Atlantic City, it saw the crowning for the first time of Sam Snead as a national champion in the United States. Snead, who had suffered more than a few disappointments, won when he defeated Corporal Jim Turnesa in the final match by 2 and 1, after being 3 down at the end of the first round. Shortly after taking the title, he was inducted into the navy.

To a large extent, Corporal Turnesa, on furlough from Fort Dix, N.J., was the real hero of the tournament. Next to the youngest of six brothers famous in golf since Joe, the eldest, barely missed winning the Open championship at Columbus, O., back in 1926, the soldier entered this championship practically unheralded. However, he began by finishing a stroke back of the medalist, Harry Cooper, in the qualifying test. Then en route to his final-round meeting with Snead, he eliminated, among others, Ben Hogan and Byron Nelson, both popular favourites to win, defeating them on successive days.

For the third successive year, Ben Hogan won the Vardon trophy, emblematic of the year's best among professional golfers, and he also topped the field in total prize money. Hogan scored 400 points in the Vardon trophy race, with Byron Nelson second at 285 and Snead third with 255. In prize money, Hogan totalled $13,143. Nelson with $9,601 was second, while Snead was third with $8,078.

War restrictions imposed heavy hardships in the operations of golf clubs. Transportation was a difficult problem, and shortage of manpower made course upkeep a difficult problem. Many clubs were operating on a semi-public basis. In some instances entire club properties were taken over for military uses. Except for strictly club events, indications were for little or no competitive golf during 1943. (I. BN.)

Gonorrhoea: *see* VENEREAL DISEASES.

Göring, Hermann Wilhelm: *see* GOERING, HERMANN WILHELM.

Gortner, Ross Aiken

(1885–1942), U.S. biological chemist, was born March 20 near O'Neill, Neb. He earned degrees from Nebraska Wesleyan university, Toronto and Columbia. He joined the faculty at the College of Agriculture, University of Minnesota, as associate professor of soil chemistry in 1914. Later he became professor of agricultural biochemistry and chief of the latter department from 1917 until his death. Dr. Gortner worked on chemistry of cereals, the improvement of bread flours, and did special research on nitroso compounds, formation and chemistry of animal pigments, chemistry of embryonic growth, and soil analysis. In 1926, he became consultant of the chemical warfare service of the U.S. army.

Among his published works was a widely used textbook *Outlines of Biochemistry* (1929). He died in St. Paul, Minn., Sept. 30.

Government Departments and Bureaus.

The following are the leading officers of the more important government departments and bureaus of the United States. The date for the information is Jan. 1943.

Department or Bureau	*Name*	*Post*
Department of State	*Hull, Cordell	Secretary
	*Welles, Sumner	Under-Sec'y
Office of Foreign Relief and Rehabilitation Operations	Lehman, Herbert H.	Director
Department of the Treasury	Morgenthau, Henry, Jr.	Secretary
	Bell, Daniel W.	Under-Sec'y
Bureau of Comptroller of Currency	Delano, Preston	Comptroller
Treasurer of the U.S.	Julian, William A.	Treasurer
Bureau of Customs	Johnson, W. R.	Commissioner
Bureau of Internal Revenue	Helvering, Guy T.	Commissioner
War Department	*Stimson, Henry L.	Secretary
	Patterson, Robert P.	Under-Sec'y
General Staff	*Marshall, George C., Gen.	Chief of Staff
Services of Supply	*Somervell, Brehon, Lt. Gen.	Comm'd'g Gen.
Army Ground Forces	McNair, Lesley J., Lt. Gen.	Comm'd'g Gen.
Army Air Forces	*Arnold, H. H., Lt. Gen.	Comm'd'g Gen.
Department of Justice	*Biddle, Francis	Att'y-Gen.
Solicitor General	Fahy, Charles	Solic. Gen.
*Federal Bureau of Investigation	Hoover, J. Edgar	Director
Bureau of Prisons	Bennett, James V.	Director
Immigration and Naturalization Service	Harrison, Earl G.	Commissioner
*Post Office Department	Walker, Frank C.	Postm'r Gen.
Department of the Navy	*Knox, Franklin	Secretary
	Forrestal, J. V.	Under-Sec'y
Office of Commander in Chief, U.S. Fleet, and Chief of Naval Operations	*King, Ernest J., Adm.	Commander in Chief, U.S. Fleet, and Chief of Naval Operations
Bureau of Naval Personnel	Jacobs, Randall, Rear Adm.	Chief
Bureau of Ordnance	Blandy, W. H. P., Rear Adm.	Chief
*U.S. Marine Corps Headquarters	Holcomb, Thomas, Lieutenant Gen.	Commandant
*U.S. Coast Guard	Waesche, Russell R., Vice Adm.	Commandant
Department of the Interior	Ickes, Harold L.	Secretary
	Fortas, Abe	Under-Sec'y
General Land Office	Johnson, Fred W.	Commissioner
Office of Indian Affairs	Collier, John	Commissioner
Office of Solid Fuels Coordinator for War	Ickes, Harold L.	Coordinator
Office of Fishery Coordination	Ickes, Harold L.	Fishery Co-ordinator
Geological Survey	Mendenhall, W. C.	Director
*Fish and Wildlife Service	Gabrielson, Ira N.	Director
Bureau of Reclamation	Page, John C.	Commissioner
National Park Service	Drury, Newton B.	Director
Bureau of Mines	Sayers, R. R.	Director
Division of Territories and Island Possessions	Thoron, Benjamin W.	Director
Department of Agriculture	*Wickard, Claude R.	Secretary
	Appleby, Paul H.	Under-Sec'y
Agricultural Research Administration	Auchter, E. C.	Administrator
Bureau of Animal Industry	Mohler, John R.	Chief
*Bureau of Agricultural Chemistry and Engineering	Skinner, W. W.	Acting Chief
Bureau of Dairy Industry	Reed, Ollie E.	Chief
Bureau of Entomology and Plant Quarantine	Annand, P. N.	Chief
Office of Experiment Stations	Jardine, James T.	Chief
Bureau of Plant Industry	Salter, R. M.	Chief
Bureau of Home Economics	Stanley, Louise	Chief
Bureau of Agricultural Economics	Tolley, Howard R.	Chief
*Commodity Credit Corporation	Hutson, J. B.	President
Office for Agricultural War Relations	Bledsoe, Samuel B.	Director
Agricultural Extension Service	Wilson, M. L.	Director of Extension Work

*See separate article.

Department or Bureau	*Name*	*Post*
Food Distribution Administration	Hendrickson, Roy F.	Director
Agricultural Marketing Administration	Hendrickson, Roy F.	Administrator
Sugar Agency	Bernhardt, Joshua	Chief
Food Production Administration	Parisius, Herbert W.	Director
Agricultural Conservation and Adjustment Administration	Townsend, M. Clifford	Administrator
Agricultural Adjustment Agency	Wallace, Fred S.	Chief
Soil Conservation Service	Bennett, Hugh H.	Chief
Federal Crop Insurance Corporation	Smith, Leroy K.	Manager
Farm Credit Administration	Black, Albert G.	Governor
Farm Security Administration	Baldwin, C. B.	Administrator
Forest Service	Lyle, F. Watts	Chief
Office of Foreign Agricultural Relations	Wheeler, L. A.	Director
Rural Electrification Administration	Slattery, Harry	Administrator
Department of Commerce	*Jones, Jesse H.	Secretary
	Taylor, Wayne C.	Under-Sec'y
Bureau of the Census	Capt, James C.	Director
Bureau of Foreign and Domestic Commerce	Jones, Grosvenor M.	Acting Director
*National Bureau of Standards	Briggs, Lyman J.	Director
*Coast and Geodetic Survey	Colbert, Leo O.	Director
Civil Aeronautics Board	Pogue, L. Welch	Chairman
*Reconstruction Finance Corporation	Henderson, Charles B.	Chairman
War Damage Corporation	*Jones, Jesse H.	Chairman
*Export-Import Bank of Washington	Pierson, Warren L.	President
Patent Office	Coe, Conway P.	Commissioner
Weather Bureau	Reichelderfer, F. W.	Chief
Department of Labor	Perkins, Frances	Secretary
	Tracy, D. W.	Asst. Sec'y
U.S. Conciliation Service	Steelman, J. R.	Director
Bureau of Labor Statistics	Lubin, Isador	Commissioner
Children's Bureau	Lenroot, Katharine F.	Chief
Women's Bureau	Anderson, Mary	Chief
Wage and Hour and Public Contracts Divisions	Walling, L. Metcalfe	Administrator
Federal Security Agency	*McNutt, Paul V.	Administrator
Office of Education	Studebaker, John W.	Commissioner
Public Health Service	Parran, Thomas	Surgeon Gen.
Social Security Board	Altmeyer, Arthur J.	Chairman
Food and Drug Administration	Campbell, W. G.	Commissioner
*Federal Works Agency	Fleming, Philip B., Brig. Gen.	Administrator
Public Buildings Administration	Reynolds, W. E.	Commissioner
Public Roads Administration	MacDonald, Thomas H.	Commissioner
Public Works Administration	Gilmore, Maurice E., Col.	Commissioner
Work Projects Administration (in liquidation)	Fleming, Philip B., Brig. Gen.	Acting Commissioner
Independent Offices		
*Federal Communications Commission	Fly, James L.	Chairman
*Federal Deposit Insurance Corporation	Crowley, Leo T.	Chairman
Federal Power Commission	Olds, Leland	Chairman
*Federal Reserve System, Board of Governors of the	Eccles, Marriner S.	Chairman
Federal Trade Commission	Ayres, William A.	Chairman
*Government Printing Office	Giegengack, A. E.	Public Printer
*Interstate Commerce Commission	Aitchison, Clyde B.	Chairman
Library of Congress	MacLeish, Archibald	Librarian of Congress
National Advisory Committee for Aeronautics	Hunsaker, Dr. Jerome C.	Chairman
National Capital Park and Planning Commission	Grant, U. S., III, Brig. Gen.	Chairman
*National Labor Relations Board	Millis, Harry Alvin	Chairman
National Mediation Board	Cook, George A.	Chairman
Railroad Retirement Board	Latimer, Murray W.	Chairman
*Securities and Exchange Commission	Purcell, Ganson	Chairman
Tax Court of the United States	Murdock, J. Edgar	Chairman
*Smithsonian Institution	Abbot, C. G.	Secretary
*Tennessee Valley Authority	Lilienthal, David E.	Chairman
*The National Archives	Buck, Solon J.	Archivist
U. S. Civil Service Commission	Mitchell, Harry B.	President
U. S. Employees' Compensation Commission	Swofford, Mrs. Jewell W.	Chairman
U.S. Maritime Commission	*Land, E. S., Rear Adm.	Chairman
U.S. Tariff Commission	Ryder, Oscar B.	Chairman
*Veterans Administration	Hines, F. T., Brig. Gen.	Administrator
Executive Office of the President		
Bureau of the Budget	Smith, Harold D.	Director
National Resources Planning Board	Delano, Frederic A.	Chairman
Emergency War Agencies		
*Office for Emergency Management	Coy, Wayne	Liaison Officer
*Board of War Communications	Fly, James L.	Chairman
*National War Labor Board	Davis, William H.	Chairman
Office of Alien Property Custodian	Crowley, Leo T.	Custodian
Office of Civilian Defense	Landis, James M.	Director
Office of the Coordinator of Inter-American Affairs	Rockefeller, Nelson A.	Coordinator
*Office of Defense Health and Welfare Services	*McNutt, Paul V.	Director
*Office of Defense Transportation	*Eastman, Joseph B.	Director
Office of Economic Stabilization	*Byrnes, James F.	Director
*Office of Lend-Lease Administration	Stettinius, E. R., Jr.	Administrator
*Office of Scientific Research and Development	Bush, Dr. Vannevar	Director
*Office of War Information	*Davis, Elmer	Director
*War Manpower Commission	*McNutt, Paul V.	Chairman
*National Youth Administration	Williams, Aubrey	Administrator
Bureau of Selective Service	*Hershey, Lewis B., Maj. Gen.	Director
*War Production Board	*Nelson, Donald M.	Chairman
	*Batt, William L.	Vice Chairman
	*Eberstadt, Ferdinand	Program Vice Chmn.
	*Wilson, C. E.	Production Vice Chmn.
Planning Committee	Nathan, R. R.	Chairman
Office of Rubber Director	*Jeffers, William M.	Director
*Office of Production Research and Development	Davis, Harvey N.	Director
†Smaller War Plants Corporation	Holland, Lou	Chairman
Requirements Committee	*Eberstadt, Ferdinand	Chairman
War Relocation Authority	Myer, Dillon S.	Director
War Shipping Administration	*Land, E. S., Rear Adm.	Administrator
*Board of Economic Warfare	*Wallace, Henry A.	Chairman
*National Housing Agency	Blandford, John B., Jr.	Administrat
Federal Home Loan Bank Administration	Fahey, John H.	Commission
Home Owners' Loan Corporation	Cotter, Charles F.	General Manager
Federal Housing Administration	Ferguson, A. H.	Commission
Federal Public Housing Authority	Emmerich, Herbert	Commission
Office of Censorship	Price, Byron	Director
*Office of Price Administration	Brown, Prentiss M.	Administrat
Petroleum Administration for War	Ickes, Harold L.	Administrat
	Davies, Ralph K.	Deputy Administrator
President's War Relief Control Board	Davis, Joseph E.	Chairman
Quasi-Official Agencies		
*American National Red Cross	Davis, Norman H.	Chairman
*Pan American Union	Rowe, L. S.	Director General
*National Academy of Sciences and National Research Council	Jewett, Frank B.	President, National Academy Sciences
	Harrison, Ross G.	Chairman, National Research Council

Great Britain.—The following were His Majesty's chief of cers of state and the chief permanent officials of the more ir portant of the government departments of Great Britain at t close of 1942:

Ministry or Department	*Name*	*Post*
Admiralty, The Board of	A. V. Alexander	First Lord
	Sir Henry Markham	Permanent Secretar
Agriculture and Fisheries	R. S. Hudson	Minister
	Sir Donald Fergusson	Permanent Secretar
Aircraft Production	*Sir Stafford Cripps	Minister
	Sir Archibald Rowlands	Permanent Secretar
Air Ministry	*Sir Archibald Sinclair	Secretary of State
	Sir Arthur Street	Perm'nt Under-sec'y
Assistance Board	Lord Soulbury	Chairman
	Sir George T. Reid	Secretary
Burma Office	L. S Amery	Secretary of State
	Sir David T. Monteath	Perm'nt Under-sec'y of State
Cabinet Office	Sir Edward Bridges	Secretary
Civil Service Commission	A. P. Waterfield	1st Commissioner
Colonial Office	Oliver Stanley	Secretary of State
	Sir George Gater	Perm'nt Under-sec'y
Commissioners of Crown Lands	The Minister of Agriculture and Fisheries (*ex-officio*)	Commissioner
	O. S. Cleverly	Perm'nt Commissio
Crown Agents for the Colonies	Sir W. Cecil Bottomley	
	H. C. Thornton	
Customs and Excise, Board of	Sir Archibald Carter	Chairman
Dominions Office	*C. R. Attlee	Secretary of State
	Sir Eric Machtig	Perm'nt Under-sec'y
Duchy of Lancaster	A. Duff Cooper	Chancellor
Economic Warfare, Ministry of	Earl of Selborne	Minister
	Earl of Drogheda	Director-General
Education, Board of	R. S. Butler	President
	Sir Maurice Holmes	Permanent Secretar
Food, Ministry of	*Lord Woolton	Minister
	Sir Henry L. French	Secretary
Foreign Office	*Anthony Eden	Secretary of State
	Sir Alexander Cadogan	Perm'nt Under-sec'y
Fuel and Power, Ministry of	Gwilym Lloyd George	Minister
	Sir Frank N. Tribe	Secretary
Health, Ministry of	Ernest Brown	Minister
	Sir John Maude	Secretary
Home Office and Ministry of Home Security	Herbert Morrison	Secretary of State
	Sir Alexander Maxwell	Perm'nt Under-sec' Home Office
	Sir Harold Scott	Secretary, Ministry Home Security
India Office	L. S. Amery	Secretary of State
	Sir D. T. Monteath	Acting Perm'nt Und sec'y
Information, Ministry of	Brendan Bracken	Minister
	C. J. Radcliffe	Director-General
Inland Revenue, Board of	Sir Cornelius J. Gregg	Chairman
Labour and National Service, Ministry of	*Ernest Bevin	Minister
	Sir T. W. Phillips	Secretary
Lord Chancellor	Viscount Simon	Lord Chancellor
Lord Privy Seal	Viscount Cranborne	Lord Privy Seal
Minister without Portfolio	Sir William Towitt	(Dealing with post reconstruction)
Minister of State (Cairo)	R. G. Casey	
Deputy Minister of State (Cairo)	Lord Moyne	
Minister Resident in W. Africa	Viscount Swinton	
Minister Resident in N.W. Africa	Harold Macmillan	
Minister Resident in Washington	J. J. Llewellin	
Paymaster-General's Office	Lord Cherwell	Paymaster-General
	L. Cuthbertson	Asst. Paymaster-ge
Pensions, Ministry of	Sir Walter Womersley	Minister
	Sir A. Cunnison	Permanent Secretar
*Post Office	Capt. H. F. C. Crookshank	Postmaster-general
	Sir Thomas Gardiner	Director-general
Privy Council Office	Sir John Anderson	Lord President
	E. C. E. Leadbitter	Clerk of the Counci

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*See separate article.

†Although the Smaller War Plants corporation is not organizationally a part of the Production board, its board of directors is appointed by the chairman of the Production board, who reports operations of the corporation directly to the presi and the congress.

Ministry or Department	*Name*	*Post*
oduction, Ministry of . . .	Oliver Lyttelton	Minister
	Sir Henry Self	Permanent Secretary
ottish Office.	Thomas Johnston	Secretary of State
	Sir Horace P. Hamilton	Under-sec'y of State
pply, Ministry of	Sir Andrew Rae Duncan	Minister
	Sir William Douglas	Permanent Secretary
ade, Board of	Hugh Dalton	President
	Sir Frederick Leith-Ross	Chief Economic Adviser to H. M. Govt.
	Sir Arnold E. Overton	Permanent Secretary
easury	*Winston Churchill	Prime Minister, First Lord and Minister of Defense
	Sir Kingsley Wood	Chancellor of the Exchequer
	Sir Richard V. N. Hopkins	Permanent Secretary and Head of H.M. Civil Service
ır Office	Sir James Grigg	Secretary of State
	Sir F. C. Bovenschen E. B. B. Speed	Joint Perm'nt Under-sec'ies
ır Transport, Ministry of .	Lord Leathers	Minister
	Sir Cyril W. Hurcomb	Director-General
›rks and Planning, Ministry of	Lord Portal	Minister
	Sir Geoffrey Whiskard	Permanent Secretary

*See separate article.

overnment Expenditures: *see* BUDGETS, NATIONAL.

overnment Printing Office: *see* PRINTING OFFICE, U.S.)VERNMENT.

overnment Receipts: *see* BUDGETS, NATIONAL.

overnors and Premiers, British: *see* BRITISH EMPIRE.

rain: *see* BARLEY; CORN; OATS; RICE; RYE; WHEAT.

ranite: *see* STONE.

ant, Elihu

(1873–1942), U.S. educator and archaeologist, was born July 12 in Stevensville, Pa. He re- ved his Ph.D. and S.T.B. degrees from Boston university, and ile still a student pastor was ordained in the Methodist minis- y in 1900. The next year, he left for Jerusalem to take up the st of superintendent of the American Friends schools. He re- ned home to resume his calling as Methodist pastor, but in 07 joined Smith college as associate professor of Biblical liter- ıre. His other academic posts included professorship of Biblical erature at Haverford college, 1917–38, and directorship of the ıverford college graduate school, 1923–27. Dr. Grant's most ıtable work in the field of archaeology was carried out with the ıverford college expedition at Beth Shemesh, ancient Palestin- ı city, 1928–33. He wrote several volumes on ancient and mod- ı Palestine and on the work of the expedition. Dr. Grant died New York city, Nov. 2.

apefruit.

Production of grapefruit in the United States in 1942 was estimated by the department of riculture as 45,533,000 boxes compared with 40,294,000 boxes in 41 and a ten-year (1930–39) average of 24,383,000 boxes, produced in four states—Florida, Texas, California and izona. Grapefruit juice underwent wartime restrictions Jan. 5, 43, when Food Administrator Claude R. Wickard ordered the tput and canners' supplies of all fruit juices frozen. The order l not apply to retail and wholesale stocks of grapefruit juice. ickard said the action was taken to insure civilian supplies of nned grapefruit juice when supplies of fresh citrus fruits were v. More than half the supply of canned grapefruit juice, he d, would be available for consumers, but the entire production other citrus juices would be reserved for military and lend-lease quirements.

U.S. Production of Grapefruit by States, 1942 and 1941

State	1942 boxes*	1941 boxes*	State	1942 boxes*	1941 boxes*
lorida			California		
Seedless.	8,000,000	7,000,000	Desert Valleys.	1,320,000	1,343,000
Other varieties.	15,600,000	12,200,000	Other varieties.	1,358,000	1,801,000
exas.	16,600,000	14,500,000	Arizona.	2,655,000	3,450,000

Net contents of boxes of grapefruit are 60 lb. in California; in Florida and other tes, 80 lb. (S. O. R.)

Grapes.

The 1942 grape crop in the United States was estimated by the department of agriculture as 2,531,530 tons, 7% less than the 1941 production of 2,728,330 tons, but 13% above the ten-year (1930–39) average of 2,246,271 tons. The California crop of raisin varieties, 1,326,000 tons, was well above the average of 1,157,200 tons, but less than the 1941 crop of 1,516,000 tons. The large 1942 raisin pack was believed sufficient to assure normal supplies to U.S. civilians, although large quantities of raisins were being sent to the armed forces and to lend-lease destinations. California production of raisin grapes in 1942 was 263,000 tons dried and 274,000 tons not dried. (One ton of dried raisins is equivalent to about 4 tons of fresh grapes.) The 1942 crop of wine grapes in California was 537,000 tons compared with 549,000 tons in 1941 and an average of 487,700 tons; table varieties, 437,000 tons in 1942 as against 482,000 tons in 1941 and an average of 345,900 tons.

U.S. Production of Grapes in Leading States, 1942 and 1941

State	1942 tons	1941 tons	State	1942 tons	1941 tons
California .	2,300,000	2,547,000	New Jersey . . .	2,600	2,500
New York. . . .	69,600	47,600	Texas.	2,200	2.400
Michigan	35,400	26,700	Georgia.	2,130	1,880
Ohio . . .	22,400	14,800	Kentucky	1,990	2,410
Pennsylvania . .	21,500	12,500	Virginia.	1,900	1,700
Washington . . .	14,900	12,800	Oregon	1,800	1,700
Arkansas . .	8,400	10,700	South Carolina. .	1,390	1,230
Missouri	7,200	7,700	Alabama	1,370	1,440
North Carolina .	6,400	5,800	West Virginia . .	1,350	880
Illinois	4,300	4,300	Delaware	1,200	1,200
Iowa	3,200	2,400	Connecticut . . .	1,120	1,100
Oklahoma. . . .	3,100	3,100	New Mexico. . .	890	890
Kansas	2,900	2,100	Utah	680	800
Indiana. . . .	2,800	2,800	Arizona	680	770
Tennessee. . . .	2,660	2,990	Florida	620	530

(S. O. R.)

Graphite.

There was little graphite production in the United States after World War I, but the possibility of insufficient supplies of imported material led to some revival in the industry. One plant was put into operation in northern New York, another in Coosa county, Ala., and there was a small output from Rhode Island; in addition, plans were under way for the re-opening of former operations in Chester county, Pa., and near Burnet, Tex. Imports of graphite increased from 31,529 short tons in 1940 to 29,583 tons in the first nine months of 1941. About 10% of past imports were from Chosen, which was in 1942 out of the market, but developments in the eastern area improved the chances of maintaining supplies from Ceylon and Madagascar. Imports from Mexico, which furnished about one-half of the imports, showed a heavy increase in 1941.

Efforts were made to establish new production in Brazil, Portuguese East Africa and South Africa. (G. A. Ro.)

Gravel: *see* SAND AND GRAVEL.

Great Britain & Northern Ireland, United Kingdom of.

This comprises the main island of Great Britain, with numerous smaller islands off the English and Scottish coasts, and the six northeastern counties of Ireland. It is a constitutional monarchy, with a king and a parliament of two houses. Flag, the Union Jack, consisting of a red cross on a white field (for England), surcharged on a diagonal white field (for Ireland), surcharged in turn on a diagonal white cross on a blue field (for Scotland). Ruler: King George VI (*q.v.*); premier in 1942 (since 1940): Winston S. Churchill (*q.v.*); established church: Protestant Episcopal.

Area and Population.—Area 93,991 sq.mi.; pop. (est. Dec. 31, 1939) 47,735,000 (England and Wales 41,417,000). Chief towns (pop. est. June 30, 1938): London (cap.), city and metropolitan

ENTRANCE HALL to one of the eight "super-shelters" constructed in London in 1942. Each shelter has two main twin tunnels about 1,200 ft. long and can accommodate more than 8,000 people

police districts, 8,700,000; city and metropolitan boroughs only, 4,062,800; Glasgow (June 30, 1939), 1,131,500; Birmingham, 1,041,000; Manchester (including Salford), 932,300; Liverpool, 827,400; Sheffield, 520,000; Leeds, 494,000; Edinburgh (June 30, 1939), 473,200; Belfast (Jan. 1, 1939), 443,500; Bristol, 415,000; Hull, 318,700.

History.—The history of the war effort behind the lines in Great Britain—such a country had very little other history in 1942—can best be studied against the background of the war itself (*see* WORLD WAR II). British industrial production attained in 1942 a far higher level than ever before in history; it encroached much further on all other forms of production and reached a larger percentage of the national income than in any other belligerent country except possibly Germany and the U.S.S.R. In fact, the pressure on Britain's resources of manpower and womanpower was rapidly approaching its attainable maximum, and on Aug. 2 the government appealed to all Britons in the U.S.A. to return home to help in the war effort.

Two-thirds of the population between the ages 14 and 65 were enrolled in whole time service in industry, in the forces, or in civil defense. Of those in industry a large proportion were women, of whom there were 5,500,000 in factories. Strikes caused the loss of less than one hour a worker a year.

Some output figures were given by Oliver Lyttelton, minister of production, in the summer of 1942. At that time Great Britain was producing more than 250,000 mechanical vehicles of all kinds in a year and guns—two-pounders and upwards—at the rate of 60,000. Production of aircraft calculated by weight had increased nearly 2½ times in 18 months, and the output of shipyards 57% in the same period. Later, Albert Alexander, first lord of the admiralty, stated that the merchant shipbuilding tonnage production had far outstripped that of the first three years of World War I, while at the same time the very heavy naval losses had been replaced and in certain categories new additions had been made. (*See* SHIPBUILDING.)

Side by side with quantity production the problem of quality production was being seriously tackled. New, faster and more powerful torpedo-carrying aircraft came into production in March, and after the midsummer reverses in Libya, Lyttelton announced the development of much more powerful cruiser and infantry tanks, heavily armoured, as well as of specialized anti-tank weapons far more powerful than the six-pounders which had themselves been an industrial achievement. In certain lines Britain's outstanding successes in output remained unsurpassed, notably in the quality of fighter aircraft, the manufacture of the fastest bombers, and in the development of radio-location, the only decisive weap of war deserving to be called a new "secret weapon."

In order to release manpower for the war effort as well as conserve valuable supplies, further stringent cuts—"austeri measures—were made in civilian consumption. No white bread fancy breads were allowed after April 6; in restaurants the sc of dishes offered and prices charged were strictly regulat "utility" garments designed to save both material and workm ship were widely distributed, and clothing consumption was duced by a 25% cut in coupons. Later furniture and other hou hold necessities were produced on "utility" lines while manufacture of many luxury goods was prohibited altogether a Aug. 1. With the abolition in July of the small basic ration petrol, pleasure motoring ceased. The maximum penalty for bl market offenses was raised to 14 years' penal servitude plus fi that might equal illicit profits.

A measure deeply affecting many business people was the ste concentration of the different trades, involving in many ca the closing down of works or places of business or their use some other aspect of the war effort. It was arranged, howe that the closed works were to be compensated by those remain open. Rationalization of retail distribution was also effec and in the case of dairymen resulted in the consumer being longer free to choose a particular milkman.

Except for milk, which was in short supply during the wi months, food was ample enough during 1942. Though more a cles of food came under control, the "points" rationing system g opportunities for a wider range of choice within prescribed qu tities. Fresh fruits and vegetables were plentiful in the sum and autumn and the harvest, so critical a factor in 1942, good. (*See* AGRICULTURE: *British Empire.*)

In spite of three years of war conditions and a reduction in medical and nursing services available to the general public, health of the nation was fully maintained. Nutrition was pla on a new basis, immunization against disease, especially diph ria, advanced far, and steps were taken to deal with typhus malaria should these diseases gain entry into the country. Th were fewer mental cases. The situation in respect to tubercul was, however, not so satisfactory. There had been a real incre in deaths since the start of World War II, especially among c dren suffering from tubercular meningitis. Another disquie feature was a sharp rise, up to 70%, in the incidence of vene disease. An intensive campaign of enlightenment and preven was undertaken.

In the spring the imminent threat of a serious coal shortage to a government proposal to ration all fuels, but such opposition was encountered over the practical application of cheme that an effort to bridge the gap between production and onsumption was made both by speeding up output at the mines nd by educating the public to exercise the strictest economy. See Coal.)

The coal shortage, the need for conserving gasoline, rubber and ther commodities, and military and industrial priority requireents greatly reduced the volume of transport available to the eneral public in 1942, and while extra trains were being run for orkers and some bus undertakings were carrying 80% to 100% ore passengers, the non-essential rail and road services were reuced to a minimum.

Armed Forces and Home Defense.—Throughout 1942, preparaons to meet the threat of invasion or of a new bombing offensive ontinued. Despite the dispatch of large armies overseas a conderable number of troops remained in Britain, some—the less fit—permanently assigned to home defense, others still in training. Vith a view to raising the standard of officers, those over 45 who iled to reach a requisite standard of efficiency were retired. or the ranks a new system of adult education comprised a four onths' course of instruction on Great Britain, the empire, the lied nations and economic geography. Monetary post-war credits ere introduced, and on Sept. 11 the financial position of junior ficers up to but not including the rank of captain was improved y a more rapid system of promotion, while all other ranks reived an increase in basic pay to 7*s.* instead of 3*s.*6*d.* a week for en and 2*s.*4*d.* for women. In both cases allowances for children ere increased. A proclamation on Oct. 22 made men who had ached 18 that day liable to be called up. Those who had reached between July 1 and Sept. 30 registered on Nov. 7. This did not fect the minimum age, 19, at which men were posted for service broad. A proclamation of March 5 had already extended the Naonal Service act to men of between 41 and 45. An important velopment was the formation of an R.A.F. regiment for the dense of aerodromes.

Many new contingents arrived from Canada during 1942, and om June onwards United States forces were in Britain as well as Northern Ireland. One of the biggest emergency tasks ever ndertaken by British builders was the rapid construction of aeroomes, camps and port facilities for these forces. By a bill ssed in the house of commons on Aug. 4, U.S. troops became bject to their own courts martial and not to British civil courts all criminal charges.

Certain military districts in Britain were permanently barred the public. Other areas were banned in the summer to all but sidents and their close relatives. Invasion committees were set in many districts, while a defense regulation made all civilians danger areas liable for labour but not for military service in e event of an invasion. Compulsory fire guard was extended to omen between the ages of 20 and 45. The Home Guard was ought within the conscriptional system, and liaison with the vilian defense service was greatly improved.

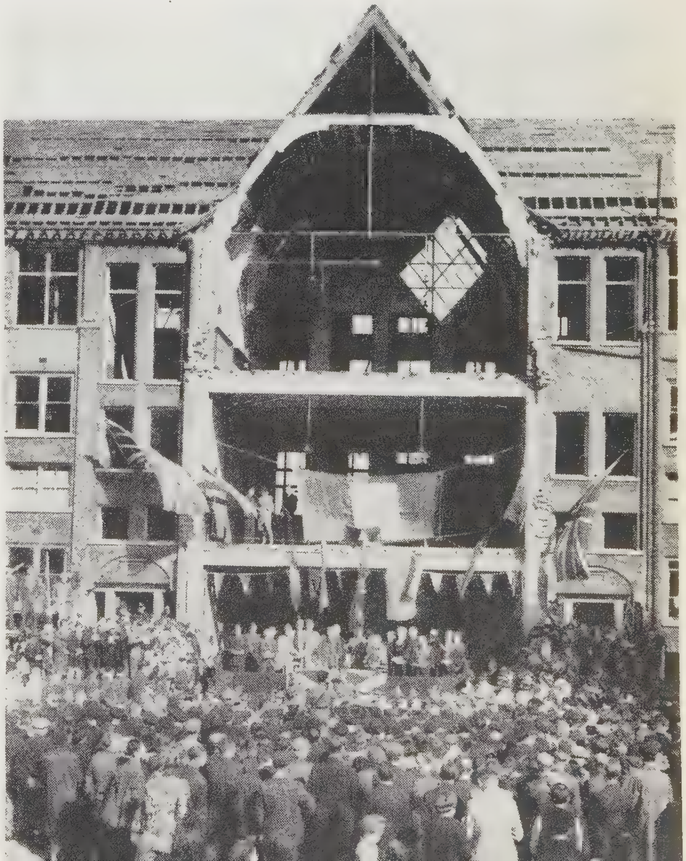
Air Raids.—Enemy activity over Britain was less than in 1941. here were "hit and run" raids on coastal areas and on a few innd towns, and in April "reprisal" raids for the British attacks Rostock and Luebeck damaged historic buildings in Norwich, xeter, Bath and York. Further reprisals after the shattering ids on Cologne and Essen in which more than 1,000 R.A.F. ombers took part were aimed at Canterbury and "Ipswich port." hese "Baedeker raids" were conducted for the most part by nall numbers of bombers whose percentage losses were high, and vilian casualties were not heavy.

Parliament.—Inevitably parliamentary proceedings during 1942 ere largely determined by the course of the war. Legislation as mainly concerned with vigorous prosecution of the war, with atters affecting the services and with the regulation of civilian activities. Many important war debates took place. At the first of these, beginning on Jan. 27, shortly after his return from the U.S.A. Churchill asked for a vote of confidence and received the reassuring majority of 464 to 1. Nevertheless the house of commons was critical and in February he re-organized his government, still retaining for himself the offices of prime minister, minister of defense and first lord of the treasury. The loss of Singapore evoked many demands for a full-dress enquiry, but after Gen. Bennett's report had been received it was announced that an investigation would not be in the best interests of the conduct of the war. A full debate on the campaign in Libya was, however, held on July 1 in both houses, and once more the house of commons re-affirmed its confidence in the government, this time by defeating a vote of censure moved by Sir John Wardlaw Milne, a conservative member, by 476 to 25.

All through 1942 a necessary veil of censorship was drawn over one of the major issues of the war, the shipping situation, which was debated in both houses on July 16 in secret session. For public consumption Churchill announced in February that following the Japanese entry into the war losses had been heavy, and in March that the battle of the Atlantic, after having been markedly in British favour for five to six months, had temporarily worsened. July and August proved, however, to be the most successful months in U-boat destruction, with new methods of combat developing and new devices in action, and shipping losses for August and September were the least since January.

The problem of the future status of India was one of the most discussed topics during 1942, and it was with the deepest regret that both houses learned of the non-acceptance by Indian leaders of the proposals put forward by the British government in the Draft Declaration of Discussion. In many subsequent pronouncements and again in the address from the throne on the opening of the new session of parliament Nov. 11, Britain's desire for the independence of India within the framework of the British Commonwealth of Nations was re-affirmed. It was made amply

THE SECOND ANNIVERSARY of the battle of Britain was observed on the site of a bombed school in East London in Sept. 1942



clear that the door still remained open for negotiation. (*See* INDIA.) Events and future developments in the colonial empire were also under discussion, and on June 24 a vigorous debate took place in the house of commons on the best means of carrying out Britain's declared policy of preparing the colonial people for self-government and full partnership in the British empire. Then and later the formation of a Colonial Development board, with statutory rights and adequate funds, was pressed as a means of expediting the process. On Oct. 21 General Smuts, premier of South Africa, addressed a joint assembly of both houses.

On Nov. 23 the prime minister announced ministerial changes and again re-organized his cabinet. (*See* CABINET MEMBERS; PARLIAMENT, HOUSES OF.)

The Budget and Finance.—In presenting the budget on April 14, Sir Kingsley Wood stated that the maintenance of stable prices during the previous financial year had cost the exchequer £125,000,000, and would probably cost more during the succeeding year. The estimated taxes on the existing basis of taxation fell short of the revenue target by £150,000,000, and therefore new duties on tobacco, spirits, wines and beer, and the doubling of the entertainments tax and the purchase tax were introduced to meet the deficit. The income tax, which in 1942 had reached the basic rate of 10*s.* in the pound, with super-tax rising in the highest ranges to 19*s.* 6*d.*, was unchanged except for a small concession to married women, raising the maximum allowance on their earnings from £45 to £80. This budget, with its twofold purpose of raising revenue and decreasing consumption, was approved as likely to aid the government's policy of avoiding inflation by restricting consumption and increasing savings. By Nov. 22, over £4,500,000,000, including £1,000,000,000 from war weapons and warships weeks, had been invested in national savings.

On Oct. 20, the chancellor of the exchequer asked for a further note of credit of £1,000,000,000, making a total of £12,050,000,000 since the beginning of the war. The daily average expenditure on the war by October had risen to £12,750,000,000.

Foreign Relations.—Greater unity among the allied powers was heralded by a joint declaration in Washington on Jan. 1, 1942, of common aims and purposes and a further joint declaration in London on Jan. 13 emphasizing Germany's war guilt and the intention that all infringements of international law and barbarous acts committed by the axis powers should be duly punished. Feeling on this subject intensified with fresh revelations of "terrible reprisals of unbelievable bestiality" against the peoples of occupied Europe, of Japanese atrocities at Hongkong and Singapore, and of the manacling of prisoners taken at Dieppe.

Relations between Britain and the U.S.A. were considerably strengthened by a continual exchange of visits for consultation purposes between statesmen, service chiefs and technicians. Winston Churchill was in Washington in Dec. 1941 and again in June 1942. From the latter visit to President Roosevelt resulted, it was later revealed, preparations for the North African campaign of Nov. 1942. From the former came plans for the complete co-ordination of the allied effort regarding munitions assignments, shipping adjustments and raw materials. On Feb. 23 the Lend-lease agreement was signed. On June 9 the formation of an Anglo-American combined production and resources board and an Anglo-American food board were announced. In September an exchange of notes set out in full the principles of reciprocal aid in the prosecution of the war against aggression, while later an exchange of inventions was arranged. On March 10 an Anglo-American commission to strengthen social and economic cooperation in the Caribbean outposts was established.

Further steps towards close rapprochement with the U.S.S.R. (*q.v.*) were also significant. Aid to that country was so steadily maintained that in May Clement Attlee, deputy prime minis
was able to announce that in spite of her own crying needs B
ain had fulfilled all her promises as regards war materials.
route through Iran was developed ahead of schedule, and in J
Britain granted a further credit of £25,000,000 to Russia for
purchase of supplies. On Nov. 12 came the news that in
year ended Sept. 1942 Britain and the U.S.A. had dispatched
the costly northern route 3,052 aircraft; 4,084 tanks; 831,
tons of miscellaneous supplies including machine tools and
materials; 30,031 vehicles; 42,000 tons of aviation fuel,
66,000 tons of fuel oil.

Aid to China by Britain became difficult after the loss of
Burma road, but a large loan for war purposes was offered
the Chinese government in February. In October Britain
the United States undertook to relinquish all extra-territo
rights in China.

Relations with other friendly powers were marked by the s
ing of the Anglo-Soviet-Iranian treaty (*see* IRAN); of an ag
ment and military convention with the emperor of Ethiopia (
ETHIOPIA); and of agreements with the Greek prime mini
and the Netherlands foreign minister respectively over the
and status of their armed forces. Notes exchanged with the Cz
government made it clear that H.M. government would not
influenced in any post war settlement by frontier changes effec
since 1938. (D. C. So.; X.

Education.—In 1937–38: elementary, England and Wales—
partments under separate head teachers 29,988, scholars
register 5,150,874; elementary, Scotland—schools 2,895, scho
617,047; elementary, Northern Ireland—schools 1,700, scho
191,862; secondary, England and Wales—grant-aided sch
1,398, scholars 470,003; secondary, Scotland—grant-aided sch

Table I.—*Estimated Revenue and Expenditure 1942-1943*

ESTIMATED REVENUE 1942–43

	£	£
Income Tax	913,000,000	
Surtax	78,000,000	
Estate Duties	90,000,000	
Stamps	15,000,000	
National Defense Contribution and Excess Profits Tax	425,000,000	
Other Inland Revenue Duties	1,000,000	
Total Inland Revenue		1,522,00
Customs	438,295,000	
Excise	366,705,000	
Total Customs and Excise		805,00
Motor Vehicle Duties		34,00
Canadian Govt. Contribution		225,00
Post Office (net receipt)		10,00
Crown Lands		80
Wireless Licences		4,30
Receipts from Sundry Loans		5,00
Miscellaneous		21,00
Total Ordinary Revenue		£2,627,10

ESTIMATED EXPENDITURE 1942–43

	£
Interest and Management of National Debt	325,00
Payments to Northern Ireland	9,50
Miscellaneous Consolidated Fund Services	7,80
Total	342,30
Supply Services	
Defense (token votes*)	4
Civil	
Central Government and Finance	2,78
Foreign and Imperial	13,883
Home Department, Law and Justice	20,781
Education	79,483
Health, Labour, Insurance (inc. Old Age and Widows' Pensions)	182,63
Trade, Industry and Transport	18,956
Works, Stationery, etc.	14,242
War Pensions 1914–18, and Civil Pensions	40,117
Exchequer Contributions to Local Revenues	52,773
Unclassified Services*	2
	425,65
Votes of Credit	4,500,00
Tax Collection—Customs and Excise and Inland Revenue votes (inc. Pensions £1,392,000)	18,519
	£4,944,17
Total Ordinary Expenditure	£5,286,47

*Substantive cost to be met from votes of credit.

able II.—*Overseas Trade, Showing the Variations in the First Eight Months (Jan. 1–Aug. 31) of Each of the Years 1937–40*

(in million £)

	1937	1938	1939	1940
Imports	654.4	616.5	605.9	792.9
Exports	341.4	306.9	313.6	312.6
Re-exports	54.2	42.4	36.3	22.6
Total Exports	395.6	349.3	349.9	335.2

52, scholars 156,645; secondary, Northern Ireland—grant-aided chools 75, scholars 14,557; universities, students: England 41,707 full time, 36,378); Wales 3,089 (full time, 2,970); Scotland 10,84 (full time, 9,841); Northern Ireland 1,590 full-time students.

Banking and Finance.—Revenue, ordinary (est. 1941–42) 1,786,360,000; (actual, 1941–42) £2,074,057,000; (est. 1942–43) 2,627,100,000. Expenditure, ordinary (est. 1941–42) £4,206,57,000; (actual, 1941–42) £4,775,694,000; (est. 1942–43) £5,86,479,000. Revenue, actual (April 1–Sept. 30, 1942) £1,163,50,400; expenditure, actual (April 1–Sept. 30, 1942) £2,594,24,000. Public debt (national) March 31, 1942, £14,070,300,000. Exchange rate 1942, £1 = 403.5 cents.

Trade and Communications.—Overseas trade in million £: Imports, merchandise (1939) £885.5; (1940) £1,099.9; exports, domestic (1939) £439.6, (1940) £413.1; re-exports (1939) £46.0, 1940) £26.2.

Communications.—Roads (March 31, 1938): England and Wales (class I) 20,627 mi.; (class II) 13,070 mi.; Scotland class I) 6,632 mi.; (class II) 3,967 mi.; Northern Ireland (class) 1,273 mi.; (class II) 1,933 mi. Railways (Dec. 31, 1938): Great Britain, track open to traffic, excluding sidings, 20,007 mi.; Northern Ireland, standard gauge, 633 mi.; narrow gauge 121 mi. Airways (1938): distance flown 14,331,000 mi.; passengers arried 222,200; mail carried 3,453 tons; freight carried 2,527 ons. Empire services (airways), traffic ton miles including passenger ton miles (1937–38) 7,153,767; (1938–39) 13,734,899; passengers carried (1939) 12,614. Shipping, excluding vessels under 100 tons (July 1, 1939), 17,984,158 gross tons; under onstruction (July 1, 1939) 791,500 gross tons; shipping (net onnage with cargo), entered (monthly average 1938) 5,698,000; cleared (monthly average 1938) 4,907,000; entered (Aug. 1939) ,617,000; cleared (Aug. 1939) 5,525,000. Motor vehicles licensed Sept. 30, 1938): cars 1,944,394; hackney vehicles (taxis, buses, oaches, etc.) 87,730; commercial vehicles 590,397; motorcycles 62,375; total 3,084,896. Wireless receiving set licences (Sept. 30, 939), 9,085,050; telephones (Dec. 31, 1939): number of stations including public and private lines, call boxes, etc.) 3,235,500.

Agriculture, Manufacturing, Mineral Production.—Production in 1939: (in metric tons) wheat 1,680,000; oats 1,760,800; barley 903,300; potatoes (1938) 5,197,100; beet sugar (1940) 70,000; hops (1938) 131,000; coal (1938) 230,658,000; iron ore metal content) (1938) 3,615,000; pig iron and ferro-alloys 1938) 6,870,000; steel (1938) 10,565,000; sea fisheries (wet fish only) (1938) 1,062,665; whale oil (1938) 221,100; benzol (1938) 218,800; shale oil (1938) 131,000; beef and veal (1937–38) 688,000; pig meat (1937–38) 415,200; mutton and lamb (1937–38) 257,000; wool (1938) 50,300; wood pulp (1938) 270,000; silk, artificial (1940) 45,360; margarine (1938) 211,600; butter (1938) 47,000; cheese (1938) 44,100; flax (fibre) (Northern Ireland) (1938) 4,100; rye (1938) 10,900; lead ore (metal content) (1938) 30,200; aluminum (smelter production) (1940) 35,000; super-phosphates of lime (1937) 449,000; tin ore (metal content) (1939) 1,700.

able III.—*Agricultural Production, in Thousands of Metric Tons,* and Acreage, England and Wales, 1938 and 1939*

Crops	1938		1939	
	Thous. met. tons	Acres	Thous. met. tons	Acres
Wheat	1,855	1,830,261	1,555	1,682,616
Barley	803	885,499	794	910,073
Oats	1,069	1,300,530	1,119	1,358,008
Mixed Corn	74	92,240	72	82,781
Seeds hay	1,281	1,184,082	1,700	1,302,858
Meadow hay	3,131	4,229,308	4,535	4,611,564
Beans (for stock-feeding or seed)	106	129,817	109	132,968
Peas (for stock-feeding or seed)	30	38,153	23	36,800
Potatoes	3,486	474,786	3,312	453,976
Turnips and Swedes	5,081	421,190	4,947	394,249
Mangolds	3,599	212,531	3,938	208,891

*One metric ton = .98421 English ton.

Industry and Labour.—Index of industrial production (1929 = 100) av. (1938) 115.5; av. (Jan.–June 1939) 123.1; index of employment (1929 = 100) av. (1939) 113.0. Industrial population, insured (July 1939) 14,838,000; unemployed, wholly, av. (1940) 802,921; temporary av. (1940) 159,782; wholly av. (1941) 292,000; (Sept. 14, 1942) wholly 98,662; temporary 5,446. (*See* BRITISH EMPIRE and the articles on the various dominions and divisions thereof.)

Great Lakes Traffic: *see* CANALS AND INLAND WATERWAYS.

Greece.

A kingdom in the southern part of the Balkan peninsula, under German, Italian and Bulgarian occupation in 1942. Area 50,147 sq.mi., of which 41,328 are mainland; pop. (census May 16, 1928) 6,204,684; (estimated, 1940) 7,150,000. Capital, Athens (392,781). Chief cities: Thessaloniki (236,524), Patras (61,278), Cavalla (49,980), Candia (33,404), Corfu (32,221). Religion: mostly Greek Orthodox; 126,017 Mohammedans; 72,791 Jews. King: George II; prime minister (1942): Emmanuel Tsouderos.

History.—Little authentic news came out from Greece in 1942 except repeated and well-substantiated reports of starvation. It was estimated that Greece needed at least 30,000 additional tons of grain monthly for keeping the population alive. With the help of Great Britain and the United States the Turkish Red Crescent delivered food and medical supplies, yet this was not sufficient.

Food was not only extremely scarce but obtainable only at highly-inflated prices.

The Greek government in exile put itself on a new basis when on Feb. 2, 1942, King George II ended the dictatorship begun Aug. 4, 1936. The minister of labour, Aristides Demetratos, who had started as a communist and later turned fascist, left the cabinet. On May 3 the cabinet was completely reconstituted. Prime Minister Tsouderos took over the navy, air and war portfolios, and Professor Panayotis Kannelopoulos, leader of Greek resistance to fascism and to the axis, became vice-premier.

The Greek government signed on Jan. 15 an agreement with the Yugoslavian government in exile concerning future closer collaboration between the two countries in foreign policy, military establishment, customs, economic organization and communications.

Education.—Education was compulsory for all children between the ages of 7 and 12. In 1938 Greece had 743 kindergartens with 38,338 pupils, 8,339 primary schools with 985,018 pupils and 407 high schools with 92,687 pupils, of whom 28,998 were girls. There were five institutions of higher learning, among them 3 universities with 7,230 students, of whom 845 were women, an institute of technology with 521 students and a school of fine arts.

Finance.—The monetary unit was the drachma, which had been stabilized in 1928 at 77.02 to the dollar; the stabilization was suspended in April 1932. For the year 1939–40, the revenue was estimated at 14,014,000,000 and expenditure at 14,653,000,000 drachmai. The public debt amounted on Dec. 31, 1938, to 52,140,000,000 drachmai. On Dec. 31, 1939, the bank-note circulation was 9,453,000,000 drachmai, and the total gold in the national bank amounted to 4,223,000,000 drachmai.

Communication and Trade.—Greece had an important merchant marine which consisted on June 30, 1939, of 589 steam and motor ships of 1,812,723 tons and 710 small sailing vessels. There were, in 1939, 1,668 mi. of railroad and 42 telephone exchanges with 38,427 subscribers. There were 1,368 post offices at the end of 1937.

The value of imports amounted in 1940 to 12,215,000,000, the value of exports to 9,079,000,000 drachmai. In 1940 Germany was first in both imports and exports and the United States second. Chief articles of export were currants, raisins and tobacco, of imports cotton piece goods, woollen goods and machinery.

Agriculture and Mineral Production.—Greece is chiefly an agricultural country, although the mountainous character allows only one-fifth of the area to be cultivated. Chief crops are wheat, wine, barley, currants, maize, oats, tobacco and cotton. Olive and fruit are produced in great quantities and good quality. Breeding of sheep and goats is important. The principal minerals found are iron ore, iron pyrites, magnesite, lignites, chromites, lead, emery. Industrial development was growing before the axis invasion of 1941. (H. Ko.)

Greenland.

The world's largest island (736,518 sq.mi., some 705,000 covered by glacier), in the North Atlantic ocean, N.W. of Iceland. A Danish possession, it came under United States protection in 1941. Capital, Godthaab. A population of about 18,000 (est. 1941) is scattered in small settlements on the west coast, and 1,000 on the east coast, about 600 in all being Danes, the rest native Greenlanders. Seats of the governors are Godhavn in the north and Godthaab in the south.

History.—Through 1942 Greenland continued under the regime established by the agreement of April 9, 1941, between the Danish Minister in Washington, Henrik de Kauffmann, and Secretary of State Cordell Hull. The continuance of Danish sovereignty was recognized; the United States obtained the right to build bases for planes, radio and weather stations, and to maintain them by "any and all things necessary"; the agreement to stand "until the present dangers to the American continent have passed." Actual administration in Greenland remained in Danish hands as before.

Any U.S. doubts about the wisdom and the necessity of this move had vanished by the beginning of 1942, and de Kauffmann, though of course disavowed and dismissed, stayed on in Washington. Significantly, the Danish government found it legally impossible to confiscate the minister's property in Denmark.

The significance of Greenland in the military situation was based primarily on two geographic factors: (1) The location there of the world's only cryolite mines, ore vital in the manufacture of aluminum, and which in 1942 was taken from Greenland to Canada and the United States in quantity sufficient to pay for all the country's necessary imports; (2) The location on "Greenland's icy mountains" of the source of much of the weather conditions and weather reporting for the North Atlantic and much of Europe. By possession of meteorological stations there, the United Nations were enabled to plan their operations much more effectively than would otherwise be possible—and Germany was at the same time deprived of the opportunity of forecasting accurately the weather even over western Europe.

A trade revolution on a small scale had to be carried through in Greenland, because Denmark had maintained there a strict trade monopoly—for the protection of the natives. With the closure of the route to Copenhagen, new associations had to be created with the United States.

On Oct. 16, 1942, the British government acknowledged acceptance of a gift of 40,000 kr. (about $10,000) from the people of Greenland, given to aid in freeing the motherland—Denmark. Though not stupendous in amount, the gift was heartening Danes, and was perhaps some confirming evidence for Mich Spender's statement that "The Danish administration of Gre land is the most brilliant example of colonial administration."

Trade and Finance.—Exports (largely fish and fish produc in 1939 totalled 1,847,000 kroner (1 krón = 18¢ U.S. in 193 exclusive of export of 56,455,300 kg. of cryolite. Imports in 1 totalled 4,149,000 kr. and consisted chiefly of foodstuffs (607, kr.), wood (468,000 kr.), manufactures (451,000 kr.), fruits a other colonial wares (389,000 kr.), meat (253,000 kr.).

The government budget for 1939–40 was balanced at 6,035, kr. (F. D. S.)

Grenada: *see* West Indies, British.
Grindstones: *see* Abrasives.
Guadalcanal: *see* Japan; World War II.
Guadeloupe: *see* French Colonial Empire.

Guam.

A possession of the United States of America and largest and most populous island of the Marian Guam lies at the southern end of that group, approximately 1, mi. E. from Manila; area about 225 sq.mi.; population, July 1941, 23,394, including 21,994 natives called Chamorros; the mainder are foreign-born or personnel of the naval establishme Agana, with a population of 11,000, is the capital and only c of Guam, which was occupied by Japanese forces in Dec. 1941.

History.—The island was discovered by Magellan March 1521, and remained a Spanish possession until June 21, 18 when it was captured by the United States. Later it was ceded the United States by the treaty of Paris, and after its acquisit was under the jurisdiction and control of the navy departme with a naval officer, commissioned as governor by the preside acting as chief executive of the island.

Guam was attacked from all sides by Japanese naval for Dec. 8, 1941 (Dec. 7 east of the international date lin It was defended by a small force of approximately 555 U sailors and marines, plus a group of some 1,100 construct workers who seized whatever weapons were at hand. The Japan made a landing near Agana Dec. 10 and claimed control of island shortly thereafter. The U.S. navy department ackno edged loss of the island Dec. 13, 1941. No information regard the Japanese occupation issued from the island during 1942.

Education.—During 1940–1941 the public schools had average enrolment of 5,082. All instruction was in the Eng language, with special attention given to health and sanita and to industrial and agricultural training. Health and sanit conditions are very satisfactory.

Agriculture.—Typhoon damage to the coconut crop curta copra export to 193,391 lb. for the fiscal year 1940–41; the va was $73,763. Total exports were $84,278; imports, $994, Guam is an agricultural community; soil is fertile and na foodstuffs plentiful.

Guatemala.

The most northerly republic of Central Amer Area, 42,364 sq.mi.; pop. (1941 est.): 3,384, Two-thirds of the population are Indians, the rest largely mes By far the greater number live in the southern third of republic. Capital, Guatemala City (167,000); other cities Quezaltenango (26,100); and Antigua (12,300); population mates for these and other cities vary widely. Official langua Spanish. President in 1942: General Jorge Ubico.

History.—Guatemala continued her policy of inter-Amer co-operation during 1942. Axis property was taken over by government, with a special tax levied on it for defense purpo In order to maintain coffee production at normal levels, pla tions owned by axis nationals were continued in operation under the direction of the Central Bank of Guatemala. President Ubico ordered the establishment of a civil guard, to be made up of men 50–60 years of age, the purpose being to combat subversive activities. One of the largest military airports in Latin America was built in Guatemala, and United States patrol bombers operated from there. The president also ordered a cessation of importation of all United States currency, to prevent use by axis agents.

The government established gasoline and tire rationing in July, stocks having been frozen earlier in the year. Price ceilings were set for imported articles where shortage appeared imminent, and rent control was established in May.

Education.—Elementary school enrolment for 1940–41 was 144,985; secondary school enrolment was 1,000. There were 1,634 national elementary schools, and 833 private schools. Secondary schools numbered 16, in addition to the National university.

Defense.—Guatemala had a regular army listed as numbering 7,000 at the start of World War II; it was steadily increased from the reserve in 1942.

Finance.—The monetary unit is the quetzal, maintained at parity with the United States dollar. The 1942–43 budget was balanced at $10,033,000 (less than for 1941–42, during which revenue had decreased over $500,000). Currency in circulation (1941) was approximately $22,000,000 with reserves in the central bank reported increased. The public debt (Dec. 31, 1941) was $3,967,799.99.

Trade.—Imports for 1941 were valued at $16,098,907, an increase in value over the previous year of $900,000. Exports: $14,502,803 (up $2,500,000). Coffee amounted to approximately 60% of all exports, bananas approximately 30%. Guatemalan trade suffered in 1942 through lack of shipping space, a loss partly offset by improved rail connections with Mexico.

Communication.—The completion of the Suchiate bridge in Feb. 1942 improved rail connections with the north, of importance after external communication by water was curtailed. Air service was increased in 1942. Railroad mileage: 600 mi. public; 280 mi. private. Highway mileage: 3,700 mi., with 650 mi. under construction.

Agriculture.—Main export crops are coffee (average export to U.S. 558,500 bags), bananas and chicle (1942 crop est. 3,000,000 bales). The quota limitation on coffee set in 1941 was removed because of the shortage in amounts reaching the United States. (*See* also BRITISH HONDURAS.)

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Guayule: *see* CHEMURGY; RUBBER AND RUBBER MANUFACTURE.

Guggenheim Memorial Foundation. The John Simon Guggenheim Memorial foundation granted 101 fellowships, with stipends totalling $240,000, for the year 1942–43. Of these awards, 77 went to the fellowship program of the United States, 4 to that of Canada, and 20 to the program of Latin America. Since its establishment in 1925 by Simon Guggenheim and his wife, the foundation had, by 1942, contributed $2,531,400 in the form of 1,223 fellowships to the advancement of research in all fields of knowledge and creative work in the arts.

At the time of the death of Guggenheim in 1941, the foundation, already having an endowment of $8,415,131, became the residuary legatee of almost his entire estate. All contributions had been made by the co-founders. Headquarters of the foundation are at 551 Fifth avenue, New York city.

Guiana, British: *see* BRITISH GUIANA.

Guiana, Dutch: *see* SURINAM.

Guiana, French: *see* FRENCH COLONIAL EMPIRE.

Guinea: *see* FRENCH COLONIAL EMPIRE; PORTUGUESE COLONIAL EMPIRE; SPANISH COLONIAL EMPIRE.

Gustavus V (1858–   ), king of Sweden, of whom a biographical account will be found in the *Encyclopædia Britannica,* ascended the throne in 1907, and years before 1942 had attained the rank of Europe's oldest living monarch. In 1938 the nation-wide celebration of his 80th birthday was a testimonial of love and respect and a demonstration of deep-seated national unity. The king's tennis and bridge continued, but winters on the Riviera had to be abandoned from 1939 on; in 1942 "Mr. G" stood not only as the personification of a nation's neutrality, but as a firm, steady guide through the storms that engulfed all Sweden's neighbours. He was a conspicuous leader in movements for Scandinavian peace and solidarity, and his very presence seemed to convey some hope for the future.

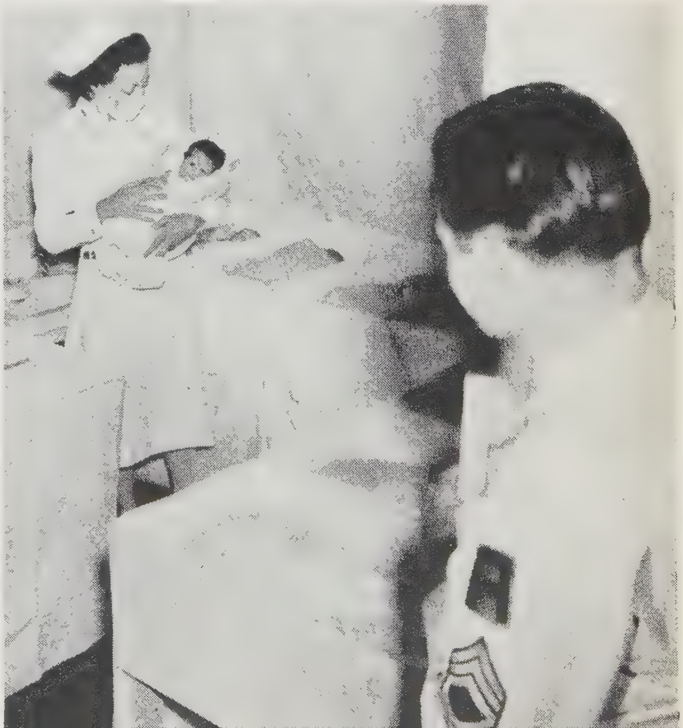
(F. D. S.)

Gymnastics. Nationwide stress on physical fitness added new interest to the A.A.U. gymnastic championships of 1942, held at Western Reserve university in Cleveland. With three 1941 champions in the armed services, only Temple university's George Szypula, in tumbling, repeated his title conquest of the previous year. The Swiss Gymnastic society of Union City, N.J., led by All-Around Champion Arthur E. Pitt, won the team championship with 60 points. Penn State was second with 39. Pitt placed first in the calisthenics, long horse, horizontal bar; was tied for first in the parallel bars; and placed second in the flying rings and side horse. Caton Cobb of the University of Illinois was the leading collegian in the all-around competition.

(M. P. W.)

Gynaecology and Obstetrics. Maternal mortality statistics are always one to one and one-half years old when compilation is complete and the figures become available. The decade from 1930 to 1940

IMPROVISED NURSERY of a U.S. army camp. Obstetrical care and delivery rooms were available to the wives of U.S. soldiers in 1942, but soldiers had first call on hospital facilities



showed a decrease in maternal death rates from 6.7 per 1,000 live births to 3.76 in the United States. The rate for 1941 shows a further decrease to 3 per 1,000. Large cities generally have considerably lower rates than rural communities or smaller populated centres. The 1940 average for 27 major cities of the United States was 2.84 per 1,000.

The contrast between methods of analgesia and anaesthesia during labour and delivery in Great Britain and in North and South America was noteworthy. Griffith and Goodall, after an extensive study of English methods, utilized opium derivatives in the first stage, nitrous oxide and oxygen in the second stage, completing delivery with chloroform or cyclopropane. In North America barbiturates were extensively used for analgesia in first stage, followed by rectal administration of Gwathmey's ether-alcohol-olive oil mixture with the addition to this of paraldehyde, delivery being completed under nitrous oxide or ether anaesthesia. Local "block" of perineal nerves was also popular. In South America, León reported that pentobarbitol sodium is superior to other drugs as an amnesic but that this alone is successful in producing analgesia-amnesia in only about one-third of all cases.

Vitamin deficiencies and the effects of these related to obstetric and gynaecologic disorders continued to produce a voluminous literature. Deficiency in vitamin A was viewed as lowering resistance against infection; that of vitamin B was held responsible to some extent for neuritis and for emesis gravidarum. Insufficient vitamin C intake seemed to be related to anaemias of pregnancy; vitamin D was considered essential to proper calcium metabolism. Vitamin E deficiency was held to be a responsible factor in sterility and repeated abortions. Vitamin K was accepted as having an important function in maintaining prothrombin levels in the pregnant woman and therefore in preventing certain types of haemorrhagic disease of the newborn.

Williams and Fralin investigated the diets or food habits of a group of 514 pregnant women in respect to the adequacy of the vitamin contents of these, and found them woefully lacking. They concluded that obstetricians should give more specific instructions to each such individual with particular emphasis on milk, citrus fruits, leafy vegetables, eggs, meat, butter, bread and whole grain cereals.

The use of sulpha derivatives in puerperal infections kept pace with their use in other fields of medicine. An ingenious suggestion was that of Anderson and his co-workers; namely, that gauze impregnated with sulphanilamide (or a suitable derivative) be used for packing in instances of infected abortions, or suspected infection of the uterus after delivery. They made bacteriologic studies by means of culture balls embedded in such packing material.

The use of sulphathiazole powder sprinkled into infected operation wounds, such as Caesarean section after neglected labour, or septic gynaecologic cases, was accepted practice.

Further light was thrown on the cause, prevention, and treatment of that haemorrhagic disease of the newborn termed erythroblastosis neonatorum. Javert was still a pioneer in this work, but many others studied and wrote about this in 1941–42. It appeared that this condition, so often fatal to newborn infants, is dependent on the Rh factors discussed from a viewpoint of dominant Mendelian characteristics inherited from the parents. The mother, for example, shows an Rh−, the father Rh+, with the infant Rh+. The transmission of Rh agglutinogin from foetal circulation into the maternal circulation may result in an isoimmunization of the mother. Formation of antibodies in the mother with their passage through the placenta into the foetal circulation are presumably responsible for red cell haemolysis and other foetal symptoms. Treatment consisted in repeated transfusions always using a donor with the same Rh as that of the infant, thus excluding its mother, plus the use of vitamin K. T latter was given routinely, by some authorities, to all babi showing jaundice, intracranial haemorrhage, or even because prematurity since this predisposes to intracranial haemorrhage.

In answer to the question often posed, as to why women not lactate during pregnancy but begin to do so shortly after t uterus is emptied of the gestation, whatever the stage of th latter may be, Turner and Meites explained that the placen produced a suppressing agent holding lactation in abeyance, whi progesterone and large amounts of oestrogen common to pre nancy likewise exerted a similar effect. Sudden removal of the inhibitions, supplanted by the appearance of lactogenic hormo from the anterior lobe of the pituitary, low during pregnancy a increased two to four times in amount immediately thereaft were, according to them, responsible for the onset of lactatic

Pulmonary embolism is responsible for approximately 6% deaths after major operations as well as being a prominent cau of postpartum deaths. Heparin, a blood anti-coagulant, was ut ized successfully in patients having emboli not immediately fat Purified non-toxic heparin was produced independently by Charl and Scott, working with Best in Toronto, and by Schmitz a Fischer in Germany. The continuous intravenous administrati was preferred in Canada and the United States, as contrast with the Scandinavian technic employing repeated single jections.

The *Journal of the American Medical Association* of Nov. 1942 contained several articles and editorial comment on an prothrombic therapy by use of "dicoumarin," or an extract fr spoiled sweet clover. Cattle feeding on such fodder develop haemophilic condition; the essential substance was extract analyzed and reproduced synthetically, and was about to offered as a treatment for thrombosis and embolism.

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Gypsum. Mine production of gypsum in the United Stat in 1941 increased by 19% over 1940, to 4,788, short tons, but combined sales of domestic and imported go were even higher. Sales of crude gypsum increased 40% 1,320,713 tons, and of calcined gypsum 20% to 4,438,754 to Since total imports for the year were not reported, it is not kno whether the increases of sales over production came from creased imports or from stocks. The manufacture of portla cement took 87% of the crude, and agriculture 11%. The u of calcined gypsum made some marked changes from the p ceding year, as indicated by the following percentages, those the preceding year being given in parentheses for compariso building plasters 44% (53%); wallboard and sheathing 1 (12%); lath 31% (28%); tile 4% (4%). All told, the build industry consumed 97% of the calcined gypsum and 87% of crude. During the first three-quarters of 1942 the production crude gypsum increased only 5% over the same period of 19 to 3,514,500 tons, while sales decreased to 2,891,000 tons. T drop was presumably due to restrictions on private build operations.

Canada made a new record high in gypsum production in 19 with 1,590,312 short tons, a 10% increase over the previous h ade in 1940, but production during the first half of 1942 dropped ore than a third below the same period of 1941. (G. A. Ro.)

aakon VII (1872–), king of Norway, of whom a biographical account will be found in *Encyclopædia ritannica,* was born Prince Charles of Denmark, second son of rederick VIII (and brother of Christian X). Upon the sepa tion of Norway from Sweden he was elected king by the orwegian Storting (Nov. 18, 1905), and took the old Norse me of Haakon, and that of Olav for his son the crown prince. aakon married Maud (1869–1938), youngest daughter of King lward VII of England.

The unanimous loyalty of Norwegians to their exiled king ter 1940 was more than a sign that their land was in trouble. aakon's personal bravery and uprightness, his nonpartisan na nalism, his zealous industry, his dignified acceptance of neces y while fighting vigorously for the independence of his people, gave rich meaning to the motto he had chosen in 1905: "All r Norway." Through disillusionment, bitterness, distress from 40 through 1942, the Norwegian people both at home and road, on land and sea, had one rallying point. This sentiment und expression from all corners of the earth on the king's th birthday, August 3, 1942. (*See* also NORWAY.) (F. D. S.)

ackett, Charles (1889–1942), U.S. opera singer, was born Nov. 4 in Worcester, Mass. He gan his singing career with a high school glee club, then studied Boston, Mass., and in Florence, Italy. In 1915, he made his eratic debut in *Mephistopheles* in Pavia, Italy, and afterwards led engagements in Genoa, Milan, Italy and Buenos Aires, gentina. In 1919, he made his American debut at the Metro litan in New York City as Count Almaviva in *The Barber of ville.* He was with the Chicago Civic Opera company, 1923–33 d then rejoined the Metropolitan. Hackett died in Jamaica, ieens, N.Y., Jan. 1.

iti. A republic occupying the western third of the West Indies island of Hispaniola. Area, 10,700 sq.mi. Pop. imates in 1942 varied from 2,600,000 to 3,000,000, with the ter figure usually quoted. Capital, Port-au-Prince (110,000). her cities: Les Cayes (15,000); Cap Haitien (20,000); naïves (12,000); Jacmel (10,000). Official language: French; icial religion: Roman Catholic, with the lower classes practis g the folk religion of vodun or voodoo. President in 1942: Elie scot.

History.—Haiti was active in carrying out inter-American col oration during 1942. Suspension of the constitutional guar tees was extended for the duration of the war. All Haitian izens outside the state were ordered to return, and all males –40 were required to register in January. Enemy property was ntrolled, as was the movement of United States currency. A fense tax of $1 on each bag of the 1942–43 coffee crop was ied to finance defense measures. In March–April Pres. Lescot ade a trip to Washington.

Complete governmental regulation of automobile, tire, and soline sales took place early in the year. Price and export con ol was established, and a special commission was created to pervise the production and sale of rice. Cotton production was led by a United States guarantee to purchase surplus amounts; ial production was also encouraged. The rubber production ogram involved the planting of 100,000 ac. to Cryptostegia ants, with the United States financing the plan.

Education.—Statistics on Haitian education, admittedly mis ading since enrolment does not mean attendance, indicated some o schools with 500,000 in attendance in 1942. In the 1941 budget, education was allotted 2,383,828 gourdes. Study of the English language became compulsory Oct. 1, 1942.

Defense.—The Haitian constabulary numbered approximately 3,000, aided by a rural police force of 550. A department of national defense was created in 1942.

Finance.—The monetary unit is the gourde, fixed by law at 20 cents U.S. Revenue (for fiscal year 1941–42); $5,119,851; expenditures: $5,545,232. In 1938–42 the Export-Import bank had extended Haiti five credits totalling $12,500,000. The public debt (Aug. 31, 1942) was $14,203,000.

Trade.—Haitian imports for the 11-month period ending Aug. 31, 1942, were $7,541,800, an increase of 13% over the same period in the previous year. Imports were mainly from the U.S. (85%), and consisted largely of textiles, manufactures, and foodstuffs. Exports for the same period were $6,940,800.

Communication.—Haiti has external communication by sea and air, and because of her strategic location suffered less in loss of service than other Latin American states. Internal communication is poor, with about 160 mi. of railroad and 1,500 mi. of highway in 1942.

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Halder, Franz (1884–), German army officer, started his army career as standard-bearer in a Bavarian artillery regiment and served as general staff officer, 1915–18. He was next attached to the office of the war ministry. General Halder was one of the early members of the nazi party at a time when other high-ranking army officials kept aloof from Hitler. In 1936 he became a lieutenant general and later that year chief of general staff. Considered by many as Hitler's No. 1 strategist, he was said to have planned the Polish campaign, the blitzkrieg against France in the west, and the initial drive into Russia in 1941. Never one to bow before der fuehrer, General Halder was said to have talked sharply to Hitler and to have disagreed with him on several occasions on the conduct of the war, especially on a winter campaign in Russia and an invasion of England. He was passed up when Hitler bestowed the rank of field marshal on several of Halder's colleagues. Halder was a close friend and associate of Marshal von Brauchitsch and his chief of general staff until the latter was deposed in Dec. 1941. A month after Halder had been appointed to carry out plans for a second hard winter campaign in Russia, rumours in late Oct. 1942 carried news of his dismissal. A dispatch on Dec. 10, 1942, confirmed Halder's ouster and revealed that he had been succeeded by Gen. Kurt Zeitzler.

Halifax, Edward Frederick Lindley Wood, 3RD VISCOUNT (1881–), British statesman. See *Encyclopædia Britannica* for his biography. On Feb. 25, 1938, he succeeded Anthony Eden as foreign minister and retained this post through the "Munich era" and through the various reshufflings of the war cabinets of Chamberlain and Churchill. On Dec. 23, 1940 he was named British ambassador to the United States, and presented his credentials Jan. 30, 1941. On March 25 he listed as one British war aim world-wide economic co-operation and political freedom after the axis' defeat.

In June 1941 he received honorary degrees from Columbia, Harvard and Yale universities. Later he made an inspection tour of aircraft plants on the U.S. west coast. On Jan. 1, 1942 Halifax conferred with Roosevelt, Churchill and British and U.S. military chieftains on war problems. He went to London in July for parleys with King George VI and Eden and returned to the U.S. in August.

Halsey, William Frederick, Jr. (1882–), U.S. naval officer, was born Oct. 30 in Elizabeth, N.J. After graduating from Annapolis in 1904, he was assigned to destroyer duty and commanded a destroyer force that patrolled waters around Queenstown, Ireland, during World War I. After the war, he served as commander of the aircraft carrier "Saratoga," then as commandant of the Pensacola naval air station. He was made a rear admiral and commander of a carrier division in 1938, organized squadrons for the aircraft carriers "Yorktown" and "Enterprise," and was promoted to vice-admiral in June 1940. During World War II, Admiral Halsey led the successful naval and air raid against the Japanese-held Pacific bases on the Marshall and Gilbert Islands on Jan. 31–Feb. 1, 1942. At a critical juncture in the battle for control of the Solomon Islands, Admiral Halsey relieved Vice-Admiral Robert Lee Ghormley on Oct. 24, 1942 as commander of U.S. naval forces in the south Pacific. Three weeks later, on Nov. 13, Admiral Halsey engaged a large Japanese force of warships off the Solomon Islands in a three-day battle. Although outnumbered, his fleet emerged victorious, and sank a total of 28 Japanese warships, including at least one battleship, eight cruisers and six destroyers. In recognition of this achievement, he was promoted to full admiral on Nov. 20, 1942, and was awarded the congressional medal of honour the following month.

Hamilton, Cosmo (1872?–1942), British author and brother of two well-known writers, A. Hamilton Gibbs and Sir Philip Gibbs, took his mother's name when he began to write. At the height of his career, Hamilton produced a book a year, and many of his plays were box-office hits. During World War II, he was on the staff of the ministry of information. Among his novels are *Brummell* (1912), *The Blindness of Virtue* (1912), *His Friend and His Wife* (1920), *Caste* (1925), *The Three Passions* (1928) and *Discord and Harmony* (1938). He died at Shanley Green, Surrey, Oct. 14.

Hammer Throw: *see* Track and Field Sports.

Hand-ball. Despite the curtailment of activities due to the war, the annual hand-ball classic was held in 1942 in San Francisco's Olympic club. The seven-time national champion, Joseph Platak, was unable to compete because he was in military service, and his annual runner-up, Jack Clements, of the Olympic club, achieved the long sought for honour by capturing the singles title. The champions in doubles, Frank Coyle and Edward Linz, of the New York Athletic club were also, for war-work reasons, absent, and their archrivals Joe Gordan and Joe Goldsmith of Long Beach, Calif. captured first honours.

National Four-Wall Rankings for 1942

Singles	*Doubles*
1. Jack Clements, San Francisco	1. J. Gordon and J. L. Goldsmith, Long Beach, Calif.
2. Dan Marble, San Francisco	2. J. Capell and Roy Leu, San Francisco
3. Angelo Tochinni, Oakland, Calif.	3. M. De La Pena and E. Henrich, San Francisco

Continued interest was manifested in the one-wall game which is played almost exclusively in the east. New York city has been the scene of all the national tournaments in this branch of the game and is considered to have the best players in the U.S.A.

National One-Wall Rankings for 1942

Singles	*Doubles*
1. Joseph Garber, New York	1. M. Ornstein and V. Herschkowitz, New York
2. Morton Alexander, New York	2. J. Garber and N. Shinkarik, New York
3. Victor Herschkowitz, New York	3. L. Block and A. Wolfe, New York

Women's Rankings (One-Wall, New York Metropolitan District)

1. Mrs. Lucy West	2. Marie Zannetti	3. Madeline Maus

(Fr. Ro

Harbours: *see* Rivers and Harbours.

Harper, William Allen (1880–1942), U.S. college p dent, was born April 27 in B ley, Va. He was graduated from Elon college, N.C., in 1899 received his M.A. from Yale in 1904. He returned to Elon lege as professor of Latin in 1905 and was made presiden the school in 1911. He resigned 20 years later to become fessor of religious education at Vanderbilt university schoo religion, in Nashville, Tenn. He died at Black Mountain, N May 11.

Harrington, John Lyle (1868–1942), U.S. construc engineer, was born Dec. 7 Lawrence, Kan. He received his B.S. and C.E. degrees from University of Kansas, 1895, and his M.S. from McGill univer 1908. Harrington developed the vertical lift bridge and many patents on the lift and bascule spans. He designed m than 200 bridges in the United States, Canada, Russia, M churia, China, Japan and New Zealand, including spans ac the Chesapeake and Delaware canal, the Welland canal and Francisco bay.

He died in Kansas City, May 20.

Harris, Sir Arthur T. (1892–), British air officer, born April 13 in Cheltenham, I land. Educated in English public schools, he enlisted du World War I and joined the royal flying corps in 1915. commanded several squadrons on the western front and decorated with the air force cross in 1918. Made an air c modore in 1937, he was named air vice-marshal in 1939 rose to commander in chief of the R.A.F. bomber comman Feb. 1942. A firm believer in mass raids, Air Marshal H developed the "saturation" technique of mass bombing—tha concentrating clouds of bombers in a giant raid on a single with the object of completely demolishing it. He applied method with great destructive effect in the vast 1,000-plane r on Cologne and Essen and in the systematic attacks on Ger and Italian industrial centres throughout 1942. In May Sir Arthur said that if he could send 1,000 bombers over many every night, the war would be over by autumn. A afterthought, he subsequently declared: "If I can send 20 bombers over Germany in a single night, the war will end next morning."

Hart, Thomas Charles (1877–), U.S. naval off was born June 12 in David Mich. He was graduated from Annapolis in 1897, served in Spanish-American War and was a commander of submar in World War I. He was made a rear admiral in 1929 took command of the Asiatic fleet in July 1939. Adm. reached retirement age in June 1941, but was kept on because, Secretary of the Navy Knox declared, he was "a g man handling a situation in the far east that requires g skill." When the U.S.-Japanese war broke out in Dec. 1941 was compelled to take up defensive positions in Philippine wa since the Asiatic fleet was a comparatively light naval fo

On Jan. 3, 1942 Adm. Hart was made commander of A naval forces in the southwest Pacific, but was succeeded Vice-Adm. C. E. L. Helfrich of the Netherlands navy on Feb In a statement on March 11, he laid the Allied defeats in Pacific to lack of air power.

arvard University, oldest institution for higher education in the United States, completed the ixth year of its fourth century in 1942. At the end of the fiscal ear, June 30, 1941, investments exclusive of land, buildings and ontents used for educational purposes stood at $157,000,000. ifts during the year were $6,188,659 for capital account and 1,689,953 for immediate use.

Scholarships and other student aids totalled $735,444, exclusive f student loans. Student enrolment continued to fall throughout he scholastic year 1941–42 due to conscription and enlistments, ut the university's facilities were fully occupied by 3,500 army nd navy officers who were sent to 11 different service schools t Harvard for specialized training. A great deal of research nder the direction of the National Defense Research council was onducted in the laboratories. All departments of the university perated on a 12-month, 3-semester schedule which allowed the udents to receive as much training as possible before entering he armed services.

For statistics of student enrolment, faculty members, endow- ent, library volumes, etc., *see* UNIVERSITIES AND COLLEGES.

arwood, Sir Henry Harwood (1888–) British rear-admiral. He was pecially promoted to this rank in 1939 for distinguished conduct the cruiser "Ajax" while in action against the German battle- ip "Graf Spee" off the River Plate. He entered the royal avy as a cadet at the age of 15, became lieutenant in 1908, ommander in 1921, captain in 1928. For two years from 1909 e served on the China station. Throughout World War I he as torpedo officer in various ships. He joined the staff of the oyal Naval War college in 1934 and was appointed in command the "Exeter" in 1936. In the same year, following disturbances Trinidad, the governor-general commended "this officer for his art in restoring an atmosphere of confidence and goodwill." A milar appreciation of the services rendered by the commanding ficer and men of the "Exeter" was made in 1939 by the mayor Concepción, Chile, following the earthquake there. Sir Henry as appointed a lord commissioner of the admiralty and assistant hief of naval staff in 1940, and commander-in-chief, Mediter- nean (with acting rank of admiral) in 1942.

aushofer, Karl (1869– ?), German geopolitician, was born Aug. 27 in Munich. He joined the my as a youth, later became military observer in Japan and ommanded a division on the western front during World War I. fter the war, he became professor of political geography at e University of Munich and from the classroom he first vanced a theory of geopolitics which, he asserted, would enable e reich to regain its status as a world power. He preached the octrine of the "organic state," declaring that a state is living ganism which must feed on the *lebensraum* (living space) smaller states, or else it dies.

Much of Haushofer's theories were based on the geographical oncepts originated by Sir Halford Mackinder, English geog- pher. The power of "Coastland" nations was based on naval rength, as Mackinder saw it. But he recognized the strategic osition of Germany and warned that if the reich armies could in control of the "Heartland" (which he defined as including alf of European Russia, most of Siberia and Mongolia, and estern China), they could operate from land bases and capture ritain's sea bases by overland attack.

Although Haushofer borrowed freely from Mackinder, the tter rejected German pretensions to establish geopolitics as science; he described it as a tool of nazi statecraft to grab *bensraum.*

Haushofer, however, found many willing listeners in Germany. One of his students, Rudolf Hess, introduced him to Hitler. Hitler liked these geopolitical theories, which gave a desired scientific twist to his expansionist aims.

In the early years of nazi rule, Hitler evidently agreed with Haushofer's formula for re-establishing German power: (1) get control of the "Heartland" first (by economic or military means) and (2) avoid a two-front war. In line with Haushofer's principles, Hitler "neutralized" Russia with the pact of Aug. 1939; he then proceeded to conquer most of continental Europe by June 1941, save Great Britain. But, impatient at the delay in crushing Britain, he turned on the U.S.S.R.; this action was an outright rejection of Haushofer's theories.

Soon after the war with the U.S.S.R. began, it was rumoured that Haushofer had fallen from grace and had been executed by a firing squad.

Hawaii. The territory of Hawaii consists of a group of eight larger islands and numerous islets in the Pacific ocean between latitudes 18°55′ and 22°15′ N. and between 154°50′ and 160°30′ W. longitude. Their total area is 6,438 sq.mi. The islands are of volcanic origin. From southeast to northwest, they are Hawaii, Kahoolawe, Maui, Lanai, Molokai, Oahu, Kauai, Niihau. In addition, stretching northwestward beyond Niihau over 1,100 mi. is an archipelago of rocks, reefs and shoals which includes Midway (*q.v.*) (longitude 177°22′ W.), notable as the first stop beyond Honolulu of the China clipper planes. Like-

WELDERS repairing a ship damaged in the attack on Pearl Harbor. Thousands of new workers arriving in 1942 were housed in barracks within the harbour area

wise, 960 mi. south of Honolulu and a part of the city and county of Honolulu lies Palmyra, a coral atoll consisting of 55 islets, five miles long and two and a half miles wide. The youngest island, geologically, and the largest in the group is Hawaii, with an area of 4,030 sq.mi. The capital of the territory is Honolulu, situated on the island of Oahu. It is a completely modern city with a population (1940 census figures) of 180,986. The population of Hawaii (1940 census figures) is 423,330.

The racial origin of this population, in addition to the native Hawaiians and Caucasians from the mainland, is Japanese, Chinese, Korean, Filipino, Portuguese. However, 82% of the population is native born.

History.—Ingram M. Stainback took office as governor on Aug. 24, 1942, succeeding Joseph B. Poindexter. Samuel W. King was territorial delegate in congress. Revenues for the fiscal year ending June 30, 1942, amounted to $22,065,468.54, an increase of more than $5,000,000 over the previous year. Cash on hand and in banks increased by over 25% while federal internal revenue collections increased from $13,763,998 in the fiscal year 1941 to $32,067,927 in the fiscal year 1942.

Agriculture.—Hawaii's chief crops are sugar and pineapples. Expert management, scientific methods and costly irrigation works raised the sugar production to a maximum of 1,035,548 tons in 1933 with a value of $66,482,181. Production of sugar in 1941 amounted to 947,190 tons. The pineapple industry, next in importance, produced 22,341,429 cases of canned pineapple and pineapple juice. Because of the shipping situation brought about by the war, an extensive program of production of food crops for local consumption was under way. (G. J. S.)

Hawthornden Prize: *see* LITERARY PRIZES: *Great Britain.*

Hay.

The 1942 crop of hay was the largest ever harvested in the United States, 106,328,000 tons, which was 7,000,000 tons larger than the previous record crop of 1916, and compared to 94,238,000 tons in 1941 and a ten-year (1930–39) average of 78,733,000 tons. The acreage in 1942 was 72,744,000 ac. and the yield 1.45 tons per ac. In 1941 the acreage was 71,776,000 ac., the yield, 1.31 tons. The ten-year average acreage was 67,893,000 ac.; the yield, 1.16 tons per ac. Production in 1942 consisted of 92,245,000 tons of tame hay, including alfalfa, timothy and clover, lespedeza, sweet clover, grains cut green for hay, and miscellaneous tame hay. The 1941 production of tame hay was 82,736,000 tons; the ten-year average, 69,650,000 tons. Wild hay was 13,083,000 tons in 1942 compared to 11,502,000 tons in 1941 and a ten-year average of 9,083,000 tons. This included prairie hay and marsh and salt grasses. The acreage of all tame hay in 1942 was 60,211,000 ac. and the yield 1.53 tons per ac. In 1941 it was 59,317,000 ac. with a yield of 1.39 tons; the ten-year average, 56,102,000 ac. with a yield of 1.24 tons per ac. Wild hay harvested in 1942 was from 12,533,000 ac., with a yield of 1.04 tons per ac. In 1941 it was 12,459,000 ac., with a yield of 0.92 tons; the ten-year average was 11,791,000 ac. and 0.76 tons per ac. Clover and timothy hay production in 1942 was 38,276,000 tons from 19,527,000 ac.; the yield was 1.45 tons per ac. In 1941 it was 23,470,000 tons from 19,324,000 ac. with a yield of 1.21 tons per ac.; the ten-year average, 24,587,000 tons from 22,363,000 ac. and 1.10 tons per ac. The lespedeza hay crop in 1942 was 7,330,000 tons compared to 5,537,000 tons in 1941 and a ten-year average of 1,709,000 tons. Lespedeza acreage had increased rapidly, being 6,452,000 ac. in 1942 and 5,428,000 ac. in 1941, with a ten-year average of only 1,696,000 ac. Yield was 1.14 tons per ac. in 1942. In 1941 it was 1.02 tons; the ten-year average, 0.99 tons. Sweet clover hay production in 1942 was 851,000 tons compared to 1,286,000 tons in 1941 and a ten-year average of 884,000 tons; the yiel 1.33 bu. per ac. in 1942 as against 1.32 bu. in 1941 and a te year average of 1.09 bu. The soybean hay crop was 3,945,0 tons in 1942 and 4,779,000 tons in 1941; the ten-year averag 4,098,000 tons, with a yield in 1942 of 1.36 tons compared 1.30 tons in 1941 and a ten-year average of 1.22 tons per a Cowpeas for hay equalled 1,512,000 tons with a yield of 0.83 to per ac. in 1942 and 1,618,000 tons with a yield of 0.83 in 19 and a ten-year average of 1,660,000 tons at 0.84 tons per a Peanut hay totalled 1,552,000 tons in 1942, 958,000 tons in 19 and a ten-year average of 709,000 tons; the yield 0.49 tons p ac. in 1942 and 0.53 in 1941 with a ten-year average of o. tons per ac. Grains cut green for hay produced 3,761,000 to in 1942 against 4,481,000 tons in 1941 and a ten-year avera of 4,623,000 tons.

Hayseed.—Red clover seed production in 1942 was 1,081,9 bu. compared to 1,469,300 bu. in 1941 and a ten-year average 1,056,870 bu. Alsike clover seed, 255,700 bu. in 1942 again 312,600 bu. in 1941 and a ten-year average of 314,280 b Timothy seed, 1,623,500 bu. in 1942 against 1,273,900 bu. 1941 and a ten-year average of 1,755,280 bu. Sweet clover see 724,800 bu. in 1942 against 786,700 bu. in 1941; the averag 887,170 bu. Lespedeza seed, 179,700,000 lb. in 1942 again 178,700,000 lb. in 1941; the average, 65,786,000 lb.

U.S. Hay Production (All Varieties) in Leading States, 1942, 1941 and 10-yr. Average

State	1942 tons	1941 tons	10-yr. averag tons
Wisconsin	7,639,000	7,082,000	4,906,000
Minnesota	6,922,000	6,945,000	5,116,000
Iowa	6,829,000	5,656,000	4,361,000
New York	5,975,000	4,361,000	4,877,000
California	5,107,000	4,846,000	4,445,000
Missouri	4,559,000	3,528,000	2,535,000
Nebraska	4,425,000	3,619,000	3,512,000

All other states produced less than 4,000,000 tons of h apiece in 1942. The above figures are estimates as of Dec. 1942, by the U.S. department of agriculture. (*See* also ALFAL SOYBEANS.) (S. O. R.)

Health, Industrial: *see* INDUSTRIAL HEALTH.
Hearing Aids: *see* DEAFNESS.

Heart and Heart Diseases.

It is well to pay trib at the outset of this br review of cardiovascular knowledge in 1942 to Dr. James Herrick of Chicago, medical pioneer. Dr. Herrick compiled short history of cardiology which is of fundamental value a foundation for knowledge in this field, the only omission major importance in his book being the account of his o notable contribution.

The range of the normal heart continued to be a source much concern and renewed study as the result of the war mands for the mobilization of a large army. The moot poi concerned particularly the range of the normal pulse rate a blood pressure. The range of the rate of the normal heart in the experience of the present writer, far greater than has b ordinarily believed. Briefly, healthy athletic champions w normal hearts have had pulse rates at rest or at relative r ranging from 35 in a champion two miler to 118 in a champ Marathon runner, in the latter case just prior to the race. E treme bradycardia below a rate of 40 has been confirmed as absolutely normal finding in a number of long distance runn Four healthy athletes have been recently proved graphically have heart rates of 38, 37, 38, and 35 respectively (a Marat winner, champion miler, aviator, and champion two mile hus heart rates alone, even when extreme, are not satisfactory uides, and when recorded, within the figures given here at ast, should not be taken as a sound criterion of either cardiac r general health or efficiency.

The second problem is more difficult, namely, that of the lood pressure. After much discussion it is beginning to be the onsensus of opinion that one should follow the middle of the oad with respect to blood pressure in young men. Under extement blood pressure, especially the systolic level, may rise ormally and it is quite possible to have readings of 160 mm. g systolic on occasions in such a person. The level of the iastolic pressure is more important and it is doubtful if levels onstantly above 90 at rest should be considered normal. Among he hyperreactors will doubtless appear the hypertensives of the uture, but more study is needed to be sure of the number and ype.

Physiological heart murmurs or sounds have been occasionally cause for erroneous rejection for military service. A review f individuals rejected for such findings is likely to show some ormal hearts, and a salvage of such individuals for military or ther purposes was contemplated in 1942.

The problem of neurocirculatory asthenia (the so-called oldier's heart) again arose, especially that of the exclusion of dividuals who may be too easily crippled by this condition military service. A preliminary survey indicated that in peace me and in early training in war, before actual combat, those ho are found to have obvious neurocirculatory asthenia without asily correctible causes are those who are definitely psychoeurotic. Hence, the psychiatric part of the induction examinaon appears to be the most important source for weeding out hese individuals. Later on, under the stress of combat, the less usceptible individuals may also develop neurocirculatory ashenia but that is a real war hazard as much as that of wounds.

Hypertension still lacks specific therapy but important progress as been made with respect to one therapeutic measure which onsists of radical splanchnic resection. Smithwick developed n operation which has produced striking results not only with espect to blood pressure but to the ease of obvious strain on he heart itself.

Although this is not likely to be the final answer to the problem, or the time being it is the most hopeful aspect, at least in a cerain percentage of hypertensive individuals.

Finally, continued interest in the ever present problem of phleothrombosis, sometimes erroneously called thrombophlebitis, n the leg veins attended by the hazard of pulmonary embolism, hich may be fatal, resulted in the more widespread recognition f both of these conditions (leg vein thrombosis and pulmonary mbolism) leading sometimes to the institution of lifesaving measures, in particular, ligation of the leg veins.

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Helium. Since helium is the most important factor in aviation with craft lighter than air, it was natural that little nformation was given out with respect to production in the United States, especially since this country had the only commerial deposits of this gas in the world. The output of the recovery lant working on the natural gas from the Cliffside (Texas) gas eld was reported at 9,451,000 cu.ft. during the fiscal year ending une 30, 1940, and enlargements were under way to increase this o 12,500,000 cu.ft. in the 1941 fiscal year. After that date, other extensions were made at Cliffside, and five other plants were being built. (G. A. Ro.)

Henderson, Leon (1895–), U.S. economist, was born in Millville, N.J. on May 26. In 1917 he entered the U.S. army as a private, attaining the rank of captain of ordnance by 1919. In 1920 Henderson returned to Swarthmore college, where he received his B.A. degree. During the early New Deal era, he served as consulting economist to the Work Projects administration.

On April 11, 1941 the Office of Price Administration and Civilian Supply (later renamed the Office of Price Administration, *q.v.*) was created by President Roosevelt to check the rise in prices caused by the defense program, and Henderson was placed at the head as price administrator. In July 1941 Henderson, who had been a Securities and Exchange commissioner since 1939, resigned this post to devote himself to his new task. On Dec. 26, 1941, after the U.S. entered World War II, he strictly rationed motor-car tires and on Jan. 2, 1942, he announced that all motor-car production for civilian use would be halted "for the duration."

Henderson predicted that his efforts to impose necessary rations on Americans to further the war effort would make him the most unpopular man in the United States. His prophecy approached fulfilment as the year progressed, and Henderson tendered his resignation as OPA administrator Dec. 17, 1942. He had resigned as chief of the WPB Office of Civilian Supply a week earlier.

Henderson, Sir Nevile Meyrick (1882–1942), British statesman, was born June 10. A graduate of Eton, he entered the diplomatic service as third secretary at St. Petersburg in 1905. He also served in Tokyo and Rome and in 1916 was sent to Paris as first secretary; he was counsellor in Constantinople, 1921, and acting high commissioner there, 1922–24. He was minister to Cairo, 1924, held the same post in Paris, 1928–29, was envoy to Belgrade, 1929–35 and ambassador to Argentina and minister to Paraguay, 1935–37. Sir Nevile was Britain's last ambassador to Berlin, 1937–39, before the outbreak of World War II. Henderson staunchly defended Chamberlain's appeasement policy and in the final weeks before the outbreak of war, shuttled between England and Germany with the hope of averting hostilities. He returned to England, wrote *Failure of a Mission* (1940), an apologia of his ambassadorship to Berlin. He became group commander, with rank of colonel, in the home guard, 1941. Sir Nevile died in London, Dec. 29.

Hertz, Alfred (1872–1942), U.S. conductor, was born July 15 in Frankfort-on-Main, Germany, and studied music at the Raff conservatory there. He conducted orchestras at the age of 19 and had directed at various theatres in Germany until 1902. At that time, he was called to New York city by Maurice Grau to conduct at the Metropolitan Opera house and there gave the first American performance of Wagner's *Parsifal* in 1903. In 1915, he resigned to take up a post as conductor of the San Francisco Symphony orchestra. Dr. Hertz introduced and conducted the summer symphony concerts at the Hollywood bowl in Los Angeles. He retired from the San Francisco orchestra in 1930 and from 1932 to 1939 directed a radio symphony program. He died in San Francisco, April 17.

Hertzog, James Barry Munnik (1866–1942), South African politician, was born of Dutch stock in Wellington, Cape Colony, on April 3. Gen.

Hertzog, who was prime minister of the Union of South Africa, 1924–39, strongly opposed the Union's declaration of war against Germany in World War II and resigned as premier in Sept. 1939. Hertzog, sympathetic toward axis aims, resigned from the United Nationalist party in 1940 and shortly afterwards from parliament. At an Afrikander party convention in Oct. 1941, he urged South Africans to adopt a National-Socialist (nazi) form of government. He died in Pretoria, Nov. 21. (See *Encyclopædia Britannica.*)

Hewitt, Henry Kent (1887–), U.S. naval officer, was born Feb. 11 in Hackensack, N.J. A graduate of the U.S. Naval academy, 1906, he was commissioned an ensign in 1908. He won the Naval Cross for distinguished service in World War I, and later served as commander of a destroyer division. He was inspector of ordnance in charge of the naval ammunition depot at Puget sound and commanded the cruiser "Indianapolis," on board which President Roosevelt sailed for South America in 1936. He was promoted to rear admiral in Dec. 1940. Adm. Hewitt was named to command the U.S. naval units in the huge Allied fleet that protected the U.S. landings in North Africa Nov. 8, 1942. Two days after the initial landings in Algeria, Adm. Hewitt's warships and dive-bombers engaged in an all-out assault against Casablanca, battering the French fleet which offered stiff resistance. After a brief but sharp naval engagement, his fleet moved toward shore and protected, with a heavy barrage, the advancing tank forces that penetrated the Moroccan city, which surrendered Nov. 11, 1942.

Heydrich, Reinhard (1904–1942), German gestapo official, was born March 7 in Halle, Prussian Saxony. At the age of 14 he joined a Free Corps band, where he became schooled in street-fighting, terrorism and looting. In 1922, he joined the navy, rising to the rank of first lieutenant, but resigned in 1931 to devote his time to nazi party affairs. Soon after Hitler became chancellor, Heydrich was appointed chief of the political department of the Munich police force, with control over the notorious Dachau concentration camp. In 1934, he was appointed gestapo chief for Berlin and was later made deputy chief of the gestapo under Heinrich Himmler. Ruthless in dealing with "enemies of the state," Heydrich was singled out in Sept. 1941 to supersede Baron Constantin von Neurath as Reichsprotector for Bohemia and Moravia. He ordered the execution of 300 Czechs within five weeks of his arrival in Prague. He was then dispatched to Norway, the Netherlands and occupied France to suppress mounting sabotage and terrorism, and his visits resulted in more mass executions. He was so hated and feared by anti-nazi elements throughout Europe that he was called "the Hangman." On May 27, Czech patriots bombed and shot him while he was riding in his car on the Prague-Berlin highway. He died June 4 in a Prague hospital. Gestapo officials exacted vengeance for his death by executing hundreds of Czechs and wiping out the entire village of Lidice, whose townsfolk were accused of harbouring Heydrich's assassins.

Highways: *see* Roads and Highways.
Highway to Alaska: *see* Roads and Highways.

Hill, (Red) William (1886–1942), Canadian daredevil swimmer and self-styled "master hero" of Niagara, was born October 22 at Niagara Falls, Ont. He made three trips through the Niagara Falls rapids, the first in 1910, when he shot the rapids in a barrel reaching the Lewiston, N.Y., shore in safety. He was credited with 28 rescues from the dangerous Niagara rapids, many at the risk of his own life. He died of a heart attack at Niagara Falls, Ont., May 14.

Hillhouse, Percy Archibald (1869–1942), British na architect, was born Ma 4 at Derby. After studying at Glasgow university, he becam draughtsman for a shipbuilding and engineering firm. Later, was invited to become professor of naval architecture at the I perial university in Tokyo, 1898–1902. Ships of his design w used in the Russian-Japanese war. Upon his return home, he a naval architect and held the chair of naval architecture Glasgow university from 1921 until his death. He was the aut of several monographs on ship designing and also *Ship Stabi and Trim.* Prof. Hillhouse died in Glasgow, Sept. 28.

Himmler, Heinrich (1900–), head of the Gern police and founder of the *Schutzsta* was born Nov. 7 at Munich. At the University of Munich, specialized in agriculture. In later life he became a member the Academy of German Law. From an insignificant beginn he rose steadily to power in the Hitler political revolution. though a participant in the abortive Munich beer hall putsch 1923, he escaped imprisonment with Hitler. In 1927 he beca deputy leader of the German S.S. (Black Shirts), expanded offset the power of the Brown Shirt troops, and was made lea in 1929. The fuehrer never had a more loyal or ruthless devo Himmler served as reich director of propaganda from 1926 1930, became a member of the reichstag and the Prussian s council in 1933, commander of the united German police fo in 1936 and deputy head of the reich administration in 19 During 1942 he was sent by Hitler to various occupied count to quell anti-nazi resistance, working closely with his pupil lieutenant, Reinhard Heydrich (*q.v.*) in carrying out a prog of wholesale executions among subjugated peoples. After H drich's assassination, Himmler eulogized his friend at the fun in Berlin on June 8, declaring it to be the "sacred obligation the nazis to avenge his death." (C. A. Sr.

Hispanic America: *see* Argentina; Bolivia; Brazil; B ish Guiana; British Honduras; Chile; Colombia; Co Rica; Ecuador; French Colonial Empire; Guatemala; H duras; Nicaragua; Panama; Paraguay; Peru; Salvador, Surinam; Uruguay; Venezuela.

Hispanic America and World War II. World Wa (*q.v.*) con ued to affect activities of the Hispanic American states du 1942, but in general the pattern of affairs did not differ gre from that established during the preceding year. The first portant political event was the meeting of the ministers of eign affairs of the American republics at Rio de Janeiro, Jan. 28. This was the third of such meetings (others were at Pana 1939, and Havana, 1940) and was designed to further plan hemisphere defense both in military and in economic fields. the work of the Rio conference the main contest developed a proposal to have all American states which had not yet don sever diplomatic, commercial and financial relations with the powers. The delegations of Argentina and Chile were oppose the move, not because their sympathies were particularly axis, but rather in line with a historic reluctance to follow lead of the United States, coupled with a feeling that the m was neither necessary nor prudent on their part. This oppos was stubborn enough to prevent the adoption of a clear-cut lution on the subject, and throughout the rest of the year two republics maintained this neutral status, even though American states were allowed non-belligerent privileges in

SION OF JAN. 23, 1942, at the Rio de Janeiro conference. At this meet- all the American republics pledged adherence to a resolution which recom- ded severing diplomatic relations with the axis nations

ritory.

While the Rio conference failed in complete attainment of its jor political objective, many steps were taken which furthered ordinated hemisphere defense activities. Among the more sig- cant was the establishment of a uniform plan for control of ncial and commercial activities of the axis in the hemisphere, the custodianship and possibly operation or sale of alien my property, for the co-ordination of intelligence services, for anization of military and political defense, and finally for "eco- nic mobilization" to the end that all resources of the New orld would be fully utilized. It was also agreed by the confer- e that any American state, or even one not American if its orts served to defend the hemisphere, would not be treated as elligerent in other American republics.

Various committees were created by the Rio conference. The er-American Defense board began continuous sessions in Wash- ton on March 30, charged with the co-ordination of military l naval policy, the handling of war supplies, control of com- nications, protection of American shipping and similar duties. April 15, a 7-man Emergency Advisory Committee for Politi- Defense met in Montevideo to plan prevention of axis propa- da and sabotage, and a board representing police and judicial cials concerned in the same effort held sessions in Buenos es May 28–June 9. The complex task of control of alien enemy perty, funds and commercial activities was entrusted to the er-American Financial and Economic Advisory committee, one the leading bodies which had been functioning since the Panama ference; it now took over general supervision of the entire nomic program, aided by national committees of the same type in each republic. This body also arranged uniform controls over the export and import of United States currency, of which $1,000,000,000 or more in axis hands could be sent to the Americas for subversive action.

In accordance with regular schedule, many other inter-American bodies met during the year. In one, the conference on American agriculture held in Mexico City July 6–16, a protest was made against efforts under way in the United States to lessen the use of coffee and sugar. The pact made at Havana in 1940, dealing with the administration of European-owned territory in the Americas when necessary, was made effective on Jan. 8, 1942, by signature of Honduras, the 14th state to sign; by June all but four nations had ratified. The first "Pan American Conference of Free Italians" met Aug. 14 at Montevideo in an attempt to parallel Free French organization.

Two more Hispanic American nations, Mexico and Brazil, joined during 1942 the ranks of the American states at war with axis powers. In both cases submarine sinkings precipitated action. Mexico voted for war on June 1, and Brazil entered the conflict Aug. 22. Because of the size and geographic position of these states, their action was particularly gratifying to the United States. Co-operation between the United States and Mexico had been marked, and one possibly dangerous issue had been removed on April 17 by the acceptance of an oil claims award; Mexico agreed to pay $23,995,991 in compensation for expropriated property. At the same time the United States announced that $40,000,000 had been allotted to stabilize the Mexican peso, and that the Export-Import bank had advanced a $30,000,000 credit for highway construction and industrial development in Mexico. Brazil, even before entering the war, had taken steps against axis dangers.

With the exception of Argentina and Chile, the remainder of the American republics co-operated with the United States in hemisphere defense with greater or less efficiency. Axis nationals were put under restrictions varying from simple registration to arrest, internment, and even deportation. Some states, such as Mexico and Colombia, prohibited their presence in strategic coastal zones, and in Cuba one spy was executed. In the belligerent states, axis property was taken over, and vessels, coffee plantations, and even funds were put to use by the governments concerned. There was extensive limitation of the activity of axis organizations throughout Hispanic America (the most active groups had already been discontinued in 1941). In Colombia German schools were closed. Control of radio and other means of communication was general, and in some cases, as in Cuba, censorship of mail and news was set up. Axis propaganda was thus reduced in effectiveness, although the short wave radio still remained, and Argentina and Chile could serve as dissemination centres. The Spanish diplomatic service, which usually took over axis affairs where relations were severed, and the Spanish military intelligence (SIM), were charged with activity in support of the fascist program. For this reason Cuba sharply curtailed the privileges of the Spanish embassy, and prohibited Spanish ships from entry into its ports. Cuba also, with Haiti, broke off relations with Vichy France in November. As opposed to the suspicion attached to Spain, Soviet Russia gained in favour in some states and was accorded recognition by Cuba, Costa Rica and Uruguay.

The official settlement of the Peru-Ecuador boundary controversy in the early months of 1942 lessened danger to inter-American accord, and in the summer Venezuela and Colombia ended a similar, although less serious dispute. A Colombian president visited Venezuela for the first time since the days of Bolívar, and with most of the administrations in Hispanic America friendly to that in Washington, several chief executives, among them Batista of Cuba, Prado of Peru, and president-elect López of Colombia made trips to the United States during the year. A projected trip by Pres. Ríos of Chile was postponed after a speech made by Under-Secretary Sumner Welles (Oct. 8) in which Chile and Argentina were characterized as spy centres.

Practically every Hispanic American nation increased the strength of its military establishment, and some—Nicaragua, Cuba, Colombia and Uruguay among them—inaugurated military service on a compulsory basis. In some cases United States military missions aided in the training program. United States troops were reported as building a base in Ecuador in March, and were in the Dutch islands of Aruba and Curaçao by Feb. in co-operation with a Venezuelan consultative mission. United States air forces also used fields in Cuba, Guatemala and Panama, but insofar as information was available, the North American personnel at other than United States bases was very limited in number.

In the economic field the program of stabilization of Hispanic American trade and finances was reasonably successful during 1942. The shift in trade toward United States markets was more apparent than ever. While exact figures were not published in 1942, at the end of March it was reported that there was a 46% increase in the net trade balance in favour of Hispanic America ($124,094,000 in 1942 as compared with $85,285,000 for an equivalent period in 1941); by July this credit balance had grown to $166,000,000. The character of export trade had changed greatly, with strategic materials in great demand and such products as bananas less important. The priority problem affected import trade; in the first half of the year, orders for Hispanic America were given top rating, but in Sept. the WPB announced that the urgent military program would take preference. Trade was also handicapped by a shipping shortage, particularly acute during the spring and summer. A lack of tankers affected indus
and transportation dependent on fuel oils. Highway and railr
construction helped in moving goods in Mexico and northern C
tral America, and Pan American Airways reported that the nu
ber of its flights had been tremendously increased, but air
land services could not compensate for more than a part of
cargo space. The resultant decline in the available amount of c
sumer goods, plus increased purchasing power, brought about
ing living costs—in some cases greater than in the United Sta
In the Caribbean zone in particular it was necessary to establ
rationing and price ceilings. An increase in inter-Hispanic Am
ican trade was reported; Argentina and Chile agreed to excha
quantities of goods, and Colombia took the entire cotton surp
of Haiti. Argentina likewise negotiated a barter agreement w
Spain in the early months of the year, exchanging meat and a
cultural products worth 150,000,000 pesos for Spanish manuf
tures. It was estimated that Hispanic American exports to Can
were heavy.

Vigorous attempts were made during the year to increase p
duction of strategic materials. The rubber-planting program
Haiti, Brazil and Costa Rica was pushed, and airports were c
structed in Colombia to aid in gathering wild rubber. The Uni
States agreed to purchase the entire output of Peru and Ecuac
and a Brazil-United States health program was organized to sp
rubber gathering in the Amazon region. In Cuba a $20,000,
nickel development was announced in the summer, and it
reported that Peru and Brazil might be able to supply minim
needs for rotenone.

The economy of Hispanic America was largely upheld dur
1942 by loans made by the United States. No exact figures
the year were available, but by the end of May, Export-Imp
bank credits allotted to Hispanic America amounted to $6
961,616, of which $149,504,000 had been actually used. Spec
commitments had been made to all countries by that date exc
Guatemala. At least $13,000,000 had been expended in addit
on defense projects in the area. (*See* also PAN AMERICAN UNI
WORLD WAR II and articles on individual countries.)

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Hispaniola: *see* DOMINICAN REPUBLIC; HAITI; WEST IND

Hitler, Adolf (1889–), German statesman, was born
Braunau on the Inn, Austria, April 20.
his career prior to 1942 see his biography and the art
"Germany" in *Encyclopædia Britannica.*

Four days after the Japanese attack on Pearl Harbor Dec
1941, Hitler declared war against the United States. On Jan.
1942, Hitler admitted the failure of his Russian drives,
promised a new offensive to crush the Russians. On April
the reichstag unanimously passed a new law enabling him
remove from office or positions any person (or general)
dared disagree with him. His long-heralded offensive, startec
June 1942, penetrated deep into the Caucasus, but was stop
short at Stalingrad. On Sept. 30, 1942, Hitler spoke of Staling
as a city "which we shall take, you may depend on it."
Stalingrad stood like a rock; the Russians not only made
their city a second Verdun, but were able to take the offen
during Nov. 1942. Again his failure to realize a "comple
victory in Russia led him to overhaul his high command.
made Gen. Kurt Zeitzler chief of the general staff, but contin
to hold the post of commander-in-chief himself. After
U.S. landings in North Africa, he ordered his troops to occ
all France on Nov. 11, 1942. A day later, he said his ar
would avenge the American landings in Africa in "due tin

e tried to seize the French fleet at Toulon on Nov. 27, but rench sailors moved quickly and scuttled the majority of eir ships. As the year 1942 ended, Hitler's armies were in treat in Africa and Russia; Allied bombings of German cities ere intensified, and Italian morale was seriously weakening. gainst this gloomy backdrop the German fuehrer, who was nfident of a short war when he set out to conquer Europe, ld his people on Dec. 31, 1942,: "Winter may be difficult. Its ows, however, cannot hit us harder than last year." (*See* also ERMANY; WORLD WAR II.)

obby, Oveta Culp

(1905–), U.S. director of the Women's Auxiliary Army Corps VAAC) (*q.v.*), was born Jan. 19 in Killeen, Tex. A graduate the University of Texas Law school, she was successively a ember of the Texas legislature, assistant city attorney of ouston and a bank director. She also helped codify Texas nking laws and was the author of a text on parliamentary w. In 1931, she married William Pettus Hobby, former gover- r of Texas, and took an active interest in his newspaper, the *ouston Post,* becoming executive vice president. In 1941, Mrs. obby was called to Washington on a dollar-a-year job as chief the women's interests section of the war department's public lations bureau. At the behest of General Marshall, she drafted ans for a women's army and on May 16, 1942, she was sworn as director of the first force of this kind in United States story, with a rank equivalent to that of a major. The WAAC, heduled to have 12,500 women in uniform after the first year, as subsequently authorized to expand to 150,000. In late Oct. 42, Mrs. Hobby went to England to inspect the Women's uxiliary Territorial Service, Britain's equivalent to the WAAC.

ETA CULP HOBBY, director of the Women's Army Auxiliary corps, and Col. nald C. Faith, commandant, inspecting the WAAC's barracks at Fort Des ines, Ia., on the opening day, July 19, 1942

ockey: *see* ICE HOCKEY.

ogs.

The largest pig crop on record, 105,500,000 head, was produced in the United States in 1942. This number was out one-third larger than the ten-year average prior to 1934 in hich period, before the losses from droughts in the middle '30s, pig production was at its previous highest level. The 1942 spring crop of pigs was 62,000,000 head, an increase of 25% over the spring crop of 1941. Final figures were not available for the fall pig crop of 1942, but in Dec. 1942 it was estimated by the department of agriculture as 43,500,000 head, an increase of 22% over the spring crop of 1941. For 1943, to meet military, lend-lease and home-consumption needs, the government asked a pig crop of 121,000,000 head. The agricultural department also asked that the weight of hogs be increased by 10 lb. before marketing. The government, to encourage swine production, promised to support hog prices through Sept. 1944 at a minimum level of $13.25 per cwt., average Chicago basis, for good and choice grade butcher stock of 240 to 270 lb.

It was estimated that the slaughter for the packing year beginning Oct. 1, 1942, and ending Sept. 30, 1943, would be 94,000,000 to 95,000,000 head. For the packing year ending Sept. 30, 1942, slaughter was 52,400,000 head. Prices for hogs in 1942 also reached a 22-year peak; and for the week ending Oct. 21, 1942, in Chicago averaged $15.45 per cwt. This was about $4 over the same period in 1941. In 1941–42 the hog-corn price ratio was particularly favourable for swine production, especially in view of the record corn crop of 1942. There was a steady increase in hog numbers. In its annual report issued Feb. 18, 1942, the department of agriculture estimated the number of hogs on farms as 60,526,000 head compared with 54,256,000 in 1941 and a ten-year (1931–40) average of 51,566,000 head. With the large increase in the pig crop of 1942 and the expected still larger increase in 1943, questions were raised as to the capacity of packing plants to handle such volume of production. It was said that if shipments maintained an even flow, packing capacity would be sufficient to handle it. But to take care of peaks, the department of agriculture was planning a system under which farmers might ship hogs only by permit. Shippers would apply to a shipping board three days before contemplated shipments to obtain a permit. Shipping boards would be composed of representatives of the government, the packers and the livestock exchanges.

Hogs contributed in a novel way to the sale of about $50,000 in war bonds in 1942 at a Victory hog sale in Rushville, Ind., where farmers accepted payment for 600 hogs in war bonds and the governor of the state spoke at the ceremony. (*See* also MEAT.)

(S. O. R.)

HOLC: *see* NATIONAL HOUSING AGENCY.

Holland: *see* NETHERLANDS.

Hollins, Alfred

(1865–1942), blind British composer and organist, was born Sept. 11 in Hull, England. He studied piano and organ at the Wilberforce institute, York, the Royal Normal College for the Blind, London, and as a pupil of Hans von Bülow. At 13 years of age, he made his first public appearance as a solo pianist at the Crystal palace, London, and some years later made a tour of the United States with a quartet of blind players. On later visits to the U.S., he appeared with the New York Philharmonic and the Boston Symphony orchestras. He composed religious as well as concert organ music, piano solos and songs, and was the author of *A Blind Musician Looks Back* (1936). He was organist at St. George's West Church, Edinburgh. Hollins died in Edinburgh, May 17.

Holmes, Phillips

(1909–1942), U.S. actor, was born July 22 in Grand Rapids, Mich. He was a student at Trinity college, Cambridge university, England; at Grenoble university, France, and at Princeton. He appeared in his first motion picture in 1928. After playing with his father, Taylor Holmes, in *The Great Necker* in New York, he starred in many U.S. motion pictures in the 1920s and 1930s and later principally in foreign movies. His chief roles were in *An American Tragedy* and *The Devil's Holiday*. Holmes enlisted in the Royal Canadian Air Force in Dec. 1941 and won promotion to the rank of leading aircraftsman. He was killed in a collision of two planes, near Armstrong, Ont., August 12.

Home Building, Federal: *see* HOUSING; NATIONAL HOUSING AGENCY.
Home Loan Bank, Federal: *see* NATIONAL HOUSING AGENCY.
Home Owners' Loan Corporation: *see* NATIONAL HOUSING AGENCY.

Homma, Masaharu (1888?– ?), Japanese army officer, was an observer with the British forces in France during World War I. He served as resident officer in India, 1925, as military attaché in London, 1930, and was decorated with the Military cross of the British empire. In 1939, he commanded Japanese forces at Tientsin, China, when the Japanese army blockaded the foreign concessions there. He was next sent to Formosa to command the 14th army, which was preparing for a Philippine invasion. Homma was made commander in chief of the Japanese expedition to the Philippines in the winter of 1941–42, but despite his numerical strength and armed superiority, the general failed to defeat the American-Filipino forces. He was reported to have committed hara-kiri in February in a Manila hotel suite occupied by General MacArthur prior to the evacuation of the capital, because he had "lost face," but later indications were that he was still alive.

Honduras. The third largest Central American republic. Area, 46,250 sq.mi.; pop. 1,040,000, largely rural. Capital, Tegucigalpa (35,000); other cities: San Pedro Sula (17,500), La Ceiba (13,800), Choluteca (13,600). Religion: Roman Catholic; language: Spanish. President in 1942: General Dr. Tiburcio Carías Andino.

History.—Honduras actively co-operated in hemisphere defense in 1942, in line with its policy adopted the previous year. Age limits were widened to increase army strength, war materials were purchased and the defense budget increased. The president was authorized to borrow up to $15,000,000 for defense and civil emergency needs, and a national bank was established to facilitate financial operations. Axis-owned property was taken over, and control over the movement of United States currency was established.

The Honduran economy was hit hard by the drop in banana exportation. A policy of price control and conservation was set in operation, although as late as Oct. 1942 price fixing reportedly was not too effective. In order to alleviate the unemployment situation in the banana region, construction work employing 1,000 men was started on a portion of the road from Tegucigalpa to the Pacific.

Education.—Elementary schools in Honduras in 1942 numbered possibly 1,000, with an estimated enrolment of 35,000; institutions of higher learning had an enrolment of approximately 3,000. The 1942–43 budget allotted 918,000 lempiras to education.

Defense.—The Honduran army (1,500 regulars, 15,250 national guard) was strengthened to meet war needs. Age limits for active service were widened to 18–32 yrs.; reserve service: 32–45 yrs. The defense budget (1942–43) was 2,416,000 lempiras (later increased).

Finance.—The monetary unit is the lempira, equal to 49 cents U.S. in 1942. The budget for 1942–43 was balanced at 12,222,000 lempiras.

Trade.—Late trade statistics were not available in 1942. Trade with the U.S. for the first half of 1941 listed imports as $3,6
000, exports as $4,032,000. Total trade for the fiscal year 19
41 was $19,952,326 (imports: $10,085,170; exports: $9,867,1
Bananas (65%) were the most important item of export; preci
metals (25%) second.

Communication.—External communication is by steams
and Pan American Airways; the latter reported increased se
ices while the former was curtailed during 1942. There were
mi. of railroad; 500 mi. of highway in 1942.

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Honduras, British: *see* BRITISH HONDURAS.
Honey: *see* BEE-KEEPING.

Hongkong. A British crown colony, occupied by the Ja
nese in 1941, Hongkong is an island off
southeastern coast of China, opposite Kwangtung province
the mouth of the Canton river. The area of the island is a l
over 32 sq.mi.; the crown colony also includes the New Te
tory, on the mainland, with an area of 356 sq.mi. Kowl
immediately opposite Hongkong Island and connected with
by a ferry, is the largest town in the New Territory.
estimated population of the crown colony in the middle of
was 1,047,768, of whom 24,125 were non-Chinese, mostly Brit
These figures did not include the personnel of the armed fo
stationed at Hongkong or the approximately 750,000 Chin
refugees. The governor of Hongkong at the time of the Japan
attack in Dec. 1941 was Sir Mark Young, who became a p
oner of war.

Hongkong was one of the first strongholds of western powe
the orient to fall before the Japanese onslaught. Operat
against the colony began Dec. 8, 1941, and the surrender t
place on Dec. 25. The Hongkong garrison had been rece
reinforced by a Canadian detachment of some 2,000 soldi
but the Canadians arrived without much of their mechan
equipment, and the entire number of troops at the disp
of the British command was insufficient to guard effectively
parts of the island or to counteract the Japanese tactics
infiltration and sniping. Japanese superiority in the air
overwhelming, and the destruction of reservoirs and other sou
of water supply hastened the fall of the city. There was l
news of Hongkong under Japanese occupation in 1942; it
occasionally bombed by U.S. air forces in China.

Education.—Hongkong in 1940 had 1,273 schools of
types, with 116,280 pupils. There was a university with
students. Expenditure on education was 2,807,269 Hongk
dollars.

Finance and Trade.—The revenue of the colony in
was 41,478,052 dollars (Hongkong), expenditure was 37,949
dollars. (The Hongkong dollar before the fall of the colony
equivalent to about 25 U.S. cents.) For the 15 months f
Jan. 1, 1940, until March 31, 1941, revenue was 70,175
dollars, expenditure 64,787,557 dollars. The public debt
27,268,000 dollars. In 1940, 28,943 vessels of 21,908,350
entered and cleared from Hongkong. Hongkong's imports f
the British empire, excluding Great Britain, in 1940
£4,786,013, exports were £7,503,908. Imports from foreign c
tries were £38,903,596, exports £28,535,291. Imports from
United Kingdom in 1938 were £3,937,515, exports £982,339.
(W. H. Ch

Hopkins, Harry L. (1890–), U.S. politician, was
Aug. 17 in Sioux City, Ia. After gra
ating from Grinnell college in 1912, he went to New York cit

gage in social service work. He later became a fast friend of ranklin Delano Roosevelt, then governor of New York, who in 33 appointed him federal administrator of emergency relief. rom 1935 to 1938 he was administrator of the Works Progress lministration. In the latter position, he expended billions to ovide work relief instead of monetary relief for unemployed illions. Hopkins was appointed secretary of commerce, 1938, ıt resigned in Aug. 1940 because of ill health. In Jan. 1941, was sent to London as President Roosevelt's personal emissary study the war situation at first-hand. On March 27, 1941, the esident named him lend-lease co-ordinator. Enjoying a unique osition as one of the president's most trusted friends and lvisers, Hopkins flew to London on a second mission in July 41, thence going to Moscow to confer with Soviet Premier sef Stalin. The next month he retired as lend-lease administra- r and was succeeded by Edward R. Stettinius, Jr. On April 8, 42, he went to London with Gen. Marshall, U.S. army chief staff, to confer with British officials on United Nations war oblems.

ops. The commercial crop of hops in the United States is grown in three states, Washington, Oregon and Cali- rnia. Production in 1942 was only 34,896,000 lb. from 34,700 ., which was but 100 ac. less than the 34,800 ac. harvested 1941, when the crop was 40,380,000 lb. Unfavourable condi- ons which caused reductions in the 1942 crop included extremely t weather in Washington in August, mildew infestation in egon and heavy "dry-away" in California. The "dry-away" ıs also more severe than usual in Washington and Oregon. ıe ten-year (1930–39) average crop of hops was 34,655,000 lb. om an average acreage of 29,720 ac. The 1942 yield was 551 lb. per ac. in Washington, 1,280 lb. in California and 680 . in Oregon; the 1941 yield, 1,850 lb. per ac. in Washington, 350 lb. in California and 840 lb. in Oregon; the ten-year erage yield, 1,771 lb. per ac. in Washington, 1,505 in Cali- rnia and 935 lb. in Oregon. These estimates are as of Dec. 1, 42, by the U.S. department of agriculture.

U.S. Production of Hops by States, 1942, 1941 and 10-yr. Average

State	1942 lb.	1941 lb.	10-yr. average lb.
regon	13,124,000	16,800,000	18,188,000
Vashington	11,788,000	13,320,000	7,767,000
alifornia	9,984,000	10,260,000	8,701,000

(S.O.R.)

ormones: *see* CANCER; ENDOCRINOLOGY.

ornblow, Arthur (1865–1942), U.S. editor and writer, was born in Manchester, England. He udied literature and painting in Paris and worked there as a rrespondent for English and U.S. newspapers. In 1889, he went the United States and worked on several newspapers, but his incipal interest was the theatre. He was editor of the *Theatre agazine,* 1901–26, and wrote the *History of the Theatre in merica* in 1919. Hornblow translated many works by Marcel révost and Gabriele d'Annunzio and also put many plays into ovel form, including *The Lion and the Mouse* (1906), a Broad- ay success. He died in Asbury Park, N.J., May 6.

orse Racing. At the close of 1942 a total of $18,131,118 had been distributed to winners at recog- zed meetings in the U.S., the record having been $17,987,- 5, in 1941. New York, the leading racing state, disbursed ,541,485, a gain of $342,931 over 1941. Illinois, next in rank, sbursed $2,487,150, a gain of $482,830 over 1941. The only area in which there was a notable decrease was California, hitherto one of the leaders, which in 1941 had stood second with a disbursement of $3,156,549. All racing in California was discontinued by governmental fiat at the outset of war and the chief racing plant, Santa Anita park, near Los Angeles, was converted into a concentration camp for interned Japanese. Not until late in the fall was a modest resumption permitted.

The nation-wide attendance was astonishing considering the transportation difficulties that prevailed. Precise figures were unavailable, but the total for the year must have equalled, if it did not exceed, that of 1941. The vast increase in the amount of money in circulation, due to the war effort, was reflected in the volume of betting, which rose to unprecedented heights. "Million dollar days" were frequent. In New York alone the taxation revenue from this feature exceeded $10,000,000. A feature of the year was the raising of over $3,000,000 by voluntary contribution of the racing associations to the nation's war effort.

Whirlaway, four-year-old chestnut colt bred and owned by Warren Wright, Calumet Farm, Lexington, Ky., was again adjudged the "horse of the year." His earnings were $211,250, and he won 12 of 22 races. This brought his total winnings up to $560,911 and made him the leading money-winning horse of the world and the first to cross the $500,000 line, the previous record having been $437,730 by Seabiscuit. He was not, however, the leading winner of the year. That honour went to the three-year-old chestnut colt Shut Out, bred in Kentucky and owned by Mrs. Payne Whitney, of New York. His winnings were $238,972. Also excelling Whirlaway's record was that of the three-year-old colt Alsab, owned by Mrs. Albert Sabath, of Chicago, with a credit of $234,565. Shut Out won both of the richest races run during the season, the Classic, at Arlington Park, Chicago, worth $69,700, and the Kentucky Derby, at Louisville, worth $64,225. His earnings, together with those of the other starters by his sire, Equipoise, gave that stallion the championship of the year with a total of $437,041; which was the largest sum ever won by the get of any stallion in a single year in America or any other country. The leading two-year-old was Occupation, brown colt bred and owned by John Marsch, of Chicago (winning $192,355); but the bay colt Count Fleet, bred in Kentucky and owned by Mrs. John Hertz, of New York, was awarded the title of champion of that age. His feat of running a mile in 1:34 4-5, the fastest of the year by a horse of any age, and defeat of Occupation in their last meeting, earned him the honour.

The leading money-winning stable of 1942 was the Greentree stable of Mrs. Payne Whitney, for whom 36 different horses won 53 races and $414,432. This, however, fell short of the $475,091 won by the Calumet Farm stable in 1941. Mrs. Whitney's horses were trained and managed by John M. Gaver.

The principal American time record lowered during the year was that for a mile and a half, which was reduced from 2:28 2-5 to 2:27 3-5 by Bolingbroke, also a son of Equipoise. The three-year-old bay filly Vagrancy, bred in Kentucky and owned by William Woodward, of New York, was supreme among the mares of the year. She won 11 races and $84,380.

The leading jockey of the season was Johnny Adams, who rode 245 winners. He also led in 1937 when he rode 260 winners. While J. M. Gaver led the money-winning trainers with $406,547, the leading race-winning trainer was Hirsch Jacobs, with 133, this being the ninth time he had earned that title in 10 years.

Harness Turf.—War conditions affected the harness turf much more seriously than the running side. Many of the great state fair plants were taken over by the government for use in the war effort. This led to the cancellation of some of the most

"ROOKIE HORSES" of the U.S. army learning to jump hurdles in 1942 at Front Royal, Va. The newly-purchased horses are branded, inoculated, and quarantined for 21 days, after which they are given 80-120 days of training for military service

important Grand Circuit and other meetings. The principal event of the season was the Hambletonian stake, for three-year-olds, trotted at Goshen, N.Y., and worth $38,954.38. It was won by the bay colt The Ambassador, owned by W. H. Strang, of Brooklyn, N.Y., and trained and driven by Ben White.

(J. L. He.)

Great Britain.—King George won four of the five substitute classic races during the 1942 flat-racing season with his filly, Sun Chariot, and his colt, Big Game, leased from the National Stud. Sun Chariot, by Hyperion out of Clarence, was without doubt the best three-year-old in training, and the champion jockey, Gordon Richards, rode her to victory in the One Thousand Guineas, the Oaks and the St. Leger. Big Game, by Bahram out of Myrobella, was successful in the Two Thousand Guineas and was expected to win the Derby. His breeding on the dam's side, however, suggested that he would not be capable of staying a mile and a half. Such proved to be the case, and Big Game failed to reach a place in the Derby behind Watling Street, by Fairway out of Ranai, who gained a narrow victory for Lord Derby at the expense of Lord Rosebery's Hyperides.

Big Game and Sun Chariot were trained by F. Darling at Beckhampton, and were both retired to the stud at the end of the season. Mr. Darling also turned out Owen Tudor, winner of the previous year's substitute Derby, to win the race for the Gold Cup.

The King ended the season at the head of the winning owners' list, Mr. Darling and Gordon Richards led the winning trainers' and jockeys' lists respectively, and the stock of Hyperion, winner of the Derby and St. Leger in 1933, won most stake money.

Transport difficulties and other restrictions were responsible for a big reduction in the number of horses in training. Horses over the age of four years were not permitted to compete in handicap events after June 1, but this restriction was modified in the plans proposed for the 1943 flat-racing season, when racing was again to be conducted on a regional basis.

(A. K. B.)

Horses. The number of horses and mules on United Sta
farms continued to decrease in 1942. In its ann
report on livestock, issued Feb. 18, 1942, the department of a
culture estimated the number of horses on farms as 9,856,
compared with 10,214,000 in 1941 and a ten-year (1931–
average of 11,707,000 head; the number of mules, 3,811,00
1942 compared with 3,922,000 in 1941 and a ten-year average
4,677,000. No later figures were issued in 1942, but Wayne D
more, secretary of the Horse and Mule Association of Amer
estimated the number of horses on United States farms as ab
9,700,000 at the end of 1942; mules, 3,630,000. Fewer ma
were bred in 1942, either for horse or mule colts, chiefly beca
of a shortage of farm labour. Many breeders limited the "trav
of stallions in 1942 because of a lack of experienced men to s
with expensive breeding stock. The number of foals in 1942
estimated by Dinsmore as about 500,000; mule colts, about 1
000. Thus the annual death rate of older stock exceeded the
colt crops.

There was some small increase in the number of horses
mules not on farms. These, the Horse and Mule association e
mated, numbered about 400,000 and included horses used in ci
mines, lumber camps and other non-farming places. The incre
however, was not as large as had been anticipated when the
strictions on gasoline, rubber and automobile travel went
effect. Conversion to horse-drawn vehicles was by no means
great as expected because manufacturers of the necessary ho
drawn vehicles could not obtain materials, which were needed
war production. There was also a decline in the use of ri
horses in 1942 because many riding stables were in rural a
difficult to reach. Pack horses and mules found an enlarged
in army service in 1942, apparently unexpectedly, despite
highly-mechanized military transport. Pack animals were fo
particularly adaptable to carrying supplies in South Sea isla
where motorized equipment was difficult to use because of jun
and swamps. U.S. army pictures in newspapers showed pack
mals in use in New Caledonia. The army bought few horse
1942 but a considerable number of pack mules.

Few of the states in 1942 were producing a sufficient num of either horse or mule colts to provide for replacements of work stock on farms, Dinsmore estimated. The exceptions were the range states, such as Wyoming and New Mexico. These states, however, were not relatively large producers of horses and mules.

Wartime restrictions on beef and other meats drew attention in 1942 to the possibility of using horse meat as food in the United States.

Abattoirs were established in several cities for the production of horse meat under United States government inspection. Federal regulations forbade the slaughter and processing of horses in packing houses where cattle, swine and sheep were processed.

Packers expressed extreme doubt that horse meat would have more than a very minor acceptance in the United States, particularly since horses were worth much more as draught animals han as meat animals. For some years one large company had slaughtered about 125 horses a week to be processed as dog food, but horses so processed were old or crippled animals no longer fit for draught service. Another company prepared food for pets and, in addition, shipped considerable quantities of horse meat to Europe. (*See* also SHOWS.) (S. O. R.)

Horse Shows: *see* SHOWS.

Horthy, Stephen (1904–1942), Hungarian vice-regent and eldest son of Adm. Nicholas Horthy, Hungarian regent, was born in Pola, Istria. He was elected permanent ice-regent, Feb. 1942, in line to succeed his father. Shortly fter the start of World War II, he joined the Hungarian air orce. A London dispatch of Aug. 20 reported that he was killed in a plane combat over the Russian front.

Horticulture. World horticulture was placing its emphasis on food production as the year 1942 drew to close. Lack of manpower and mounting transportation difficulties appeared in early summer and increased rapidly. Market ardeners and fruit growers were so loud in their complaints that government stepped in to alleviate the situation in some egree. Growers announced a reduction in acreage devoted to ornamentals and some of them turned over parts of their land for community gardens. Many agencies began active preparations at the end of the year for a widespread campaign to increase the making of home vegetable gardens and to bring about the establishment of community gardens in industrial sections. Florists began cutting their greenhouse production. The department of agriculture in Washington appointed a national advisory committee headed by Governor Prentiss Cooper of Tennessee to aid in developing a home gardening movement.

This situation in the United States ran parallel to the one existing in Great Britain, except that it was somewhat behind the British schedule. Early in the summer the British government announced that landowners would be expected to plow up their lawns and whatever other available areas they might have, to increase the production of vegetables. The food situation in Britain became especially acute by the end of the year, inasmuch as Great Britain was supplying much of the food needed for feeding the American and Canadian troops quartered on English and Irish soil. Six million new acres had been plowed up and thousands of miles of drains laid. Vegetables were grown in public parks everywhere, as well as on golf courses, cricket fields and village greens—even, indeed, in the moat of the Tower of London.

The season favoured British gardeners. Plums and apples once more provided the fresh fruits and jams which the British people crave. However, Britain was still lacking in oranges, lemons and similar fruits, but the fact had been discovered that a syrup from rose hips (fruits) could be substituted satisfactorily for orange juice. A factory in Scotland was taken over by this industry.

Strict control of the bulb industry in England permitted few bulbs for home use, but heavy exports of tulip bulbs and narcissus bulbs to the United States were made. Flower crops in England were reduced to 25% of the total area. Florists, therefore, began growing tomatoes and other food crops in their greenhouses. Nevertheless, the Royal Horticultural society continued to hold flower shows, which were crowded with exhibits and visitors. The curtailment of the florist industry in the United States was on a much smaller scale.

It was almost impossible to get direct information from the continent of Europe, but Holland was reported to have had one of the poorest harvests in history because of insects and diseases,

ICTORY GARDENS added to the U.S. supply of vegetables in 1942. The icture shows apartment-house dwellers of New York city preparing their mall plots which increased rapidly because of lack of control material. Caterpillars stripped the trees and shrubs in Amsterdam in early September and millions of the pests in the streets caused much trouble to pedestrians. They also damaged the food crops. Potatoes were badly affected by disease.

Growing shortages of insecticides and fungicides became a matter of concern in the United States long before the end of 1942, but the department of agriculture announced a program for the purchase and importation of rotenone from Brazil and Peru. This material had come for the most part from the East Indies in the past, but was available in South America in 1942 and hopes were expressed of importing at least 4,500,000 pounds. It was also announced by the government that satisfactory fertilizers would be available for commercial growers but that different and less favourable formulas would be supplied to amateurs.

Fruit growers and market gardeners again turned to women and school boys for the marketing of their crops, a tendency which certainly was expected to increase in 1943. In some sections, schools were closed to permit school boys to work in the orchards and berry fields. A beginning was made in the use of women in greenhouses.

Much attention was given to the production of medicinal herbs in the United States, for importation was impossible after the far east was cut off. Greatly increased prices tempted beginners to grow medicinal herbs, but the project is a risky one unless the grower is experienced. The United States department of agriculture issued a pamphlet on medicinal herbs of commercial importance. It is called "Drug Plants Under Cultivation," or "Farmer's Bulletin 1231."

The seed crop in California was excellent but by no means sufficient to meet the demand. California normally supplies about 85% of the flower and vegetable seeds of the U.S. but was being asked to provide seeds for many foreign countries as well. This was combined with a 60% labor shortage. Contrary to general belief, the Japanese on the west coast were not prominent in seed production, accounting only for about 10% of the total amount raised. California seed was shipped to England, South Africa, New Zealand, Australia, Hawaii and Russia. Hawaii, incidentally, made remarkable strides in the production of vegetables and fruits after the war began. Thousands of lawns were spaded under to make way for tomatoes, peas, beans and lettuce.

Much progress was made in weed control, especially in developing selective products which would kill weeds and not injure cultivated plants. The most important new product was ammonium sulphamate, which is nonpoisonous and noninflammable but highly effective against poison ivy and many other weeds. There was a widespread campaign to eradicate poison ivy because of the many hours of lost labour which it caused, especially in war industries and the newer army camps. The Massachusetts Horticultural society, Boston, Mass., issued a comprehensive bulletin on poison ivy and its eradication.

The fact was announced that borax had been discovered to have unexpected value as a selective weed killer, being useful against both poison ivy and ragweed. However, a campaign for the eradication of ragweed was suddenly checked by the discovery that this weed, which is supposed to cause hay fever, had many useful qualities, producing an oil equal to that of soy beans and providing food for great numbers of birds.

Increased use was made of certain synthetic substances which prevent the early dropping of apples and pears when sprayed on the trees, holding the fruit from 10 days to two weeks longer than usual. This fact enabled the fruit grower to spread his harvest over an increased length of time. The shedding of the foliage of holly and other plants was reduced by the use of these hormones, which were found to have many other uses, such as retarding the sprouting of potatoes and bulbs in cold storag
(*See* also BOTANY.) (E. I. F.)

Hospitalization Insurance: *see* INSURANCE.

Hospitals.

The planning in Great Britain for a post-war vamping of the whole basis of medical care volved the hospitals as well. Already this effected a mark co-ordination of the activities of the voluntary and munici hospitals, the government having already agreed to make tional and local authority funds available to voluntary hospita It was planned that all of the hospitals in an area would be co-ordinated that there might be a more efficient division functions. Surveys upon which would be based regional organi tions were conducted in two large areas. In this development Nuffield Provincial Hospital Trust proved of tremendous assi ance. Hospitals would have a definite place, too, in the co- dinated schemes for health care announced by the Brit Medical Planning commission and by P.E.P. (Political and E nomic Planning). The report on social insurance by Sir Willi Beveridge would still further influence the hospital system providing free hospital as well as other care for practically entire population. In the United States, President Roosevel recommendations for compulsory participation in a contribut hospitalization plan was not implemented. However, Americ Hospital association leaders agreed that the present "Blue Cros hospital care plans must achieve greater enrollment, particula in rural areas, and provide broader benefits if more radical for of sickness insurance are to be forestalled.

In Great Britain, the United States and in Canada, the creasing shortage of personnel and of equipment was a seri handicap during 1942. Boards set up to facilitate the allocat of professional personnel to meet military and civilian nee proved helpful. In Australia and New Zealand the evacuat of casualties from the scattered Pacific battle zone complica the situation for hospitals already understaffed. However, an example of adjustment, the fine new Royal Prince Alf hospital at Sydney took in an American hospital unit of 300 be later raised to 400 beds, yet after reorganization had 25 m beds for their own patients than formerly.

Further progress was made in developing the Inter-Americ Hospital association. The hospital associations and leaders the three Americas strongly supported this movement. Assista was also rendered by the Co-ordinator of Inter-American Affa through the Pan-American Sanitary bureau, at Washington a by the School of Tropical Medicine at San Juan, Puerto Ri Plans were laid for a Hospital institute in 1943 in Mexico Ci

Construction.—Although there was need in most countries much new hospital construction, the shortage of critical materi and of labour made adequate construction difficult. In the Uni States, hospital construction was fifth in the order of prior for welfare protection. Under the Lanham Act (Public Law 13 of 1941 the construction of needed hospitals and health cent approved by the Public Health Service was authorized. As Sept. 1, 1942, the Federal Works agency had in hand the c struction of 50 such new hospitals costing $18,345,000, so 125 additions costing $30,960,000 and 105 health centre proje costing over $5,000,000. Because of the shortage of cert materials the trend was to erect so-called "semi-permane buildings of but one or two stories.

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ousing. Following Pearl Harbor, practically no new housing was constructed in the United States for the general blic. No new slum clearance projects were undertaken in 1942. he only housing construction programmed was in military or val or war production areas, to serve the needs of the army, the vy, the Maritime commission and the war industries.

The year 1942 marked the beginning of a co-ordinated govern- ent housing program. On Feb. 24, 1942, the 16 federal agencies d activities dealing with overlapping, duplicating and competi- ve housing programs were merged into the National Housing ency (*q.v.*), created by presidential executive order to admin- er all war housing.

Recognizing the importance of war housing to war production, e NHA administrator was invited to sit with the cabinet. The esident's order, issued under his war powers, was to remain in ect until six months after the end of the war. Any permanent tional housing agency would therefore have to be created by t of congress.

There were three constituent units of NHA: the Federal Pub- Housing authority (FPHA), which in 1942 constructed and naged all public war housing, or delegated these functions to her federal agencies or local housing authorities; the Federal ousing administration (FHA), which insured mortgages on ivate housing and insured loans to finance remodelling to create ditional living units for war workers; the Federal Home Loan nk administration (FHLBA), which dealt with the problems of me financing through the Federal Home Loan Bank system, e Federal Savings and Loan Insurance corporation and the ome Owners' Loan corporation (HOLC).

The organism for an integrated program of public and private using was set. John B. Blandford, administrator of the Na- nal Housing agency stated: "It is a basic policy of the NHA give private industry every opportunity to build as much of e needed war housing as it finds feasible under the necessary strictions such as size, cost, location and occupancy limitations." FPHA and FHA—at the Washington level—worked hand in nd in 1942 to accomplish a mutual goal, but the spirit of co- eration had not yet permeated to all the field offices.

The War Manpower commission and the War Production board *q.v.*) set the pace for war housing construction in 1942. WMC termined the number of people to be brought into an area for dustrial or military purposes. NHA then found out how many isting dwelling units were available and how many new ones d to be built, and programmed them for construction with ivate or public funds. WPB determined the amount of critical aterial that could be allocated to war housing production.

Until the end of 1942, NHA was impeded by the WPB system issuing priorities and attempting to process and administer e distribution of materials instead of allocating them to NHA. PB and NHA, however, worked out their difficulties. NHA s made a claimant agency; sat on the WPB requirements com- ittee; and was given blanket priorities for critical materials, ich it divided among different projects and localities according the need. These arrangements rested on the assumptions that HA would locate housing as near industrial plants as possible, ve due consideration to conservation of materials, and rely upon mporary construction to meet a large share of housing require- ents.

During 1942, 278,000 war housing units of all types were com- eted under preference ratings; 150,000 of these were privately anced family units and 128,000 units were publicly financed; ,000 private units were completed in the early months of the ar without preference rating orders.

FHA had commitments outstanding to insure mortgages financ- g approximately 43,000 units on which construction had not started. FHA emphasis was turned from sale to rental housing because the homes were restricted to the use of war workers coming into communities. There was no surety in 1942 that the war worker would remain permanently in the community. Should the war worker desire to own his home, he could purchase after a period of residence.

The public war housing constructed in 1942 through FPHA included 80,000 family dwelling units, 8,000 war apartments for two-person families, 31,000 dormitories for single workers and 9,000 trailer homes. At the year's end, FPHA had under construction another 144,000 family units, 10,000 war apartments, 52,000 dormitory units and 8,000 trailers.

In preconstruction development, FPHA included 99,000 family units, 18,000 war apartments, 24,000 dormitory accommodations and 5,000 trailers.

At the close of the year, desiring to use every available structure in war production areas to its fullest advantage, NHA launched a War Guest program aimed to house single workers, and—through HOLC—a Homes Conversion program aimed to convert large single-family houses into multi-family apartments. (*See* also BUILDING INDUSTRY; BUSINESS REVIEW: *Industrial Groups;* CENSUS, 1940; FEDERAL WORKS AGENCY; LAW; MUNICIPAL GOVERNMENT; NATIONAL HOUSING AGENCY; WASHINGTON, D.C.)

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Great Britain.—Interest in housing in Great Britain during 1942 centred on postwar programs rather than on current building, although a certain amount of what might be called utility housing was carried out in connection with the development of new factory areas.

Housing would obviously have to be the first concern of the government and the building industry immediately after the war. Up to the end of 1942 there had been 2,750,000 houses damaged by enemy action, but of these, 2,500,000 had been repaired and

DETROIT POLICEMEN subduing Negroes in a race riot precipitated Feb. 28, 1942, when 700 white men picketed a new U.S. housing project built for occupancy by Negro families

were again inhabited. This left 250,000 to be added to the shortage already in existence before the war, which had since been increasing.

Almost every society or institution connected with building or planning was making research into housing questions, and many industrial concerns were experimenting in the use of their particular products for housing purposes.

Few results of the experiments had been seen in 1942, although many of the newer methods adopted in building wartime huts and hostels were regarded as offering potential solutions to the problem of rapidly erecting working-class houses as soon as the opportunity arose.

The ministry of health set up a special advisory committee to establish standards for housing, and this committee was gathering information, statistics and recommendations from every available source.

The problem of heating the small house was being considered by many, especially in relation to the possibility of heat supply on a communal basis. There was controversy on the advisability of equipping the small house with built-in furniture. Certainly the furnishing problem was one which would have to be considered in any housing policy, because, on account of the war, furniture making had practically ceased. There was, and would be, a very serious shortage of the type of furniture usually required for smaller houses. The board of trade scheme for the manufacture of "utility" furniture was bound to influence the manufacture of cheaper furniture, particularly because prices under the board of trade scheme were to be pegged and, for the war period anyhow, production limited to certain selected firms.

Those concerned with housing questions were watching U.S. experiments in the provision of housing for war workers, particularly where methods of prefabrication and mass production were being adopted. (F. R. Y.)

Housing Administration, Federal: *see* NATIONAL HOUSING AGENCY.

Housing Agency, National: *see* NATIONAL HOUSING AGENCY.

Housing Authority, U.S.: *see* NATIONAL HOUSING AGENCY.

Howe, Harrison Estell (1881–1942), U.S. chemist, was born Dec. 15 in Georgetown, Ky. He took his B.S. degree at Earlham college, 1901, and later studied at the University of Michigan. Dr. Howe was consultant in the nitrate division of the army ordnance bureau in World War I; he was again called by the government in World War II to act as chairman of the chemicals group and of the chemicals priorities committee of the OPM priorities division, 1941. He later became chairman of the advisory committee of the chemical section of WPB. On Nov. 6, 1942, he was awarded the Society of Chemical Industry medal for his "valuable application of chemical research to industry." He was the author of several books on industrial chemistry and contributed to many scientific journals. He died in Washington, D.C., Dec. 10.

Hubeny, Maximilian John (1880–1942), U.S. radiologist, was born Oct. 12 in Leipzig, Germany. He went to the United States when a boy and studied medicine at the University of Illinois medical school, from which he graduated in 1909. A specialist in the medical application of X-ray, Dr. Hubeny advanced its use in embryology and obstetrics, in the examination of the head and appendix and in the early diagnosis of pulmonary tuberculosis. He was chairman of several radiological societies, editor of *Radiology*, 1923–31, and gold medallist of the Radiological Society of North America in 1931. From 1936 to 1942 he was director of the X-ray department the Cook County hospital in Chicago. Dr. Hubeny died in C cago, July 2.

Hull, Cordell (1871–   ), U.S. statesman, was born Oc in Overton (now Pickett) county, Tenn. was graduated from the Cumberland university law school in 1 and served as a captain in the Spanish-American War. He ser in congress from 1907 to 1933, except for one brief inter 1921–23. He was elected to the senate in 1931 but resigned 1933 to become President Roosevelt's secretary of state. In nationally, his name became closely associated with the "g neighbour" policy in South America and elsewhere; he was a c sistent foe of aggression in settling disputes. He roundly nounced the Japanese attack on the Philippines and Pearl Har on Dec. 7, 1941, as a "treacherous and utterly unprovoked tack"; he further accused the Nipponese of having been " famously false and fraudulent" by preparing the attack while t envoys were in the United States conducting purported pe negotiations.

On Nov. 8, 1942, the day U.S. troops landed in French No Africa, Hull asserted that this successful invasion vindicated state department's oft-criticized policy of maintaining diplom relations with Vichy. Obviously referring to queries as to whet the Darlan regime would be retained after the war, Hull decla on Dec. 2 that the United States had first to win the war be considering political issues. He condemned the assassination Darlan three weeks later as "an odious and cowardly act."

Hungary. A kingdom in central Europe. Area (1940) 61, sq.mi.; pop. 12,708,439. Capital: Budapest. Cl cities: Budapest (1,115,877); Szeged (131,893); Debrec (122,517); Kolozsvár (100,844); Kecskemét (83,732). Acco ing to official figures published in 1942, the territory acquired Hungary from Yugoslavia in 1941 and called officially "Sou land," contained 339 towns with a population of 1,024,876. a result of this re-incorporation, the population of Hungary 1942 was officially estimated at 14,733,000 in an area of 172, sq.km. Religion: the majority are Roman Catholics, with str Protestant and smaller Jewish and Greek minorities. Ki throne vacant since 1918, royal functions exercised by reg Nicholas Horthy de Nagybánya. Premier (1942): Nicholas Kallay.

History.—In Feb. 1942 the Hungarian parliament passe law which provided for the nomination of a vice-regent, in v of the fact that the regent Admiral Nicholas Horthy was old in poor health. Only the national socialist Arrow Cross pa voted against it. Horthy's eldest son, Stephen, was then elec by acclamation. He was 38 years old, president of the Hungar state railroad and a member of the upper chamber since 1 The new vice-regent assumed his duties March 4, but in Aug he was killed in air combat on the Russian front. His descenda were granted the hereditary title of "serene highnesses."

The third session of the Hungarian parliament, which opened June 14, 1939, was closed Feb. 24, 1942, and the session started March 10. In the intervening period the largest parties, the government party and the Transylvanian pa under the leadership of Count Bela Teleki, entered a coalit and decided on closest collaboration in view of Hungary's m tary effort. On March 7 the cabinet of Dr. László de Bárdo who was also foreign minister, resigned, and on March Nicholas von Kallay formed the new cabinet. He also assum temporarily the foreign office, while all the other ministries mained unchanged. In his first speech the new premier decla that Hungary would continue to fight without the slightest h tion on the side of Germany and Italy.

The relations between Hungary and Rumania continued very rained. It was only with difficulty that open warfare was oided. The violent reaction of all Rumanian leaders to the ss of northern Transylvania to Hungary aroused Hungarian blic opinion. Rumanian complaints about the brutal ill-treat- ent of their compatriots in the Hungarian part of Transylvania ere countered with similar complaints by the Hungarians. Rela- ons with Slovakia and Serbia were only a little less strained. he former minister of justice, von Tomcsányi, was named com- issar of the former Czechoslovakian Ruthenia, or, as it was lled in Hungary, Carpathian land. Milan Popovitch, the only rb member of the Hungarian parliament, revealed the brutality the methods used to suppress an uprising of the Serb popula- on of the Bacska, the Yugoslav province between the Danube d the Tisa rivers. In his reply Premier Kallay had to acknowl- ge not only the extent of the Serb uprising but also that Hun- rians had committed acts of repression for which they were ly punished. Kallay promised that in the future every care ould be taken to avoid similar actions.

During 1942, Hungary's active participation in the war be- me more and more pronounced, especially on the Russian front. Sept. 5 Budapest had its first air-raid alarm. The Hungarian vernment tried to ward off too great demands of the German vernment for more soldiers and more foodstuffs. The German reign minister, Joachim von Ribbentrop, visited Budapest at e beginning of January and was reported to have demanded at the Hungarian army be put at Germany's disposal, while rmany would allow Hungary greater independence in internal airs. A week later Ribbentrop was followed by the Italian reign minister, Count Ciano, and in April the Hungarian chief staff, Field Marshal Franz Szombathelyi, visited Italy.

The close friendship with Germany had no influence on the itude of the Hungarian government to the Arrow Cross party, ich desired to bring about a completely national socialist gime, but was hindered by an internal struggle. The party's der, Ferenc Szálasi, expelled the two vice-leaders, Kálmán bay and General Eugene Ruszkay. The party also opposed e election of a vice-regent. Some members of the party joined e group of former premier Bela Imredy; others emphasized e need for national unity.

In the fall, new negotiations started between Germany and ngary to regulate mutual exports and imports. Two leading rman economic experts, Dr. Walther Funk and Dr. Karl odius, arrived in Budapest to demand that Hungary should d more foodstuffs, hides and other urgently required raw ma- rials to Germany.

Education.—Education is compulsory for children between and 12, while for three more years they have to visit continua- n schools or courses, many of them specialized agricultural ools. Besides these continuation schools and a relatively large mber of special schools, Hungary had, in 1939, 8,103 elemen- ry schools with 23,215 teachers and 1,104,916 pupils. In the ies there existed 418 primary schools with 4,619 teachers and 5,466 pupils. High schools of different kinds numbered 263, th 4,709 teachers and 79,435 students. There are four univer- ies, Budapest, Kolozsvár (Cluj or Klausenburg), Pécs (Fünf- chen) and Debreczen with a total of 7,032 students, of whom 11 were women.

Defense.—On Jan. 28, 1939 Hungary re-introduced compul- ry military service for all men between 18 and 60. Men from to 48 belong to the second, and from 49 to 60 to the third serve. Men unfit for military service become liable to work on blic works. In 1941 there were 8 army corps, and in addition motorized brigades and 2 cavalry brigades. The air force was very small and there was no navy. The budget of 1941 provided 385,000,000 pengoes for national defense.

Finance.—The monetary unit is the pengoe, containing 0.263158 grams of fine gold, equal to 19.77 cents U.S. in March 1941. The revenue for 1942 was estimated at 2,060,000,000, the expenditure at 2,202,000,000 pengoes. The public debt on Sept. 30, 1941 amounted to 3,545,000,000 pengoes. Bank notes in circulation on Sept. 30, 1940 were 1,357,000,000 pengoes. The national bank of Hungary had, as against this circulation, a metal reserve, including foreign exchange, of 166,000,000 pengoes.

Trade and Communication.—Hungary imported, in 1939, 28,600,000 quintals of goods for a value of 489,000,000 pengoes and exported 28,500,000 quintals to a value of 605,000,000 pengoes. Of the imports, almost half the value came from Germany, and half the exports went to Germany. Italy held the second place in 1939, Great Britain the third.

Hungary had 6,307 mi. of railroad in 1939, 2,898 post offices, 6,902 mi. of telegraph lines and 20,976 mi. of telephone lines.

Agriculture, Industries, Mineral Production.—Hungary's main production is agriculture. In the fertile plains of the Danubian basin potatoes, maize, wheat, sugar beets, rye, barley and grapes are grown. Hungary is rich in forests, pigs and cattle. It has a wealth of good coal and important bauxite deposits. Industrial development has only started recently. Most of the industries are connected with agriculture. Hungary produced in 1939 10,625,452 tons of coal, 500,193 tons of bauxite, 409,292 tons of pig iron and 732,615 tons of steel. (*See* also RUMANIA; WORLD WAR II.) (H. Ko.)

Hurdling: *see* TRACK AND FIELD SPORTS.
Hygiene, Industrial: *see* INDUSTRIAL HEALTH.
ICC: *see* INTERSTATE COMMERCE COMMISSION.

Ice Hockey.

The National league, major circuit of professional hockey, experienced one of its more unusual seasons during 1942. The New York Rangers won the league championship, but could go no further than the semi-finals in the Stanley cup playoffs. The Toronto Maple Leafs, victors over the Rangers in the cup playoffs, went on to win the Stanley cup in the final series against the Detroit Red Wings. In keeping with the dizzy season, Toronto managed to lose the first three matches of the series, then won four straight to regain the trophy it last won in 1932. More than 1,860,000 admissions were paid for the National league and Stanley cup season of 1941–42.

The American league title went to Indianapolis on the strength of three victories in the five-match playoff series against Hershey, Pa. Omaha won the American association championship by taking three straight in its playoff with Kansas City. The Eastern league crown went to the New York Rovers.

Amateur hockey continued to flourish in spite of war curtailments. The Royal Canadian Air Force captured the Allen cup, awarded annually to Canada's amateur champion. The Memorial trophy, emblematic of the Canadian junior hockey championship, was won by Portage La Prairie, Manitoba. Boston college dethroned St. Nicholas as champion of the National A.A.U. hockey tournament, defeating the defending titlist in the final, 6 to 4. Dartmouth returned to first place in the Pentagonal league, replacing Harvard.

Numerous changes marked the opening of 1942–43 professional hockey. The American association, made up of Midwestern cities, disbanded. The American league in the east reduced its teams from 10 to 8. The National league dropped one franchise, Brooklyn, and went along with six teams—Toronto, New York, Montreal, Chicago, Detroit and Boston.

Defenseman Tom Anderson of the Brooklyn Americans won the Hart trophy as the player most valuable to his team in 1941–1942. Frank Brimsek of Boston easily won the George Vezina cup as the National league's best goalie. He allowed only 118 goals to pass into his nets, as compared to 136 by "Turk" Broda, his nearest competitor and the 1941 Vezina trophy winner. Grant Warwick, left wing of the New York Rangers, was voted the outstanding rookie of the National league, while Syl Apps, Toronto centre, won the Lady Byng trophy as the player with the best conduct on the ice. (M. P. W.)

Iceland. An island state of the north Atlantic. Area, 39,709 sq.mi.; pop. (1939 est.) 120,264. Capital, Reykjavik, the only large town (pop. in 1939, 38,219). Religion, Lutheran Christian. Rulers: hereditarily united with Denmark, Iceland became an independent state Dec. 1, 1918, legally united with Denmark only by recognition of a common king. After April 9, 1940, the executive power was wielded by the Icelandic ministry, with a regent, Sweinn Björnsson.

History.—In April 1942 Major Gen. Charles H. Bonesteel of the U.S. army replaced Gen. Henry Osborn Curtis of Great Britain in command of United Nations' forces in Iceland. Gradually British troops were removed, and by autumn U.S. troops were the sole occupying forces.

Internal political difficulties were heightened by Iceland's position in the war. Prime Minister Hermann Jonasson resigned in May and was succeeded by Olafur Thors. But this government found it impossible to hold the confidence of a majority of the Althing (parliament), and on Dec. 16 the regent asked Dr. Björn Thordarson to form a provisional nonpartisan government. The elections of Nov. 1942 returned 20 Independence party members, 15 Progressives, 10 Communists and 7 Labourites to the Althing.

On May 17 the Althing passed two significant resolutions: that Iceland did not intend to renew the union with Denmark when it expired on Jan. 1, 1944; and that Iceland intended to become a republic.

The social problems of military occupation in a small country were accentuated by the economic problems of the inflationary trend. In Reykjavik the cost of living index soared (using Jan.–March 1939 as 100) from 146 in Jan. 1941 to 183 in Jan. 1 and up to 210 in Sept. 1942. Iceland was enjoying the m prosperous period in its history, yet serious unbalance w threatened by the rapid price changes.

Finance.—Monetary unit: krón=18 U.S. cents (1939), ab 15.5 U.S. cents in 1942; in 1939 government revenues w 19,930,879 krónur (and estimated for 1943 at 33,736,100 kr expenditures, 19,378,318 kr. (and est. for 1943 at 28,333, kr.); national debt (1939), 56,648,000 kr.; notes in circulati 14,000,000 kr.; gold reserve, 5,762,000 kr.; bank capital a reserves, 17,577,000 kr.; bank deposits, 76,720,000 kr.; to bank funds, 48,997,000 kr. Bank deposits were 303,034,000 in Aug. 1942. Note circulation jumped from 24,580,000 kr. Jan. 1941 to 78,910,000 kr. in Aug. 1942; loans in the sa period from 92,137,000 kr. to 147,577,000 kr., and savings posits from 18,526,000 kr. in Jan. 1941 to 29,403,000 kr. March 1942. Gold reserves and bank capital remained practica at the 1939 figures.

Trade.—Exports in 1939 totalled 69,654,000 kr.; chief artic of export were fish, salted and dried (17,228,000 kr.); fish (12,491,000 kr.); herring (11,800,000 kr.); fresh fish (8,988,0 kr.); fish flour (7,291,000 kr.); sheepskins, etc. (3,309,000 kr Imports in 1939 totalled 61,639,000 kr. The chief imports w gasoline (9,672,000 kr.); textile manufactures (6,583,000 kr metal wares (5,182,000 kr.); wood (5,483,000 kr.); machi (4,727,000 kr.); automobiles, etc. (3,638,000 kr.). Great Brit took most of Iceland's exports in 1939 (11,794,000 kr.), follow by Sweden (8,517,000 kr.); Denmark (7,708,000 kr.); Germa (7,488,000 kr.) and the United States (7,378,000 kr.). Gr Britain also was first in supplying Iceland's imports, with goo valued at 13,785,000 kr. Denmark was second (12,684,000 k and Germany was third (10,125,000 kr.).

The years 1941 and 1942 show some significant contrasts w the peacetime balance depicted in the above paragraph. Expo rose steeply in value: 188,504,000 kr. in 1941, about two a one-half times the value of 1939; in 1942 the figure was 148,22 000 kr. for only January through August. In 1941 a large cre balance was allowed to accumulate, but in 1942 Iceland beg to import goods almost to the extent of its sales, having

DOME-SHAPED SHELTERS of the U.S. Iceland Base command

NAVY SUPPLY SHIP dragging its anchor during a gale along the coast eland in Jan. 1942

ourable balance of only 9,080,000 kr. at the end of August.

ommunication.—Highways (1936) totalled 2,728 mi., of ch 1,736 mi. were improved and 992 mi. were unimproved. es of telegraph lines (1939): 9,700. Military occupation led unrevealed new construction.

griculture.—In 1938 the chief products with their yields tons were as follows: hay (269,024), potatoes (13,160), nips (2,856). (F. D. S.)

Skating.

Ken Bartholomew of Minneapolis and Carmelita Landry of Fitchburg, Mass., retained ir senior speed skating supremacy with victories in both the ited States and North American amateur championships. In eating their double conquests of the country's two major out- r meets, the youthful pair demonstrated the hard and easy s of winning championships. Miss Landry had little trouble ning the women's senior titles, sweeping all five events in each t. Bartholomew, on the other hand, was extended to the last es to score his double.

Herman Van Putten, New York city bridge painter, captured minor skating titles—the North American indoor and the r-city silver skates. Mrs. Elaine Bogda Gordon, a Chicago sewife, won the women's indoor speed skating title. The Mid-Atlantic senior championships were won by Leo Lavalle, Paw- ket, R.I., and Virginia Jahn, Cresskill, N.J.

Robert Specht, a 21-year-old Chicagoan who later turned pro- sional, captured the men's senior figure skating title of the ted States. Specht easily outscored the field in the difficult ool figures, and then matched his closest opponent, Arthur mditch of Philadelphia, in the colourful free-skating competi- . Mrs. Jane Vaughn Sullivan of Philadelphia retained the men's senior championship, while Walter Sahlin of Minneapolis Dorothy Goos of New York won the national junior crowns. (M. P. W.)

aho.

One of the far northwestern states belonging to the group regionally designated as the Pacific northwest. ho was admitted to the union on July 3, 1890, and is popu- y known as the "Gem state." Area, 83,888 sq.mi.; pop. (1940) ,873, of which 66.3% was rural, 33.7% urban. There were 38 Indians in the state. Principal cities are Boise, the capital ,130), Pocatello (18,133), Idaho Falls (15,024), Nampa (12,) and Twin Falls (11,851).

istory.—State officers elected Nov. 3, 1942 were as follows: ernor, C. A. Bottolfsen (R); lieutenant-governor, Edward son (R); secretary of state, George H. Curtis (D); attorney eral, Bert H. Miller (D); auditor, Calvin E. Wright (D); su- intendent of public instruction, C. E. Roberts (D); mine inspector, Arthur Campbell (D). The 27th legislative session convened Jan. 4, 1943, with a Republican majority in both houses. The budget placed before the body called for drastic reduction in expenditures.

Education.—The school population in 1942 was 120,029. There were 79,771 pupils in elementary schools; 9,672 in junior colleges and 30,586 in high schools. The state university is at Moscow, the southern branch of the state university at Pocatello; there are two state normal schools, one at Lewiston and one at Albion.

Charities and Correction.—The state industrial training school is at St. Anthony and the penitentiary at Boise. There was little change in the average number of inmates during 1942—approximately 175 at the former and 250 at the latter. There are two institutions for the insane; one at Blackfoot and the other at Orofino. There is also a home for the feeble minded at Nampa.

Communication.—There were 4,910 mi. of state highway and approximately 33,000 mi. of county and forest roads June 30, 1942. There were approximately 2,890 mi. of railroads in 1942; there were eight major airports under government control and many emergency and forest landing fields. In 1942 there were approximately 65,000 telephones in use, with a line mileage of 150,543. Telegraph mileage was 8,226.

Banking and Finance.—On Dec. 31, 1942, there were 33 state banks with capital of $1,275,000 and surplus of $963,600. As of June 30, 1942, there were 53 national banks with capital of $3,730,000 and surplus of $2,713,800. The state's total assessed valuation was $400,236,991. The state treasurer's receipts for 1942 were $38,976,612; disbursements $37,932,574; total bonded debt on Dec. 31, 1942 was $1,735,600.

Table I.—*Principal Agricultural Products of Idaho, 1942 and 1941*

Crop	1942 (est.)	1941
Wheat, bu.	21,722,000	27,822,000
Corn, bu.	2,520,006	2,385,000
Oats, bu.	8,000,000	6,680,000
Barley, bu.	14,874,000	11,400,000
Sugar beets, tons	1,160,000	823,000
Dry beans, 100-lb. bags	2,072,000	1,888,000
Seed peas, bu.	1,690,000	1,016,000
Hay (all kinds), tons	2,306,000	2,391,000
Potatoes, bu.	30,360,000	27,450,000

Table II.—*Principal Mineral Products of Idaho, 1941 and 1940*

Mineral	Value, 1941	Value, 1940
Gold	$ 5,250,000	$ 5,075,000
Silver	11,808,000	12,250,000
Copper	912,600	757,100
Lead	11,592,000	10,380,000
Zinc	11,795,999	9,184,500

Agriculture.—The total value of crops in 1941 was $89,587,000 as compared with $61,744,000 in 1940.

Manufacturing.—There were 533 manufacturing establishments (1940) with 12,797 workers and a payroll of $16,249,685.

Mineral Production.—Total value of mineral production for 1941 was $41,357,800 for the five leading metals. In 1941 there was the largest output of gold since 1871

C. A. BOTTOLFSEN, Republican, elected governor of Idaho Nov. 3, 1942 and the largest production of zinc in the history of the state. Figures for 1942 were unobtainable because of federal regulations. (B. De.)

Illinois.

A north central state of the United States, admitted to the union in 1818, nicknamed the "Sucker state," sometimes called the "Prairie state." Total area, 56,400 sq.mi. of which 55,947 sq.mi. are land. Pop. (1940) 7,897,241, including 3,967,481 males and 3,929,760 females; 7,503,987 white, 393,254 nonwhite. Population classed as urban was 5,809,650, rural not on farms 1,121,823, rural farm 965,768. The census bureau estimated the 1942 population at 8,008,067. Springfield, the state capital, with a population of 75,503, is the fifth Illinois city in size. Chicago (3,396,808) is the largest Illinois city, followed by Peoria (105,087); Rockford (84,637); East St. Louis (75,609).

History.—Military mobilization and war production dominated the Illinois scene in 1942. The Great Lakes Naval Training station was supplying numerous navy personnel, Camp Grant was one of the largest army receiving centres and Ft. Sheridan an important army headquarters. The huge ordnance depot at Savanna, the Kankakee Ordnance works, the Elwood Ordnance plant and the Illinois Ordnance plant at Marion were all in production, while the historic arsenal at Rock Island was vastly expanded. Chanute Field near Rantoul and Scott Field near Belleville were centres of intense and ever expanding aviation activity. The available manpower of the state over age 20 was very largely mobilized under selective service, and voluntary enlistments of younger men numbered scores of thousands. By Dec. 1, 1942, a total of $617,475,000 in war bonds had been absorbed by private buyers, and the state's financial institutions had taken billions.

In the elections of 1942 the Republican party made gains. U.S. Senator C. Wayland Brooks, at the head of the Republican ticket, defeated Raymond S. McKeough, Democrat, for the junior U.S. Senatorship by a vote of 1,582,887 to 1,380,011. Republicans gained 3 U.S. Representatives, electing 19 to 7 Democrats. The entire Republican slate for state offices was elected. The vote cast was the smallest since 1934.

Dwight H. Green was governor of Illinois in 1942; Hugh W. Cross, lieutenant governor; Edward J. Hughes, lone Democrat official, secretary of state; Arthur C. Lueder, auditor; Warren Wright, treasurer; and George F. Barrett, attorney general.

Education.—Enrolment in 11,996 Illinois school districts, according to the latest figures available in 1942, was 1,287,085 of whom 379,163 were in secondary schools. Teachers numbered 49,132. Current expenses were $117,493,670 from the educational fund, $9,204,234 from the building fund, total $126,697,905.

Public Welfare, Charities and Correction.—Persons receiving public assistance in Illinois, under all five programs in course, had declined by 326,023 at the close of 1941 and this trend was steady throughout 1942, with WPA almost liquidated.

Cost of old age, blind and dependent children aid since April 1, 1936 had been $171,635,982. The 200,000 persons on those programs in 1942 received approximately one-fifth of the money provided by the state budget. The Division of Prisons operated five institutions with 11,094 inmates and 1,287 employes. The appropriation for maintenance was approximately $3,500,000 per year; the per capita cost per prisoner about $264 per year.

Communication.—The network of high type highways in Illinois comprised 13,683 miles in 1942, connected to about 56,000 miles of lower type road. The direct state expenditure on the system was $17,435,000 per year (exclusive of federal and local funds). The railway mileage of Illinois in 1942 was about 11,500 miles.

Banking and Finance.—National banks of Illinois numbered 339, deposits, $3,307,071,000, investments $1,866,452,000. State banks and trust companies numbered 495, deposits $1,249, 000, investments $594,581,000.

Money appropriated by the state legislature for the bie period July 1, 1941-June 30, 1943 totalled $523,907,802. Rec of the State Treasury for 1941 were $374,029,810. Tax rec of 1942 exceeded budget estimates, the reduced sales tax fo fiscal year 1942 netting $85,589,258 against anticipatory esti of $65,000,000. The bonded debt of Illinois was $149,461

Agriculture.—Illinois crops harvested in 1942 were $623,295,000, fourth largest gross value on record. The ac harvested was 19,236,600. Cash farm income for 1941 from and livestock was $703,000,000, exclusive of AAA govern payments. The latter approximated $30,000,000. The weath 1942 caused a high yield of corn and soybeans, a very wheat crop and a fruit tonnage 14% below average.

Table I.—*Leading agricultural products of Illinois 1942 and 1941*

	1942	1941
Corn, bu.	433,438,000	409,213,000
Soybeans, bu.	73,794,000	49,098,000
Oats, bu.	141,320,000	153,467,000
Winter wheat, bu.	12,623,000	34,080,000
Tame hay, tons	3,942,000	3,680,000

Manufacturing.—The value of products manufactured in nois in 1939, according to the U.S. biennial census, was $4, 860,733; the number employed was 688,800; total wages salaries were $988,453,881. The principal industries and the of their products were as follows: meat packing, $479,501 steelworks and rolling mills, $207,301,815; petroleum refi $122,933,528; tractors, $121,550,621.

Table II.—*Production of Coal and Petroleum in Illinois, 1940 and 193*

	1940	1939
Bituminous coal, tons	45,977,479	47,627,45
Petroleum, bbl.	140,788,000	94,912,00

Mineral Production.—The total value of minerals prod in Illinois in 1939 was $210,295,738. (L. H.

Illinois, University of.

In 1942 the university mad greatest contributions to vi and post-war progress through the activities for which it best prepared by experience and equipment—education an search. War service leaves were granted (as of Dec. 1, 194 425 staff members.

A major contribution to war production was the trainin 10,000 persons in 45 Illinois war-factory communities thr the engineering, science and management war training, fina by the federal government and supervised by the unive The U.S. navy established one of its large training station the campus. Both officers and enlisted men attended signal diesel engineering schools. Navy personnel in training at time numbered 2,000; total trained annually, 9,000.

The wartime "speed-up" of regular instruction was conti A four-quarter system was established for the colleges of cine, dentistry and pharmacy in Chicago. At Urbana, the su session in 1942 was lengthened. A plan was adopted, effe June 1, 1943, for a three-semester academic year on the down- campus; students may thus graduate in three years or Enrolment in the reserve officers' training corps reached a high of 4,779, including 778 juniors and seniors in the adva course leading directly to commissions.

Early in 1942 the 20,000,000-volt Betatron was put into o tion on the campus. The instrument was designed by Donald W. Kerst and was considered the outstanding dev nt in atomic physics in more than a decade. It is a high-tage "atom-smasher" whose power can be precisely controlled, l the world's most powerful X-ray. Facilities of the college medicine were expanded by the opening of the Neuropsychi-ic institute of the Illinois state department of public welfare, ffed by the university, and the taking over by the university of Illinois Eye and Ear Infirmary in Chicago.

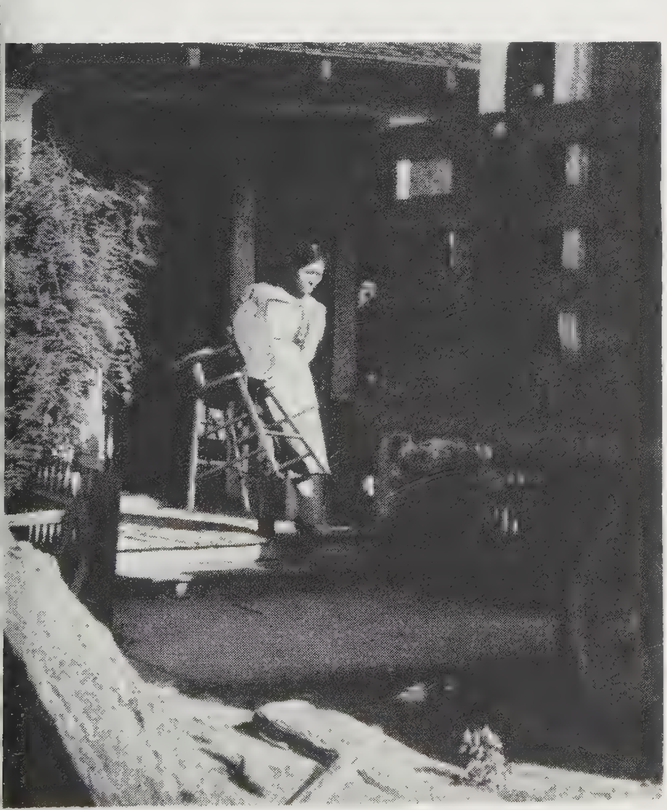
The university budget for 1942–43 was $10,734,672, of which 606,463 was to come from state tax revenues. For statistics enrolment, faculty, endowment and library volumes, *see* IVERSITIES AND COLLEGES.

umination: *see* ELECTRICAL INDUSTRIES.
.O.: *see* INTERNATIONAL LABOUR ORGANIZATION.

migration and Emigration, U.S.

The immigration and emigration of ns are controlled in the United States by laws and treaties l by regulations based thereon, and are under the direction of commissioner of immigration and naturalization in the depart-nt of justice. Aliens seeking to enter the United States for manent residence are limited as to quality by the act of . 5, 1917, which requires that they meet certain standards, ntally, physically, morally and economically. The Quota act sed on May 26, 1924, limits the number that may enter for manent residence from certain countries.

During the fiscal year ended June 30, 1942, officers of the nigration and naturalization service passed upon 44,899,283 sons' entries into the United States. Of these 43,679,900 were oss land borders, including 5,253,535 alien entries and 12,227,- entries from Canada, and 15,721,746 alien entries and 10,- ,431 citizen entries from Mexico (making a total of 20,975,281 ns and 22,704,619 citizen entries across both land borders). Alien entries for permanent residence numbered only 28,781 the fiscal year ended June 30, 1942, a decrease of 22,995 from the fiscal year 1941 and the second lowest number to take up permanent residence in the United States during any fiscal year since 1831.



ANESE HOUSEWIFE moving from her home on Terminal Island near San ro harbour, Calif., in Feb. 1942 after the U.S. government had ordered the cuation of aliens. Later all Japanese, German and Italian aliens were moved

Quota immigrants numbered only 14,597 although under the law 153,774 quota immigrants could have been admitted. Only 7,363 emigrant departures occurred during the fiscal year of 1942, the lowest number since 1908 when records of departure were first made. Immigration of permanent residents exceeded emigration by only 21,428.

During the period 1,833 aliens were excluded. There were 40,653 vessels boarded and 1,661,582 alien and citizen seamen inspected. The immigration border patrol officers patrolled 11,854,842 mi., examined 4,736,341 conveyances, and questioned 13,240,125 persons which resulted in the apprehension of 15,237 persons and the seizure of 192 conveyances. During this period 3,709 aliens were deported from the United States and 6,904 who had been adjudged deportable were allowed to depart at their own expense without warrants of deportation. (*See* also ALIENS; CENSUS, 1940; REFUGEES.) (E. G. H.)

Imports: *see* INTERNATIONAL TRADE.
Incendiary Warfare: *see* WARFARE, INCENDIARY.
Income, U.S. Distribution of: *see* WEALTH AND INCOME, U.S. DISTRIBUTION OF.
Income Tax: *see* TAXATION: *Income Tax.*

India.

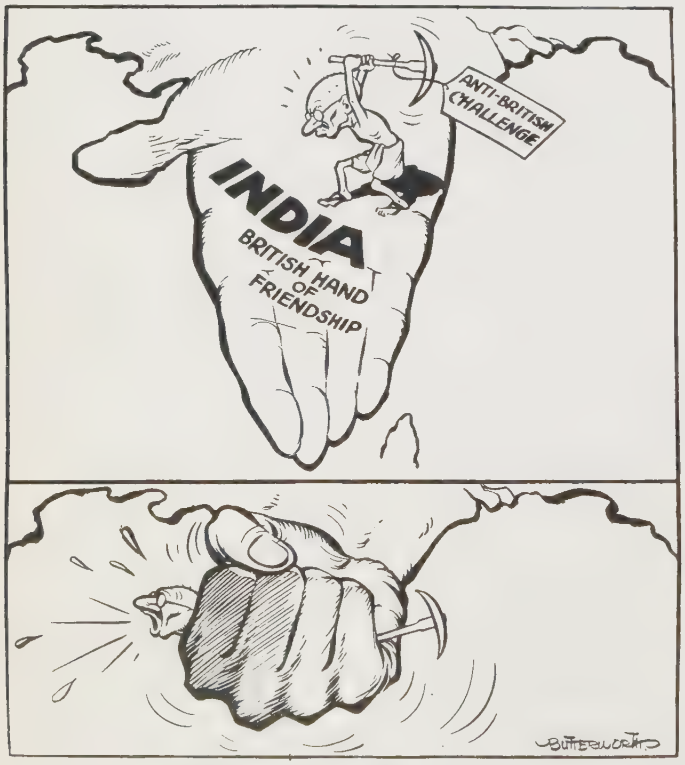
A sub-continent projecting from the mainland of Asia, India lies between the 8th and the 37th degrees of north latitude. It comprises 11 major or "autonomous" provinces, five minor areas directly administered by the central British government and a large number (between 500 and 600) of states under Indian rulers. The latter are scattered about the sub-continent and vary greatly in size and importance, as well as in the powers enjoyed by their chiefs. British India (the 16 major provinces and minor areas) has its capital at New Delhi and is under a viceroy and governor-general (the marquess of Linlithgow, appointed in April 1936), who is also the representative of the crown in its relations with the native states. The total area is 1,575,187 sq.mi., of which the native states and agencies total 712,508 sq.mi.; pop. (est. 1941 census) 388,800,000. Chief cities (pop. census 1931): Calcutta (1,485,582); Bombay (1,161,383); Madras (647,230); Hyderabad (466,894); Delhi (447,442); Lahore (429,747). Languages: Hindi, Bengali and Urdu the most important; religions: Hinduism (approx. two-thirds), Mohammedan (approx. one-fifth). Ruler, George VI, emperor.

History.—In 1942 the Indian sky was darkened by two heavy clouds—the threat of invasion by Japan, and the rejection by the Indian political leaders of a new constitution offered them by the British government. The Japanese menace evoked prompt and loyal support for the United Nations from the princes, from the fighting classes and in the manufacturing ability of the country; the wordy warfare of the politicians was conducted as if the actual clash of arms were raging on another planet.

At the end of 1942 the impasse between the government and the congress was complete. The passive resistance internees, including Abdul Kalam Azad, the president of the congress, and Jawaharlal Nehru, were then released from their brief incarceration; and the viceroy (Lord Linlithgow) broadcast yet another unavailing call for unity and support of the allied war effort. India was invited to send representatives to the war cabinet in London and to the Pacific war council; and in Feb. 1942 Chiang Kai-shek, the Chinese generalissimo, visited India and issued a stirring appeal for a united front against the axis in its assault upon the freedom of the peoples of Asia. All to no purpose. Although some apprehension was aroused by a statement of Winston Churchill regarding application of the Atlantic Charter to India, the essential issue was not long to remain in suspense. On March 11, 1942, the prime minister announced in the house of commons that Sir Stafford Cripps, formerly an advanced member of the socialist party and later British ambassador to the U.S.S.R., was starting for India with a complete project of constitutional reform for discussion with the Indian leaders. On March 23 Sir Stafford reached Delhi, and his offer was released on the 29th. By April 11 it had been rejected and was withdrawn, and Sir Stafford left for London at once.

The intervening fortnight had been one of strenuous endeavour to reconcile the leaders of the political parties: but they had never met among themselves. The Declaration, as the project was styled, had been drawn in London in a hopeful spirit of compromise: it evoked in Delhi no corresponding spirit among the parties which it was intended to satisfy, no detachment from communal interests, little constructive thought for India and her future. Falling into two parts, the proposals dealt, first, with the completely new political status of India after the war and, then, with the measures of provisional advance that would be possible while war continued. It was on the latter that the party leaders for a time concentrated their opposition. The British government had declared that, during the critical time facing India, Britain must remain responsible for the conduct of the country's defense as part of its world war effort; but that in all other respects it would welcome the full co-operation of Indians in the central administration. As explained by Sir Stafford Cripps, this meant that the commander-in-chief must remain the war minister, responsible for the portfolio of defense; but that all the other posts in the viceroy's cabinet might be held by Indians. Resentment was expressed that Indians should be singled out as incompetent to fill one particular office; and Sir Stafford was well on the way to an arrangement which would get over this difficulty.

The grievance, however, was nothing but a feint. The permanent postwar constitutional proposals were what the political leaders had determined not to accept, and they ultimately said so.



"THE FRIENDLY HAND CAN ALSO BE FIRM": a British reminder to Gandhi in Aug. 1942. Cartoon by Butterworth from the Manchester *Daily Dispatch*

These proposals, and the reasons given in the first instance rejecting them, may be thus stated:

1. Immediately after the close of the war, an elected b would be set up to design a new constitution for an Indian un federal in type, with the same status in the commonwealth as existing dominions. The electoral college would be the mem of the lower houses of all the provincial legislatures, and re sentatives would be added from states wishing to particip Here in effect was the constituent assembly for which the cong had always pressed, and in this form exception could hardly taken to it, though the congress demurred to the inclusion "palace nominees" from autocratic states.

2. Subject to 3 and 4 below, the British government undert to accept whatever form of constitution this body might fra No promise could be more definite. It gave the full prospec dominion status, which in turn implied, as Sir Stafford was c ful to point out, the right of the new dominion to secede f the British empire if it wished. Objection thus was difficul formulate; but the Muslims had made it clear that they would accept from the constitution-making body any majority deci in which they did not concur.

3. Any province unwilling to accept the new constitution an enter the union would be at liberty to stay outside and fram separate constitution for itself: similarly, any state desirou contracting out could do so and have its treaty status suit adjusted. This was the response of the British governmen the Muslim demand for Pakistan (*see* below): but the Mus did not consider it sufficiently categorical, the congress demned it as shattering the unity of India, and the Sikhs nounced it as a betrayal of their community because it w place their home province, the Punjab, under Mohammedan

4. With the new union when constituted, the British gov ment would conclude a treaty, making the transfer of power c plete, and providing protection for racial and religious minori Sir Stafford was asked if this provision was intended as an brella for British commercial interests, and answered in the n tive.

These then were the salient features of the Declaration, the reasons given throughout the discussion for its rejection. to the eleventh hour accommodation seemed possible: and an other conciliatory influences Louis Johnson, Mr. Roosevelt's resentative in India, took an active and helpful part. On Apri however, all disguise was thrown aside, and the congress infor Sir Stafford that it would negotiate no further unless a coal government were set up at once, consisting entirely of In members, subject to no control by the viceroy or the Br parliament, and responsible for the whole administration of country. To this Sir Stafford's reply was final: a tremen constitutional change of the sort could not be effected in middle of the war; and in any case it meant that "a nomin cabinet (nominated presumably by major political organizati would be responsible to no one but itself, could not be remo and would in fact constitute an absolute dictatorship of majority." Mohammed Ali Jinnah, president of the Mu league, subsequently endorsed this, stating that he would n enter a coalition government unless the Pakistan scheme accepted. The Declaration was accordingly withdrawn, th the door to negotiation remained open.

At this point a brief diversion on Pakistan may be useful. some time, under the dominant personality of Jinnah, Mu opinion had been hardening in favour of a partition of India tween its two great communities, into Hindustan (the countr the Hindus) and Pakistan (the country of the Pure). The la would stretch across the northwest of India, with an eastern in Bengal, and would form an independent Asiatic state wit

IOUS RIOTING broke out in Bombay and other cities of India Aug. 10, 2, the day after Gandhi's arrest by the British

re in an all-India union. It would be a somewhat amorphous ritory, and, unless supplemented by vast and forcible transfers population, it would contain large Hindu and other minorities which no safeguards had been suggested. Despite its vague-s, the idea became a battle-cry. "Without it," cried Jinnah, e Muslims will be absolutely wiped out of existence."

fter the departure of Sir Stafford Cripps, Gandhi at once took field. His first stroke was to expel from the congress organ-tion one of its staunchest supporters, C. R. Rajagopalachari, me minister of Madras, for the crime of having proposed an e-branch to the Muslims. His next move was to publish the owing statement: "The presence of the British in India is an itation to Japan to invade India: their withdrawal would re-ve the bait"; and to follow this by a call for open rebellion "of urely nonviolent character." Protests immediately poured in m the Muslims and most of the other political groups: but on g. 8 the congress authorized the starting under Gandhi of "a ss struggle on nonviolent lines on the widest possible scale" inst the government. The body which had to deal with this llenge was the viceroy's cabinet, which in July 1942 had been arged from 12 to 15, and now consisted of 11 Indians and 4 tish members. They showed no hesitation in meeting the eat: the congress and its committees were declared illegal lies, and Gandhi, Azad, Nehru and others were placed under ention. Outbreaks of lawlessness started at once. Though ac-npanied by the usual features of such risings—murders, arson, acks upon police stations, etc.—this outbreak had a sinister ciency of its own—a systematic sabotage, well financed and efully prepared at strategic points, clearly designed to imperil defense of the country. To restore order took over six weeks l the calling out of troops in 60 cases to help the police. It is imated that 2,000 casualties occurred among the rioters, and nage to the extent of £750,000 was caused to railway property ne.

Turning the page from the political to the military annals of year, we find a very different picture. "The Indian army," d a message from the king in June, "has won fresh laurels and v glory in many battlefields." In numbers at the close of 1942 army exceeded 1,000,000 men, and recruits were pouring in at the rate of 60,000 a month, faster than equipment could be provided for them. The replacement of British by Indian officers in Indian regiments, and the training of the latter, were making rapid strides; and the first Indian officer to command a regular Indian unit was Major K. M. Cariappa, who had taken over a battalion of the 7th Rajputs. The field of recruitment was much enlarged, an Indian Christian battalion, for example, having been raised in the Punjab, and a number of castes which were formerly excluded from the army were being freely drawn upon. Besides her contribution in fighting men, India was making a dramatic advance in the manufacture of war material: and had become the main arsenal for the middle and far eastern armies of the commonwealth. The catalogue of its output was endless; from parachutes to toluene, from boots to minesweepers. Up to the end of 1941 the value of war orders placed in the country aggregated 230 crores of rupees ($700,000,000).

One paradoxical consequence of the war is thus that India was being converted from a debtor to a creditor nation. She was being paid for her war orders from outside; and no part of the expenditure upon Indian troops operating beyond her borders was charged to her revenues. (*See* also BURMA; WORLD WAR II.) (ME.)

Education.—(1938–39): Number of recognized institutions in British India (excluding Burma) 211,192; scholars in recognized institutions: primary, males 9,407,782; females 1,462,263; middle, males 1,150,272; females 179,506; high, males 1,059,909; females 115,341. Unrecognized institutions, 19,354. Universities, British India 15, native states 3; total number of students, 140,461.

Finance.—Revenue, central government (est. 1942–43) rupees 191,48,07,000; expenditure, central government (est. 1942–43) Rs.226,54,91,000; public debt (March 31, 1940): in India Rs.450,-23,00,000; in England £280,100,000; notes in circulation (May 31, 1942) Rs.460,60,00,000; reserve (May 31, 1942) gold Rs. 44,42,00,000, silver rupee coins Rs.27,90,00,000, sterling securities Rs.318,60,00,000. Currency: 1 rupee (Rs.1); Rs.100,000 = 1 lakh, written Rs.1,00,000; Rs.10,000,000 = 1 crore = 100 lakhs, written Rs.1,00,00,000; one hundred crores is written Rs.100,00,00,000. Exchange rate (average 1941) Rs.1 = 1*s.* 6*d.* = 30.14 cents U.S.; (July 1942) Rs.1 = 30.12 cents.

Trade and Communication.—Overseas trade (1941–42): imports, merchandise Rs.173,29,68,523; exports, Indian merchandise Rs.237,22,28,388; re-exports, merchandise Rs.15,32,63,725; gold coin and bullion (1939–40), imports Rs.1,32,72,707; exports, Rs.36,00,26,302; imports of Afghan merchandise (1939–40) Rs. 3,97,06,671; exports of Indian produce to Afghanistan (1939–40) Rs.72,79,399.

Indian Imports and Exports 1941-42

	Imports from Rs.	Exports to Rs.
U.K.	36,64,89,173	77,01,10,164
Burma	29,47,12,872	11,73,42,202
Japan	11,78,58,746	4,59,24,528
U.S.A.	34,60,80,194	46,39,73,606

Communication.—Roads (March 31, 1938) British India only, 83,612 mi. motorable roads, 201,701 unsurfaced. Railways (March 31, 1940) route mileage: broad gauge 21,154 mi.; metre gauge 15,899 mi.; narrow gauge 4,103 mi. Shipping, tonnage entered (monthly average 1939) 924,200; tonnage cleared (monthly average 1939) 917,500. Motor vehicles licensed (March 31, 1940): British India 94,788 cars and taxis; 43,187 commercial vehicles; 8,602 motorcycles. Wireless receiving set licences, all India (Jan. 1941) 121,534. Telephones (March 31, 1940): 86,219 straight-line connections, 626 exchanges.

Agriculture, Manufacturing, Mineral Production.—Production (in metric tons): rice (1940–41) 33,332,800; wheat (1940–41) 10,957,100; cane sugar, raw (1939–40) 2,770,000; maize (1937–38) 2,080,800; barley (1938–39) 2,119,500; jute (1940) 2,280,000; coal (1940) (British India) 26,496,000; iron ore (metal content) (1939) 1,994,000; pig iron and ferro-alloys (1939) 1,785,000; steel (1939) 1,035,000; petroleum, crude (1940) 325,000; cotton, ginned (1940–41) 1,049,600; groundnuts (1940–41) 3,528,700; tobacco (1939–40) 495,800; tea (1940) 174,800; manganese ore (metal content) (1939) 430,000; linseed (1940–41) 473,500; gold (1940) 9,000 kg.; bauxite (1939) 9,100; chrome ore (chromic oxide content) (1939) 25,000; rape seed (1940–41) 1,135,900; sesamum (1940–41) 408,200. Industry (excluding Burma): cotton (1939–40) yarn spun 1,233,686,576 lb.; woven goods 4,012,529,025 yards; number of mills 388; average number employed 430,165. Jute (1937–38): mills 105; average number employed 309,000. Total number of factories (1939) 10,466; average daily number employed (1939) 1,751,137.

Indiana.

A north central state, Indiana was admitted into the union Dec. 11, 1816, the date observed as Indiana day. Indiana was the 19th state in order of admission. The popular name of the state and its inhabitants is "Hoosier"; the origin (in the 1830s) of the term is unknown. Area, 36,291 sq.mi., of which 86 sq.mi. exclusive of its Lake Michigan jurisdiction are water surface. The population by federal census of 1940 was 3,427,796, of which 44.9% was rural and 55.1% urban; 96.3% of the population in 1940 was native white, 3.6% Negro, and 3.2% foreign born. The percentage of Negro population ranged from zero in some localities to 18.3% in urban areas. Indianapolis, the capital, had a population (1940) of 386,972. Other cities are Fort Wayne (118,410); Gary (111,719); South Bend (101,268); Evansville (97,062); Hammond (70,184); Terre Haute (62,693); East Chicago (54,637); Muncie (49,720); Anderson (41,572).

History.—The biennial general assembly was not in session during 1942. Members of the 1943 assembly elected in Nov. 1942, included 82 Republicans and 10 Democrats for the house of representatives, 23 Republicans and 5 Democrats for the state senate. Counting the 22 holdover members, the new senate was to have 38 Republicans and 12 Democrats. Compared with the 1941 general assembly, this represented an increase of 18 Republicans in the house and 7 in the senate. Republicans were re-elected to the offices of secretary of state, auditor, treasurer and superintendent of public instruction. Officers elected were: Rue Alexander, secretary of state; Richard T. James, auditor; James M. Givens, treasurer; and C. T. Malan, superintendent of public instruction. In addition, the Republicans gained th office of attorney general, one seat on the supreme court, an four on the appellate court. The governor, Henry F. Schrick (Dem.), and lieutenant governor, Charles M. Dawson (Rep. were elected in 1940 for four-year terms. The supreme court f 1943 was to include 3 Democrats and 2 Republicans, with th appellate court entirely Republican. For congress, Indiana electe 9 Republicans and 2 Democrats as against 8 Republicans an 4 Democrats in the 77th congress. The state lost one represent tive under the apportionment law based on the 1940 census.

Education.—In the school year 1941–42 there were 2,79 elementary schools and 866 high schools. The enrolment elementary grades (1–8) was 461,968; in secondary school grad (9–12), 192,147; in kindergarten, post graduate and speci classes, 15,033; making a total enrolment of 669,148. The were 11,608 teachers in elementary grades, 1,104 in junior hig schools and 7,948 in senior high schools.

Public Welfare, Charities, Correction.—During 1942 th state maintained eight institutions for mental cases: Centr State hospital (Indianapolis), Evansville, Logansport, Richmon and Madison State hospitals, Muscatatuck and Fort Wayne Sta schools, the Village for Epileptics (New Castle); nine home hospitals, and schools: Soldiers' home (Lafayette), Soldiers' an Sailors' Children's home (Knightstown), State Tuberculos sanatorium (Rockville), Southern Indiana Tuberculosis hospit (New Albany), three Indiana University hospitals (Indianapolis School for Blind (Indianapolis), School for Deaf (Indianapolis and six correctional institutions (including two training schools

Payments for public welfare were as follows for the year endi June 30, 1942: old-age assistance, $15,797,936.82; aid to d pendent children, $5,606,604.79; blind assistance, $602,686.6 general relief, $40,398,641.57; unemployment compensatio $10,590,036.42.

The number of inmates in Indiana's four correctional instit tions on June 30, 1942, was 5,263; in its two training schools, 67 Expenditures for the six institutions for the year were $2,144 031.77.

Communications.—There were on June 30, 1942, approx mately 10,210 mi. of roads in the state highway system an 70,610 mi. of county roads. Expenditures by the state highwa commission during the fiscal year ending June 30, 1942, totalle $25,603,016.01. The mileage of steam railroads operated Indiana in 1941 (exclusive of switching lines) was 6,928. April 1942, there were 47 airports recognized by the U.S. d partment of commerce.

The Indiana Bell Telephone company on Dec. 30, 1942, r ported 313,513 telephones in use in the state. Independent co panies reported 251,281 telephones in use on June 30, 1942.

Banking and Finance.—On June 30, 1942, there were 3 state and 121 national banks in operation in Indiana. The tot capital of state banks was $60,750,000; deposits amounted $576,008,000. The national banks had a total capital of $58 191,282 and deposits of $707,608,855.

The 184 state-chartered building and loan associations ha assets of $92,095,210.92 at the close of the year 1941; th

Table I.—*Leading Agricultural Products of Indiana, 1942 and 1941*

Crop	1942 (est.)	1941
Corn, bu	220,914,000	177,030,000
Oats, bu	51,763,000	54,120,000
Wheat, bu.	15,152,000	34,665,000
Soybeans (for beans), bu.	30,135,000	14,552,000
White potatoes, bu.	5,720,000	5,355,000
All tame hay, tons	2,638,000	2,428,000
Rye, bu.	1,800,000	1,953,000
Barley, bu.	2,530,000	2,100,000
Apples, bu.	1,392,000	2,230,000

Table II.—*Principal Industries of Indiana, 1939 and 1937*

Industry	Value of products	
	1939	1937
teel works and rolling mills	$301,268,709	$356,646,436
lotor vehicles, motor vehicle bodies, parts and accessories	252,684,069	319,853,900
etroleum refining	182,566,697	190,332,763
leat packing, wholesale	80,292,977	79,885,003
efrigerators, etc.	54,675,833	58,013,662
ven coke and coke-oven by-products	43,559,216	43,249,409
rugs and medicines	37,400,313	36,022,938
ousehold furniture, except upholstered	32,454,225	57,094,049
anned and dried fruits and vegetables	26,521,364	45,006,000

leral savings and loan associations had assets of $105,321,000. Total receipts of the state treasury during the year July 1, 41 to June 30, 1942, were $170,253,882.72; disbursements alled $160,702,090.93. The state, as such, had no debt, the nstitution forbidding the incurring of indebtedness except for tain strictly limited emergencies.

Agriculture.—The total value of agricultural production in 40 was $276,642,600; the total acreage harvested was 10,047,- 0. Cash income from crops was $74,518,000, from livestock l livestock products, $202,124,000; from government payments, 2,657,000.

Manufacturing.—The biennial federal census for 1939 showed 7,467 wage earners (average for the year), $345,475,000 paid wages, and $2,227,648,011 as the value of the products.

Mineral Production.—In 1941 there were 260 new oil wells l 57 gas wells completed. (C. B. C.)

dians, American.

The record shows that the American Indians contributed a larger propor- n of their total number to the armed services than any other ial group in the United States. No discrimination with respect Indians was practised by any branches of the services and ny Indians have already won commissions in the army and rine corps. The marine corps and some army units organized lian groups for specialized service. In World War I, many In- ns were disbarred by illiteracy and most were not subject to draft because they were not citizens. This discrimination was noved in 1924 in recognition of the splendid service of those o enlisted. Indian high schools were stripped of boys above who were either in the army or in war industries. Girls were ng trained as welders and machinists, and were welcomed in aircraft and other industries. On reservation after reservation, number of Indians in the armed forces or industry jeopardized rmal agriculture and livestock activities. The production of ive arts and crafts gave way to war industry.

Aleut Removal.—Approximately 160 Aleuts and two federal ployees, an Indian service teacher and a reporter for the ather bureau, occupied the island of Attu at the time of the panese invasion. It was assumed that all were captives of the panese. Following the simultaneous bombing of the naval base Dutch Harbor and the neighbouring native villages of Una- ka, all Aleuts on the outlying islands and the Eskimos on the ibilofs were evacuated to southeast Alaska and re-established in ning villages and abandoned CCC camps where self-supporting ivities were being provided.

Indian Office.—The administrative staff of the Office of Indian airs was moved in Aug. 1942 from Washington, D.C. to Chi- go. Hundreds of Indian service employees entered the armed ces or transferred to war agencies. The service was operating h a reduced staff both in Chicago and in the field.

AN AMERICAN INDIAN BONNET was presented in Feb. 1942 to Soviet Premier Joseph Stalin by the Indian Confederation of America for his achievement in stopping the German invaders of Russia. Mohawk Chief Fallen Trees presented the bonnet to Edward C. Carter, president of Russian War Relief, Inc.

Aboriginal Occupancy.—The supreme court decision in the alapai land case was held by the solicitor of the department of the interior to apply to native resources in Alaska. This might enable the Indians of southeast Alaska to re-establish rights to some fishing sites pre-empted by whites.

CCC-ID Terminated.—With the termination of the Civilian Conservation corps, as of July 1, 1942, the Indian division also brought its work to a close. No single federal agency in the previous 15 years contributed more effectively to the training of Indians in the use of tools and machinery through the application of skills to actual construction than the CCC.

Japanese Relocation on Reservations.—*See* ALIENS.

Inter-American Indian Institute.—Commissioner John Collier of the Indian service served as chairman of the governing board of the Inter-American Indian institute established in 1941. Representatives of the Indian service were loaned to Haiti and to Saudi Arabia to advise in education and irrigation matters. Other advisory services within the Americas were increased.

(W. W. B.)

Indium: *see* METALLURGY.

Indo-China, French: *see* FRENCH COLONIAL EMPIRE; WORLD WAR II.

Industrial Health.

Of the many thousands of men and women employed in war industry, women employees are absent oftener than men, and individual absences tend to be of longer duration. Medical data were being collected to supply dependable information on the effects of occupation upon the health of the unmarried or childless woman, the pregnant, or the mother with associated home and family responsibilities. Industry also turned to older men and women as a source of labour supply, and they, in turn, presented a host of medical problems to physicians, under the general designation of preventive geriatrics. Moreover, the physically handicapped were in the unusual position of being sought out as recruits for a wide variety of employments. Younger male workers, rejected for military service because of physical reasons, for the most part, were found acceptable, in many ways, to industry. Because of their substandard physical status, however, an organized program of medical or surgical "rehabilitation" was being set up in certain localities to put this group of workers in better physical condition for employment.

Personnel Problems.—The war also affected industrial health activity through considerable reductions in available qualified personnel—physicians, nurses, engineers, chemists and technicians, all of whom were equally useful to the armed forces. A number of methods were devised to recruit additional people through provision of intensive teaching courses. Because of limited personnel, there was some thought given to training technical assistants below professional grade to conduct routine functions.

Industrial Toxicology.—Research continued into hundreds of problems in hygiene and toxicology created by the accelerated war production program. New materials and processes had to be introduced without clear knowledge of possible harmful effects. Scarcity of certain harmless products necessitated reversion to the use of harmful substances. Particular attention was paid to materials used in the synthesis of rubber and in the manufacture of munitions.

The work of Foulger and Fleming, in the early detection of industrial intoxication through accurate observations of the blood pressure, aroused considerable interest.

Industrial Medicine and Surgery.—Safety experts were greatly concerned over the upswing in the incidence of occupational accidents which were excessive in some localities and in certain industries. This serious turn of events necessitated a presidential proclamation urging industry, workers and safety organizations to redouble efforts at reduction of lost time accidents. Occupational disease was similarly on the increase, in keeping with the increased man-hours of exposure. Dermatitis still accounted for the largest number of disabilities. As in former years, the greatest single cause of lost time in industry continued to be infections of the upper respiratory system. In respect to all causes of lost time, prevention was increasingly recognized as the cardinal principle of sound industrial health service.

Advances were made in correlating physical and mental ability with specific job requirements. The U.S. Civil Service commission particularly interested itself in this direction.

Communicable disease is a constantly recurring problem in industry, and considerable activity in the direction of case-finding and prevention occurred during 1942. A plan for the control and active treatment of syphilis in the industrial population was published as an aid to state and local health authorities. New developments in radiologic equipment facilitated case-finding of pulmonary tuberculosis in industry.

Interest in the whole subject of physical and vocational rehabilitation following disability of all kinds was greatly intensified through actions in legislatures, governmental agencies and professional groups. A rehabilitation council was organized, containing representation from all major related agencies in the country.

The most successful plans for health education in industrial plants were related to nutrition, under the stimulus of national and state organizations. In the same way, but to a much more limited degree, problems of housing, proper rest, recreation and suitable use of leisure time were receiving attention. (*See* also ACCIDENTS; DERMATOLOGY; MEDICINE.) (C. M. PN.)

Industrial Production: *see* BUSINESS REVIEW; WAR PRODUCTION, U.S.

Infantile Paralysis.

In spite of the difficulties imposed by a global war the National Foundation for Infantile Paralysis in 1942 was able to expand its program of rendering assistance to scientific workers to study various phases of this disease.

The Virus.—By means of ultracentrifugation and chemical treatment the virus was obtained in more concentrated and purified form. Dr. E. Racker reported obtaining from poliomyelitis-infected brains and cords of mice a crystalline substance that was either the virus or a crystalline substance onto which the virus had been adsorbed.

Means of Spread.—Additional evidence was secured that virus was exceedingly widespread in nature and highly resistan many chemical and physical agents that were bactericidal bacteriostatic. Epidemiological studies by both Dr. Tho Francis, Jr., and Dr. George Y. McClure and their associ forcefully pointed out the relatively important role of the mi case or carrier. Dr. Alexander Langmuir reported that in small rural outbreak of all apparently well contacts, 84.5% the children and 50% of the adults excreted virus in their st following exposure. Francis reported on the clinical and clinical infections resulting from the travels of one infe family.

Many workers showed that in the laboratory, by using var species of monkeys, clinical infection could be produced by p tically any method that allowed introduction of the virus the body.

Pathology.—Important information relative to the part the nervous system in mild clinical and subclinical infection gained. McClure described lesions in the posterior root gan Dr. Harold K. Faber reported on involvement of the Gasse ganglion in animals infected by the oral route. The prev work of Dr. Albert B. Sabin to the effect that many parts of body were invaded was supported by further studies. Drs. H ard A. Howe and David Bodian published an outstanding re of the several years' work under the title *Neural Mechanism Poliomyelitis.*

Immunity.—All attempts at production of induced immu or increased resistance, either by use of biological or chem products, met with flat failure. In fact, there was additional dence to show that there was little acquired general or hum immunity, but such resistance as did develop was cellular

SISTER KENNY, Australian inventor of the famed exercise treatment for i tile paralysis, went to the U.S. in 1942 to teach her method to U.S. do and nurses. Here she is shown at a demonstration in Little Rock, Ark., rot a victim's foot to re-establish muscular activity pended upon direct virus invasion of the neuraxons and nerve lls.

Prevention.—Lacking any means of active immunity and any actical method of ridding the environment of viable virus ma- ial, protection still was dependent on avoidance of unnecessary posure during epidemic times. Repeatedly public health officers d epidemiologists stressed the importance of avoidance of nic during outbreaks. With improvement in treatment facilities need for early medical care took on added significance and portance.

Diagnosis.—No clear-cut set of diagnostic standards was veloped, nor were any specific laboratory tests developed. Di- nosis still depended on the array of clinical signs and symp- ns plus the use of some laboratory work to rule out certain ner neurotropic virus diseases. The need for such tests was de even more apparent by the more widespread recognition of se other neurotropic virus diseases.

Treatment.—None of many drugs tested was found to be of value in the treatment of infantile paralysis. Systematic ting programs were maintained by the National Foundation Infantile Paralysis in several well-equipped laboratories.

The Kenny method of treatment by hot moist packs and early ysical therapy gained widespread recognition during the year. ysicians, nurses and physiotherapy technicians were widely in- ucted in this method. Not only was there common adoption this method of treatment, but there was also common ac- tance of the teaching of Sister Kenny that the cardinal symp- ns were those of "spasm" and temporary dysfunction simulat- paralysis. It was more widely recognized that true permanent cid paralysis resulting from extensive destruction of anterior n cells was a relatively rare state in clinical poliomyelitis.

Dr. R. Plato Schwartz and Dr. Harry D. Bouman of Rochester, Y., reported a series of electromyographic studies in early iomyelitis. They reported that spasm, as indicated by in- ased action current potentials, did exist, not only in involved paralyzed muscles, but also in their opponents and even in er muscles without clinical evidence of disturbance. They also wed that this condition persisted for long periods and that it s adversely affected by stretching. Such spasm tended to appear or to lessen when treated by hot foments according to method advocated by Sister Kenny.

While statistical evidence supporting the claims of the Kenny thod was not produced, many experienced clinicians reported ir opinions supporting the original report of Cole, Pohl and app. (*See* also Nervous System.)

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fant Mortality.

The generally favourable health conditions in the United States and England d Wales during 1942 were reflected in their low infant mor- ity for that year. Provisional reports for the United States for the first eight months of 1942 showed 4.9% fewer deaths in the first year of life than in the corresponding period of 1941. During all of 1941, there were recorded 113,675 infant deaths, with an infant mortality rate of 45.3 per 1,000 live births, the lowest yet on record for the United States. In England and Wales, the great towns experienced a decrease of 5.4% in infant deaths from 1941 to 1942, the period of comparison being the first eight months of each year. For the whole of England and Wales, 34,292 infant deaths were reported during 1941 with a rate of 58.4 per 1,000 live births. Infant deaths in the whole of Canada in 1941 numbered 15,197, the infant mortality rate being 60 per 1,000 live births.

The European population of New Zealand had a rate of 30 per 1,000 in 1941; for Eire, the rate was 73 per 1,000. Germany reported 62 infant deaths per 1,000 live births for 1941; Belgium 85; Bulgaria 123; Hungary 117; Netherlands 43; Portugal 151; Switzerland 41. In the same year, 1941, the infant mortality rates per 1,000 live births for several Latin American countries were as follows: Argentina 82; Chile 200; Ecuador 139; Salvador 105 and Venezuela 121.

Within the United States, Utah had an infant mortality rate of only 29.5 per 1,000 live births in 1941. Eight states had rates between 30 and 35, namely, Connecticut, Idaho, Illinois, Minnesota, Nebraska, New York, Oregon and Wisconsin. Twelve states had rates of more than 55 per 1,000: Alabama, Arizona, Georgia, Kentucky, Louisiana, New Mexico, North Carolina, South Carolina, Tennessee, Texas, Virginia and West Virginia. All of these states are in the southern tier of the country and, except for Arizona and New Mexico, owe their high rates principally to the large proportions of Negroes in them, who have a high infant mortality. The two states excepted have large Mexican populations, also with high infant mortality. (See appended table.)

Among the cities of 100,000 population or more in 1940 very low infant mortality rates were found for the following, after births and deaths were allocated according to the residence of the mother: Portland, Ore. 25.6, St. Paul 26.2, Chicago 28.4, Springfield, Mass. 29.1 and Minneapolis 29.6. For other large cities, the rates were: New York City 35.2, Philadelphia 41.3, Detroit 37.5 and Los Angeles 34.3.

In 1940, the latest year of complete record, the white population of the United States as a whole had an infant mortality rate of 43.2 per 1,000 live births, while the Negroes had a rate of 72.9 and other races a rate of 91.0

Of a total of 110,984 deaths in the first year of life during 1940, premature birth accounted for 32,346, pneumonia (all

Deaths Under One Year of Age per 1,000 Live Births, United States, 1941

State	Infant Mortality Rate	State	Infant Mortality Rate
United States	45·3	Montana	36·9
		Nebraska	34·4
Alabama	60·0	Nevada	42·2
Arizona	88·5	New Hampshire	36·4
Arkansas	45·0	New Jersey	36·1
California	36·4	New Mexico	90·8
Colorado	51·9	New York	33·1
Connecticut	31·8	North Carolina	59·8
Delaware	42·8	North Dakota	38·0
District of Columbia	50·8	Ohio	40·7
Florida	52·9	Oklahoma	47·2
Georgia	58·6	Oregon	31·0
Idaho	34·6	Pennsylvania	40·8
Illinois	34·0	Rhode Island	35·6
Indiana	39·6	South Carolina	74·8
Iowa	36·1	South Dakota	41·3
Kansas	37·8	Tennessee	55·4
Kentucky	58·7	Texas	56·7
Louisiana	57·5	Utah	29·5
Maine	50·7	Vermont	43·8
Maryland	52·2	Virginia	67·0
Massachusetts	35·9	Washington	35·9
Michigan	38·3	West Virginia	60·4
Minnesota	34·1	Wisconsin	34·7
Mississippi	54·6	Wyoming	43·8
Missouri	45·5		

forms) for 14,881, congenital malformations for 11,038, injury at birth for 10,506, diarrhoea and enteritis for 8,222, congenital debility for 2,827, influenza for 2,696 and whooping cough for 2,015. Altogether, these eight causes accounted for three-quarters of the deaths.

Within the first day of life alone, there were 32,870 deaths out of the total of 110,984 within the first year of life. Almost two-thirds, or 67,866 of this total died within the first month of life. Investigations showed that a large number of deaths in infancy could be avoided by an adequate program of prenatal and neonatal care in which correct diet plays a large part.

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Infantry: *see* Munitions of War; World War II.

Inflation: *see* Business Review; Consumer Credit; Prices; United States.

Ingersoll, Royal Eason

(1883–), U.S. naval officer, was born June 20 in Washington, D.C., the son of Rear Adm. Royal Rodney Ingersoll. He was appointed to the Naval academy from Indiana, 1901, and after graduation was assigned to several U.S. warships. He was on duty at the Naval academy, 1911–13, when he received orders to join the Asiatic fleet. He went to the office of naval operations in 1916, and during World War I received the navy cross for his services in organizing, developing and directing the communications office of the navy department. Pres. Roosevelt in 1938 nominated him rear admiral, jumping him over the heads of a dozen senior officers. On Dec. 20, 1941, Secretary of Navy Knox appointed him commander of the Atlantic fleet to succeed Adm. Ernest J. King, who was designated commander in chief of the U.S. fleet. Ingersoll's appointment followed a shake-up in army, navy and air commands after Secretary Knox toured Hawaii and found U.S. defense forces there "were not on the alert" during the Japanese attack on Pearl Harbor Dec. 7, 1941. On July 3, 1942 Pres. Roosevelt named Ingersoll for promotion to full admiral.

Initiative and Referendum.

This most ambitious of all experiments in pure democracy was employed during 1942 despite the absorption of public interest in the war, in about three-fourths of the states (mostly on Nov. 3) as well as by the national government. For important state referenda of 1942, *see* the articles on the states concerned.

Among U.S. federal referenda of 1942 was one held May 2, in which those wheat growers who had already accepted the AAA acreage limit approved restricted marketing quotas (323,003 to 69,081). On Dec. 12, cotton growers in 19 southern and southwestern states voted by a majority of more than two-thirds to continue federal control of production and marketing of their staple in 1943. Indian tribal constitutions, under federal auspices, were voted on March 15 by the Moapa band of Paiutes (Nev.) and on Aug. 31 by the St. Croix Chippewa (Wis.); amendments on Feb. 2 by the Ft. Bidwell Indian community (Cal.) and on Feb. 4 by the Cheyenne and Arapahoe tribes (Okla.); charters on Jan. 5 by the Tanacross Indians (Alaska); on Feb. 15 by the Upper Lake band of Pomos (Cal.) and on May 3 by the Moapa band of Paiutes (Nev.).

Canada voted (2,945,514 to 1,643,006) in 1942 to authorize the draft for overseas service; it was not actually required until se months later.

On the subject of liquor control, Arkansas adopted (52,83 41,040) but North Dakota rejected (85,733 to 84,049) initia measures to prohibit the liquor traffic in certain areas.

As to old age assistance, Idaho adopted (75,000 to 35,344) Washington rejected (225,027 to 160,084) proposals embody the "Townsend Plan," with minimum monthly grants to "e bles" of $40 and additional benefits.

Taxes on motor vehicles and fuel were reserved for high purposes by constitutional amendments in Iowa (433,917 to 472), Oregon (125,990 to 86,332) and West Virginia (228,82 38,651). (C. S. L.; X

Inland Waterways: *see* Canals and Inland Waterways.

Inman, Ondess Lamar

(1890–1942), U.S. biologist botanist, was born Novembe in Bloomfield, Ind. He was professor at Antioch college in C from 1921 until his death, and in 1930 he was named directo the Charles F. Kettering foundation for the study of chlorop and photosynthesis at Antioch. Dr. Inman, whose major objec was to establish the relationship of sunlight to plant growth, covered that the chlorophyll extracted from plants and stu under laboratory microscopes differed from the substance as it isted in living plants. In 1937, he announced that chloroph hitherto believed to be the controlling factor in plant growth, peared to be only part of the process. He died in New York c July 21.

Inner Mongolia: *see* Mongolia.

Insects: *see* Entomology.

Instalment Selling: *see* Consumer Credit.

Insulin: *see* Diabetes.

Insurance.

Accident and Health.—With an estimated of 12% in 1942, total accident and health hospitalization insurance premiums exceeded $350,000,000. Gr and hospitalization showed exceptionally large increases. It estimated that there were 30,000,000 individual policies iss covering 25,000,000 individuals at the end of 1942. The sal nonoccupational coverage to war workers covered on the job workmen's compensation was stimulated. A reinsurance pool formed to provide insurance for civilians covering personal in or death arising out of war action, such as enemy bombing, i sion, etc. Companies tended to liberalize the attitude in reg to war clauses, and some continued coverage on men in the ar services within the U.S. Provisions were made for reinstatem of noncancellable policies after the return of men in servic civilian life.

A survey conducted of claim complaints received by 11 re sentative state insurance departments indicated that there only 12 complaints out of each 10,000 claims paid. As of 1 about one out of every five policyholders had a claim paid e year. (C. D. Sp

Great Britain.—Accident insurance results published du 1942 showed a recovery in the volume of the business, almost storing it to prewar levels. The only exception was in the m section, which continued to shrink following the further rest tions imposed during the year on the use of private cars. consequent reduction in road traffic made it possible for the m insurance offices to allow a 20% rebate on private car premiu which took effect July 1, 1942.

Workmen's compensation business showed the greatest ex sion owing to industrial activity arising out of the war and reased wage rolls connected therewith. Premium rates remained altered, but the additional charge levied to provide for the tra liability imposed by the Workmen's Compensation (Sup- mentary Allowances) act was discontinued in March. In view the expansion of normal premiums, rates were in future to be justed to a 70% claim ratio instead of 65% as previously. (C. E. G.)

Automobile.—The automobile insurance industry was vitally ected by U.S. entry into World War II. The most marked ect was on automobile casualty loss ratios. Because of volun- y and governmental restrictions on driving, the accident rate pped sharply, and the companies showed a substantial under- iting profit in spite of drastic rate reductions.

The war also produced a substantial drop in volume. With no w automobile production, curtailment of use, and lower pre- ums per unit, automobile volume figures began to fall during 42.

By keying automobile rates to the type of rationing card held the insured, the industry in 1942 was operating on a rate basis ectly related to the mileage operated.

The most interesting aspect of the business from the stand- nt of legislation in 1942 was the results of the New York ancial Responsibility law which went into effect in 1941. Its ef effect was to double the percentage of the total number of s insured. (G. E. Ho.)

Fire.—The business of fire insurance, so far as receipts and ses are concerned, had a fairly successful year in 1942. There s no outstanding fire in which property loss was exceptionally vy, such as the Fall River fire of 1941. There were, however, eral fires where the loss of life was serious, notably the case the Boston night club fire, in which the loss of life was about .

Perhaps the outstanding event in fire insurance in 1942 was formation of the War Damage corporation (*see* below). This poration, a government project, was organized to take care of perty losses originating from the war. If the cause was direct my action, no question could arise about the liability of the poration, but there were bound to be "borderline" cases. For tance, if a bomber were being tested before acceptance by the vernment and property was injured, was the loss to be paid by War Damage corporation? Private insurers would carry such isk only to a limited, if any, extent. This was a form of in- ance on which statistics were very scant in 1942; it was ap- ed only to a limited extent in the United States during World ir I. Great Britain, however, had on its statute books the law t over from World War I, and so was able to put it into ef- t immediately at the start of World War II. War damage to perty, even in Great Britain, amounted to only about 2% of total property value in 1939–42.

Use and occupancy insurance, protecting the individual against ses from the time his plant is damaged until it is restored, sed difficult problems in 1942. Under normal conditions this urance could be successfully written, but, in 1942, the impos- ility of securing either building material or raw materials for ure operations brought about a different situation. Many npanies considered the advisability of discontinuing or curtail- this type of insurance. (*See* also Fires and Fire Losses.)

(E. R. H.)

Hospitalization.— The most important 1942 developments re the continued growth of nonprofit, community-sponsored vice plans approved by the American Hospital association, and affiliation of several plans with newly organized nonprofit med- l service plans. Seventy-six approved plans, many of them ng the name "Blue Cross," were operating at the close of 42 with a combined membership of 11,000,000 persons, and 11 of these had working arrangements with nonprofit medical plans. The 76 plans served 34 states and 3 Canadian provinces.

During 1942 nonprofit plans paid more than $50,000,000 for the hospital care of 1,000,000 subscribers, rendered in 2,500 member hospitals.

Of much significance was the adoption by the American Hospital association of the "Bishop Resolution" opposing the inclusion of indemnity for hospital expense in the Federal Social Security program, as had been proposed, and setting forth a program for the extension of nonprofit plans to reach persons in occupational classifications and at income levels not generally covered by Blue Cross plans. (A. G. S.)

Life.—About $2,500,000,000, or approximately 90% of the net new investments of every kind made in 1942 by legal reserve life insurance companies was used to purchase United States and Canadian government bonds. The payments made by individuals to purchase and maintain life insurance are generally recognized as a definitely anti-inflationary force, in helping both to protect the national credit and to divert income away from commodity channels. Of fundamental importance, too, is the protection provided for the people of their two countries by the life insurance companies of the United States and Canada, supplemented as it is by the protection furnished through the United States government for dependents under the Social Security act and for members of the armed services under National Service Life Insurance, and in Canada by alternative methods. At the end of 1942 the total life insurance (excluding reinsurance) in force in the legal reserve companies of the United States and Canada was estimated at more than $135,000,000,000 or a gain of 4% over 1941. The new business issued during the year amounted to about $13,000,000,000. The assets of the companies at the end of 1942 amounted to approximately $37,500,000,000, after paying or crediting to policyholders and beneficiaries about $2,600,000,000 during 1942.

The mortality experienced in the United States and Canada during 1942 continued favourable. The continued decline in the mortality from pneumonia represented one of the triumphs of modern medicine. The downward trend of the tuberculosis death rate was also maintained. While there was a drop in motor vehicle fatalities, attributed primarily to the general reduction in the civilian use of automobiles, the increased industrial activity in connection with the war production program resulted in a greater number of fatalities caused by occupational accidents. War deaths during 1942 comprised about 1½% of total deaths among ordinary policyholders, and a considerably smaller proportion among industrial policyholders.

The interest rate earned during 1942 on the aggregate of life insurance companies' assets continued at the low level characteristic of previous years, reflecting to a marked degree the low yield obtainable on government bonds. Because of the continued low rates, a number of companies had revised the interest bases for premium rates and reserves for new life insurance. Some of them at the same time began using the American Men Ultimate table of mortality in place of the older American Experience table, for the valuation of new ordinary insurance. Because the effect of low interest rates greatly overshadows the improvement in mortality, the premium rates based on more modern mortality tables and lower interest rates were generally higher than those previously in effect. While the changes in premium rates charged did not, of course, affect policies issued in the past, the low level of interest rates responsible for such changes was also reflected in decreased dividends on participating policies.

Life insurance companies in the United States were required to bear their share of the increased tax under a modified formula for income taxes incorporated in the federal Revenue act of

1942. This formula retained investment income as a tax base and also the principle of allowing life insurance companies some adjustment for the interest required to maintain their reserves.

The war was directly responsible for the incorporation in policies of war risk provisions limiting the insurance company's liability in event of death during military service of the insured. Prior to the entry of the United States into World War II, only a very small proportion of life insurance policies in force on citizens of the United States contained or retained any limitation of the life insurance benefits on account of war service or required the payment of extra premiums in such event. The companies, therefore, were absorbing the war risk on practically all policyholders whose policies were issued prior to the entry of the country into the war, but, in the interest of these older policyholders, precautionary measures had to be taken in respect to new insurance. The extra hazard on the lives of members of the armed forces was properly assumed for a limited amount by the federal government through National Service Life Insurance. (L. A. L.)

Marine.—The year 1942 will be remembered by U.S. marine underwriters as a disastrous one, largely because of the results of war risk insurance on both hulls and cargoes. It was an extremely busy year, what with the constantly changing conditions and the necessity for arranging new forms of cover to protect shippers whose goods had to be carried under wartime conditions of transit. The most important of these new forms probably was the wartime extension clause added to cargo policies, by which goods are covered for unlimited periods at a port of transshipment provided the goods remain the property of the original owners. The "missing vessel agreement" entered into by all companies and the War Shipping administration was of great benefit to shippers who had placed their marine insurance and war risk in different markets. Some ships were lost without trace, and the cause was not known; in other cases the circumstances of the loss were known, but it was uncertain as a matter of law whether it should be settled as a marine loss or a war loss. In all such cases under the "missing vessel agreement" and a supplemental agreement among the same parties, the assureds were paid promptly.

Surcharges were the subject of careful consideration in 1942. Conditions in all ports throughout the world were bad; in many places the docks and warehouses were filled with merchandise either awaiting shipment or recently landed and not yet removed. Heavy claims were made for theft, pilferage and nondelivery, particularly from areas subject to bombing.

Early in 1942 there was considerable confusion in shipping circles. Ships requisitioned by the U.S. were sent to ports where the masters and officers had never been before. Quantities of merchandise at Pacific coast ports, some on the docks and some already loaded on ships, were taken by the government and the ships were sent out to destinations unknown to the owners. Ships were operated in convoys and had to enter and leave darkened ports without the customary aids to navigation. Heavy claims on both hulls and cargoes resulted during the early part of the year. But after the entire operation of the merchant marine was put under control of the War Shipping administration, shipping operations gradually were placed on a more orderly basis. However, the claims for shortages and nondelivery of cargo continued at the end of 1942, particularly in the near east and South America.

War Risk Insurance.—The U.S. government played an important part during 1942 in war risk insurance—through the War Damage corporation covering property on shore, and through the insurance department of the War Shipping administration covering ships and waterborne cargoes. The underwriting
powers of the War Shipping administration had been defin
by legislation passed some years earlier when congress w
dominated by noninterventionist sentiment. For example:
a vessel was carrying any contraband, the War Shipping admin
tration could not insure either the hull or any part of the car
In view of the fact that almost everything useful in the cond
of war is regarded as contraband, it was apparent that th
limitations effectively prevented the War Shipping administ
tion from supplying U.S. marine insurance needs. A relativ
small percentage had been written by the American Mar
Insurance syndicate, the rest principally in the London mark
Soon after the attack on Pearl Harbor, however, the War Sh
ping administration indicated a desire that the war risk
surance on all U.S. ships, and all U.S.-owned ships under ot
flags, be written in the United States. The underwriters in t
market were reluctant to accept these large increases in th
lines; but, realizing that the War Shipping administration its
could not legally write the insurance, they felt that they sho
comply with the wishes of the administration as a matter
public duty. Shortly thereafter the War Shipping administrat
again approached the syndicate and requested that they aband
their method of fixing war risk rates from day to day, depe
ing on conditions, and promulgate a rate schedule that wo
be good for a month, and under which the syndicate wo
name rates for 60-day voyages on the Atlantic coast and
West Indies trade. It was pointed out to the syndicate that s
a schedule was essential to enable the administration to
freight rates based on operating costs, in which war risk ins
ance was naturally an important element. The syndicate h
tated to make such a radical change in its method of fix
premiums; but, toward the end of January, it finally submit
a rate schedule good for acceptance any time in Februa
These events occurred on the eve of the great German s
marine attack on U.S. coastal shipping. The result was that
syndicate sustained enormous losses. Under normal conditi
these losses could have been recouped by increases in
after the expiration of the 30-day period above mentioned;
at about this time the underwriting powers of the War Shipp
administration were broadened, the restrictions with respect
contraband were eliminated, and the administration procee
to assume the war risks on U.S. vessels on terms which
little, if any, relation to the risks involved. The syndicate clo
the year with a net loss running into many millions of doll
Hull war risks were assumed entirely by the War Shipping
ministration, and the syndicate was no longer writing this c
of business at the end of 1942.

The situation with respect to cargo insurance developed al
somewhat different lines. The American Cargo War Risk
insurance Exchange, which covered, by way of reinsurance,
great bulk of U.S. cargoes, had no agreement with the
Shipping administration and was, therefore, able to adva
rates from day to day as the submarine menace grew m
serious. Unfortunately, however, the sinkings increased
rapidly that the increase in premium was always a few we
behind the increase in losses. Furthermore, the Office of P
Administration insisted that war risk premiums on imports sh
not be increased because this would involve an increase in
price of sugar, coffee, cocoa and other products on which cei
prices had previously been established. The War Shipping
ministration was thus forced to quote rates which had no
tion whatever to the risks involved, and which were in
merely nominal. This action naturally created an enorm
demand for government insurance. During the first half of
the rules of the administration required that each risk be se
rately submitted—a cumbersome and unsatisfactory method

Later a plan was worked out through the American Institute Marine Underwriters whereby all companies writing marine surance in the United States could be appointed underwriting ents for the War Shipping administration to issue open policies vering war risk insurance on imports to the United States.

After July 1942 the United States armed forces were able to ake greater headway against the submarine menace, and losses creased materially. Nevertheless, the results for the year owed a loss of millions of dollars sustained in writing war k insurance on cargo; and because the share of this business itten by the War Shipping administration was constantly creasing, the prospect of recouping these losses was not good.

The Inland Marine Underwriters' part in war risk insurance s small in 1942, but nevertheless important. In accordance th world-wide practice, both hull and cargo war risk insurance ith certain minor exceptions) covered only while waterborne. ortly after Pearl Harbor the U.S. government announced it uld make good any damage in United States territory caused enemy action. A government-owned corporation, the War mage corporation, was finally created to issue policies cover- against such damage (see *War Damage*, below).

(S. D. McC.)

War Damage.—War Damage corporation was created as a poration by Reconstruction Finance corporation on Dec. 13, 41, with a capital of $100,000,000 for the purpose of providing urance protection against damage to U.S. property resulting m enemy attack. By public announcement, the corporation mediately extended to owners of property in the United tes, Alaska, Hawaii, the Philippine Islands, Puerto Rico and Virgin Islands assurance of reasonable current protection, nding future arrangements for coverage under policies of urance.

By act of congress approved March 27, 1942, Reconstruction nance corporation was authorized to supply War Damage poration with funds in an aggregate amount not exceeding 000,000,000, for the purpose of providing through insurance sonable protection against loss of or damage to property ulting from enemy attack or from the action of the military, val or air forces of the United States in resisting enemy attack. r Damage corporation placed its program of policy insurance operation, effective July 1, 1942, and the free protection retofore effective was terminated on the same date.

To avoid the necessity of creating a complete governmental anization to handle the program, the corporation entered into arate agreements with 546 fire insurance companies pursuant which such companies agreed to act as "fiduciary agents" the corporation in receiving applications and premiums, ing policies and otherwise handling the program. The corpo- ion in 1942 operated through approximately 1,450 established icy-issuing offices. The insurance agent or broker who sub- ted the application received a service fee of 5% of the mium, with a minimum of $1.00 per policy and a maximum $1,000 per policy. The insurance company through which the lication was submitted received an expense reimbursement 3½% of the premium, with a minimum of 50 cents per policy a maximum of $700 per policy, subject to adjustment on basis of actual costs and expenses. The insurance industry, resented by the 546 participating companies, had a 10% erest in the operating profits or losses of the program in 1942, ject to a limit of $20,000,000. As of Oct. 31, 1942, premiums lected aggregated approximately $119,900,000 and it was mated that approximately $94,000,000,000 of War Damage poration insurance was in force on that date. In excess of 50,000 policies had been issued by the corporation. Premium es were uniform throughout the territories covered, and varied with types of property, classes of occupancy, and types of construction. The insurance was not compulsory.

Effective Dec. 21, 1942, the corporation made available insurance on money and securities through the facilities of 88 casualty and surety insurance companies likewise acting as "fiduciary agents" of War Damage corporation.

The corporation established its principal office in Washington, D.C., and was managed by a board of directors appointed by Reconstruction Finance corporation. (W. L. C.)

Great Britain.—The principal forms of insurance in Great Britain against war damage on land became well established during 1942. The number of policies issued up to Dec. 31, 1941 were: under the commodity scheme 4,160,800; under the business scheme 1,533,600; and under the private chattels scheme 934,900. The first two schemes were compulsory on all but small traders. The rates of premium payable were revised from time to time. Under the commodity scheme the rate in 1941 was 7*s.* 6*d.* per cent per month, and this was reduced to 5*s.* per cent per month as from June 3, 1942. The rate for the business scheme was made at 10*s.* per cent for the six months commencing Oct. 1, 1942, with an indication that it would not exceed a further 10*s.* per cent for the next six months thereafter. The rate for the previous 12 months was 20*s.* per cent. The private chattels scheme remained at 20*s.* per cent per annum with higher rates for large amounts. Buildings were covered under a contribution levied through the inland revenue which was to continue for five years from 1941. The risk period, which originally ran up to Aug. 31, 1941, was later extended. (*See* also LAW; VETERANS ADMINISTRATION.) (C. E. G.)

Insurance, Accident and Health: *see* INSURANCE.
Insurance, Automobile: *see* INSURANCE.
Insurance, Crop: *see* AGRICULTURE.
Insurance, Fire: *see* INSURANCE.
Insurance, Hospitalization: *see* INSURANCE.
Insurance, Life: *see* INSURANCE.
Insurance, Marine: *see* INSURANCE.
Insurance, Old Age: *see* SOCIAL SECURITY.
Insurance, War Damage: *see* INSURANCE.
Inter-American Highway: *see* ROADS AND HIGHWAYS.
Interior, U.S. Department of: *see* GOVERNMENT DEPARTMENTS AND BUREAUS.

Interior Decoration.

The early part of 1942 showed an increasing interest in contemporary design, but owing to government building restrictions on residential work very little new work was developed, with the result that interior architectural design did not change over 1941.

There were various new and interesting designs created for interior furnishings which were developed to overcome priorities, such as all-wood pieces of furniture, but they were not made in any large quantities owing to the difficulty in obtaining raw materials such as plywood, etc.

The theme or keynote of the interior decorating field in 1942 was based on the current trend to "stay at home and like it," as this phrase sprang from necessity due to conditions of the time. People were made more decoration-conscious and were urged to make their homes attractive to help keep up morale. Furnishings were carried out in simple but livable lines and created an effect of restfulness and simplicity rather than the more elaborate feeling of past years.

Furniture.—Mahogany and natural wood finishes were the most popular. There was a new development of all-wood pieces, including wooden springs, and furniture that could be folded or dismantled for easy and quick transportation. Increasing popularity was evident of so called utility pieces, such as chests, cabinets, bookcases, etc. that could be used interchangeably. Traditional furniture was still used to a great extent though contemporary design was gaining in favour due to continued improvement of this style.

Furniture Coverings.—Cotton and cotton and rayon mixtures in interesting, textured weaves predominated. Silk and wool were still used, though nylon began to take the place of silk and cotton to replace wool, as these two fibres were noticeably curtailed for civilian use. Printed linen, cotton and chintz were also used for upholstery. Slip covers in prints and plain fabrics continued to be popular due to the difficulty in obtaining new furniture; they also helped give a new, fresh look to rooms.

Floor Coverings.—Tufted and various shaggy type rugs, the majority being made of cotton, some of wool, were quite the style and there was a decided change from multicoloured, patterned floor coverings to plain, textured rugs and carpets. This helped give the feeling of restfulness and simplicity which was one of the aims of decorating at this time.

Lamps.—Restrictions were placed on the manufacturing of lamps in October, which limited designs to some extent; however, there were styles for either modern or traditional settings, based on motifs characteristic of various periods of design. Pottery bases were more prevalent than other materials though glass, wood, plastics and some metal were used. Bases were in various forms such as human figures, heads, animals, vase and urn shapes and geometric designs. Parchment, paper and fabric comprised most of the lamp shades, which could be tinted any colour to harmonize with the scheme of rooms. In most instances little trimming was used on shades.

Wall and window treatment, lighting fixtures, and decorative accents showed no noticeable change over 1941.

Summary.—The trend toward contemporary design continued, though due to numerous government restrictions on raw materials more attention was turned toward developing substitute designs for those already established than toward developing new ones. (G. M. J.)

International Labour Conference: *see* INTERNATIONAL LABOUR ORGANIZATION.

International Labour Organization.

The resolutions of the International Labour conference, New York-Washington, Oct.–Nov. 1941, furnished the work program for 1942. The Emergency committee, acting for the governing body, met in London in April to consider proposals of Acting Director Edward J. Phelan and to find ways and means to fit the I.L.O. for its part in preparation for postwar reconstruction.

I.L.O. collaboration with governments, national reconstruction and other international agencies increased, beginning with the presence at the London meeting of Sir Frederick Leith-Ross, chairman of the Inter-Allied Postwar Requirements committee, and Alexander Loveday, director of the League's Economic, Financial and Transit section. Another valuable aspect of collaboration was the clearing house function of the I.L.O. in the exchange of information on postwar reconstruction planning, and public works development, especially concerning measures requiring international technical or financial co-operation. Information immediately available required 16 additional pages in the monthly *International Labour Review.* Memoranda were furnished on request to Argentina, China, Iraq and Venezuela. Two I.L.O. experts on social insurance proceeded to London to give evidence before the Beveridge committee.

New emphasis was placed on economic studies and policies as a means of achieving social objectives. The organization must be equipped to scrutinize all economic and financial propos from whatever source derived in order to consider their soc consequences, to make suggestions for their improvement to t competent authorities and throw the whole weight and support its 20 years' experience and its tripartite constituency back of proposals that do not run counter to the social objectives whi are its special prerogative to defend and promote.

The publications of the year reflected the same trend in m terial published in the *International Labour Review, Industr Safety Survey,* and the *Year-Book of Labour Statistics* (in its si year and issued in a tri-lingual edition, including Spanish). The *L islative Series,* issued quarterly, and giving translations of la decrees and regulations affecting labour, is unique and invaluab

Special studies and monographs included: *Wartime Transf ence of Labour in Great Britain* (163 pp.); *Food Control in Gr Britain* (272 pp.); *Approaches to Social Security* (100 pp.); *ternational Comparisons of Food Costs* (83 pp.); *Food Consum tion and Dietary Surveys in the Americas* (64 pp.); *The Int national Seamen's Code* (55 pp.)—contains the conventions a recommendations affecting maritime employment adopted by International Labour conference, 1920–36.

The New York conference recommended that the I.L.O. represented in any peace or reconstruction conference follow World War II, not for the prestige such action would confer, for the service its resources and experience enable it to render.

The sixth Canada-United States tripartite meeting to consi questions of labour supply of interest to both countries was h in Montreal in August 1942. The documentation was prepa by the office. The discussion dealt chiefly with the Canadian s tem of employment control which went into effect Sept. 1, 19 and with the Canadian and U.S manpower position.

The first Inter-American Conference on Social Security held in Santiago, Chile, in September, and attended by delega from 21 American countries. The governing board of the I.L was represented by a tripartite delegation headed by Paul Zeeland, former prime minister of Belgium. The declarations conclusions of the conference showed unusual preparedness unity in dealing effectively with the most difficult pledge of Atlantic charter. A statute was adopted making the conferenc permanent agency of co-operation acting in concert with I.L.O. The conference was official and owed its inception larg to the governments of Chile and Peru, but much of the initiat and success was due to I.L.O. nursing care and expert guida For detailed reports, see *Int. Lab. Rev.* XLVI, No. 5 (Nov.) 606–18, and No. 6 (Dec.), p. 661–91.

The twelfth session of the Joint Maritime commission met London in June 1942. Including deputy members and advis 64 persons, representing 15 nations, took part in the discuss of the acting director's report on the maritime work of the I.L since the last meeting of the commission in 1935. Practica every aspect of the maritime industry in conditions of war debated, and 14 resolutions were unanimously adopted on men's welfare and life-saving appliances. For detailed rep see *Int. Lab. Rev.* XLVI, No. 2 (Aug. 1942).

Costa Rica, member from the beginning, had allowed its I.L membership to lapse in 1927 but was readmitted in Nov. 19 Mexico deposited the latest ratifications in June and July 194 the 883rd and 884th ratifications of a convention, being the 2 and 30th by that country, and the 3rd of the Holidays with (Sea) convention, 1938, and the 10th of the Statistics of Wa and Hours of Work convention, 1938. (*See* also CHILD WELFA LEAGUE OF NATIONS; REFUGEES.) (S. McC. L.

International Law.

Mexico.—The expropriation of eign-owned oil properties effected

3 came to a head in 1942 by the award of a two-man ap- sal commission which appraised the American properties as th something over $23,000,000, as contrasted with a company n of value in excess of $100,000,000. Although the department tate had historically insisted that the subsoil petroleum was er the law of Mexico owned by the surface owners, and al- gh an assurance was extended by Secretary Hull in Oct. 1941 the American appraiser, Mr. Cooke, would take these subsoil es into account, the figure arrived at was a blind one in that it not specify the constituent items that made it up. Subse- tly, the Mexican supreme court held that in the case of two panies, Titania and Mercedes, not named in the expropriation ee, the property was not legally expropriated and presumably ld be returned to its owners. Other such cases were pending e end of 1942. A settlement with the British-owned com- es had not been effected at the close of the year.

e general claims against Mexico, dating back to 1868, were ed during the year by the ratification of an agreement to pt in payment $40,000,000 over a long period of years. 00,000 had already been paid, and on the balance not less than 00,000 annually had still to be paid. Relatively few awards made by the Mixed Claims commission under the treaty of . Additional claims were agreed upon by two commissioners 934 and 1935. Under an act of Dec. 18, 1942, a domestic mission of three commissioners would be set up to make ds on the unsettled claims. The so-called special claims g out of the revolution in Mexico between 1910 and 1920 settled during the 1930s.

livia.—On Jan. 27, 1942, the United States department of , through Sumner Welles, effected an agreement with Bolivia he payment of $1,500,000 with 3% interest from March 13, , because of the executive cancellation by President Toro e concession of the Standard Oil Company of Bolivia, a diary of the Standard Oil Company (N.J.). The company d to this sum as payment for the voluntary sale of its prop- s, which represented a much larger investment, but perhaps reater value. The unilateral cancellation for alleged but un- ed fraud allegedly committed in 1925 was accompanied by flagrant acts by Bolivia, such as the deportation of the com- 's lawyer in Bolivia, the cutting down by decree of the te of limitations from 30 years to 90 days, a violent cam- against the supreme court, threatening their lives if they led against the government, and a denunciation of all law- who gave opinions in favour of the company. The supreme dodged the issue by concluding that the local represen- e of the Bolivian subsidiary held no proper power of at- y, and that the assignment of the concession by the pred- or company to the Standard had not received government oval in advance, although the government had never there- e raised the question. Payment was made April 22, 1942.

ance.—The relations of the United States with the Vichy rnment of France presented a number of political and legal lems somewhat unprecedented. Although the Vichy govern- was under the control of Germany, relations with the United s were not broken until Germany occupied southern France. United States adopted the policy, which had support in in- tional law, of dealing with the local governments they found ossession of colonial territories of France in Africa, Asia America. Where these territories were in control of the Free ch, Vichy was not consulted, and Vichy protests were re- d. Thus, local agreements were made or territory occupied adagascar (by the British), in New Caledonia, in Martinique, t. Pierre, in Brazzaville (U.S. consul appointed) and other s in Africa. The policy reached its most prominent exempli- on in North Africa, where the invading U.S. and British forces made their agreements with the Vichy minister Admiral Jean Darlan, a policy which gave rise to some criticism. The general American policy announced by President Roosevelt—before the U.S. break with Vichy—was to hold any occupied French territory in trust for a future French state and government which the United States might recognize.

Occupied Territory—U.S. Property.—The occupation of Holland and other countries of Europe by German military forces led to exceptional measures for the control of Dutch-owned property in the United States. The exiled Dutch government in London, in a proclaimed desire, thus according with United States policy, to prevent Dutch property falling into the hands of the German invader, undertook to "freeze" Dutch-owned property in the United States and prevent even its owner from obtaining control without Dutch and American consent. The New York court of appeals sustained this Dutch (London) measure as a conservatory and not a confiscatory decree, and hence gave it effect in New York.

The Dutch government had also decreed, before the invasion, that American securities which might not be physically removable from Holland, should be destroyed in the presence of a U.S. consul and a substitute security issued therefor in the United States.

Extraterritorial Confiscations.—On Feb. 2, 1942, the United States supreme court decided the case of *United States* v. *Pink,* 315 U.S. 203. This was an unprecedented decision. It held that the soviet government had, under its confiscation decrees, theretofore uniformly refused application to American and other non-soviet situs property, intended to and had confiscated an American bank deposit of a liquidated Russian insurance company in New York, a fund to which foreign creditors and stockholders of the liquidated company had a lawful claim. Since, however, the soviet government had in 1933 by the Litvinov-Roosevelt agreement accompanying the recognition of soviet Russia, assigned to the United States all soviet-owned assets in the U.S., the court held that the United States had now become the owner of the deposited fund of the liquidated insurance company. The decision gave rise to almost universal criticism from students of the subject.

The New York appellate division in a subsequent case, *Bollack* v. *Société Génerale,* 30 N.Y.S. (2d) 83, refused to give effect to a somewhat similar French confiscatory decree, distinguishing the Pink case on the fact that the United States had not taken an assignment from the French government of this property. It might thus seem that a foreign confiscatory decree is invalid in the United States unless the American government becomes the beneficiary thereof. This would be a curious doctrine.

Latin America.—The effort to enlist the Latin American countries in support of the United States war effort against the axis powers found reflection in conferences of the American republics even before Dec. 7, 1941. After that date the policy was accentuated to prevent foreign exchange becoming available to the axis powers, to prevent agents of those powers from using American territory for political purposes, and even to prevent persons on the American blacklist from continuing to do business in those countries. The consideration moving from the United States was not only political but also economic and financial, in buying up many of the raw materials normally exported by those countries to Europe, in sending to them American manufactured goods under an Export-Import bank loan or under lend-lease agreements, and in other ways associating those countries with the American war effort. Many of them declared war on the axis powers. Others broke diplomatic relations. Only two, Argentina and Chile, up to the end of 1942 maintained their neutrality. On Jan. 20, 1943, Chile severed diplomatic relations with the axis. Incidentally, it may be said that the policy of political aid militated against the use of any diplomatic pressure and the efforts of the Foreign Bondholders' Protective council to persuade the defaulting countries of Latin America to resume service on their defaulted bonds, which many of them would now be able to do since they again possess American foreign exchange.

Enemy Patents.—In Dec. 1942 the alien property custodian announced that he was seizing all patents owned by German nationals or by nationals of countries occupied by Germany. This involved approximately 50,000 patents. Those owned by German nationals were to be licensed on a non-exclusive basis without compensation to American industrial concerns for the life of the patent. Those owned by nationals of occupied countries were to be royalty free until six months after the termination of the war. This policy was undertaken without the express consent of congress. It seemed like a confiscation of private property to the extent involved, and might lead to far-reaching results. The confiscation of private property, contrary to international law, did much damage to international relations after World War I, and if again adopted would militate seriously against the possibility of a restoration of healthy international relations.

In Jan. 1942 the department of state issued a circular requesting detailed information as to American property located in enemy or enemy-occupied territories, property far larger in amount than enemy-owned property in the United States.

Angary.—The conduct of the war gave rise to several legal problems which invite attention. The right of angary was invoked by the United States in taking over some Swedish vessels in American harbours Dec. 7, 1941. German and Italian vessels had been taken over theretofore on a theory that they had committed or were about to commit sabotage. It is probable that on these ships compensation would be paid after the war to their private owners. In the case of neutral ships, compensation must be paid under the right of angary, though the "Kungsholm" was actually purchased from its private owners.

An interesting case arose in Mexico which before the war seized the Italian-flag steamer "Vigor" under an alleged right of angary. This is exclusively a war right and not possessed by neutrals. The ship was owned by an Italian company in which the Standard Oil Company (N.J.) owned a 93+ percent interest. The Mexican government promptly chartered the steamer to the U.S. War Shipping administration, which issued a policy of insurance to the Mexican government. The ship was sunk, presumably by submarine. The American company requested that the insurance money be allowed to remain in the United States and 93+ percent paid over to them as the real parties in interest. The War Shipping administration wished to pay the charteree, the Mexican government, the insurance fund. At the end of 1942 the case remained unsettled. It brought up a problem analogous to that of the German ships turned over in 1920 to the Reparation commission, though actually owned by the DAPG, a fully-owned subsidiary of the Standard Oil Company (N.J.).

Prisoners of War.—The principal belligerents agreed, according to a state department release of May 23, 1942, to respect the Geneva 1929 convention concerning prisoners of war and civilian enemy aliens. After the Dieppe commando attack, the Germans charged that the British had tied the hands of prisoners and undertook reprisals on British prisoners. They claimed that an instruction to tie prisoners contrary to the Geneva convention had been issued by the British. Toward the end of 1942, the British announced that they had untied all German prisoners, but by Jan. 1943 no similar German agreement had been announced. There was some dispute as to who began the practice, whether it was not a temporary measure in the battle area, and whether the Geneva convention was actually violated. An vestigation in due course would have to examine these quest (*See* also Prisoners of War.)

Saboteurs.—On July 31, 1942, the supreme court decided saboteur cases involving the right to a jury trial rather than by military commission of eight German so-called saboteurs had landed from an enemy submarine on United States terri had discarded their uniforms, and had orders to commit ho acts involving the destruction of life and property. The sup court unanimously held (Justice Murphy taking no part) such persons were not lawful combatants entitled to be treate prisoners of war or subject to a trial by jury, but that they— if citizens—were engaged in "unlawful belligerency," there not committing lawful acts of war and, like spies, could be and sentenced by military commission. Six were executed. parte *Quirin,* 63 Sup. Ct. Rep. 2. (E. Br

International Trade.

In view of the unavailability most of the pertinent data, it is possible to prepare the usual article on international trade 1942. (*See* Agriculture; Business Review: *U.S. For* *Trade.*) (C. L. W

Trade Agreements.—The signing of reciprocal trade a ments with Peru on May 7, Uruguay on July 21, and Mexic Dec. 23, marked the outstanding developments of 1942 in trade-agreements program of the United States under the originally approved on June 12, 1934.

Conclusion of reciprocal trade agreements with Peru, Uru and Mexico in 1942 increased to 15 the number of Amer republics with which such agreements have been concluded. earlier agreements were with Argentina, Brazil, Colombia, C Rica, Cuba, Ecuador, El Salvador, Guatemala, Haiti, Hond Nicaragua and Venezuela.

These agreements helped to strengthen commercial rela between the United States and the other American republics in general, to promote hemisphere solidarity, at a time when was of more than ordinary importance.

In other parts of the world, agreements were concluded the governments of the United Kingdom, Belgium, Ca Czechoslovakia, Finland, France, the Netherlands, Sweden, S erland and Turkey. On April 4, public notice was given of i tion to negotiate an agreement with Bolivia, and a similar n in regard to Iran was issued on July 29. Negotiations with land continued.

The trade-agreements program seeks through negotiations foreign countries the reciprocal adjustment of excessive duties, the reduction of other trade barriers, and the remov trade discriminations. In this way, it promotes an expansi international trade and helps improve international relations erally.

Because of the influence of World War II, there was no able statistical evidence of the effects of the trade-agree program in 1942. However, the results of the program d the prewar period demonstrated its effectiveness as a mea restoring international trade. As a result in large part of the cessions obtained from foreign governments in trade agree and of the reciprocal concessions granted by the United S the tendency in prewar years was for United States foreign —exports and imports—with the trade-agreement countries t crease faster than that with the non-agreement group.

Developments prior to World War II emphasized the fact trade barriers and discriminations are among the under causes of war. Trade barriers, by impeding international merce, caused diminished national incomes, depressed stan of living, unemployment, financial instability and social u ade discriminations led to constantly shifting trade currents, mmercial uncertainty, recriminations and retaliations, trade nflicts and international economic tensions.

The fourth point of the Atlantic Charter recognized that all na- ns, large or small, must have access on equal terms to the de and raw materials of the world needed for their economic osperity. The effectiveness of the trade-agreements program promoting these objectives was demonstrated, and the year 42 witnessed the taking of further steps toward those objectives.

On Jan. 1 the 24 nations then united with the United States d the United Kingdom in World War II and later in 1942, r others, declared their adherence to the Atlantic Charter, reby making it a United Nations Charter. Under Article VII the mutual-aid agreement of Feb. 23 with the United King- m, the two governments agreed to seek, by international and mestic measures, the expansion of production, employment, d the exchange and consumption of goods; the elimination of criminatory treatment in international commerce and, in gen- l, the attainment of the economic objectives of the Atlantic arter. Similar mutual-aid agreements were entered into with ina, Soviet Russia, Belgium, Poland, the Netherlands, Greece, echoslovakia, Norway and Yugoslavia; Australia and New aland accepted the principles of the United Kingdom agree- nt as applicable to U.S. mutual-aid arrangements with them; d Canada pledged co-operation in the attainment of the objec- es of Article VII, although Canada had not sought lend-lease istance. Mutual-aid agreements with other countries were in spect.

The trade-agreements program provided the most effective chanism for the nations of the world to work as partners in establishing the commerce of peace in accordance with the antic Charter and Article VII of the mutual-aid agreements. tive participation by the United States in the councils of the ited Nations, looking toward the attainment of the objectives eady agreed upon seemed indispensable to the welfare and se- ity of the United States. United States co-operation seemed essary to the establishment of a solid economic foundation whatever structure of international security the victorious ited Nations might build. Without such a foundation the ucture could not stand, if it could be built at all; world se- ity against war and aggression could not be erected on a morass restrictive trade barriers and discriminatory trade arrange- nts.

(*See* also Economic Warfare, Board of.) (D. An.)

terstate Commerce Commission.

The interstate commerce com- ssion, established Feb. 4, 1887, for the regulation of carriers gaged in interstate commerce, consists of 11 members ap- nted by the president. From its membership the commis- n selects its chairman (Clyde B. Aitchison in 1942). On a vir- l leave of absence as commissioner in 1942, Commissioner seph B. Eastman was serving as director of the Office of De- se Transportation (*q.v.*) and Commissioner John L. Rogers s acting as director of the division of motor transport in that ce, which also utilized the services of many of the commis- n's employees.

In 1942 the carriers subject to the commission's jurisdiction re called upon to carry a heavy burden of wartime transporta- n, and many changes in their normal modes of operation and nnels of traffic were necessary. Railroad freight traffic was the hest on record, and passenger travel was heavier than it had n for many years. To some extent this rise was augmented by continuance of much water transportation along the coasts, but and water traffic increased. Motor truck and bus traffic was also in larger volume than it had been in previous years. The unexpected necessity for the strictest economy in the use of tires and motor fuel forced the motor carriers generally to make radical changes in their routes and schedules. All these factors brought numerous regulatory problems to the commission in addition to routine duties.

To prevent transportation wastes, the commission issued a number of emergency service orders directed to railroads and motor carriers, with respect to which its emergency powers were broadened by legislation during 1942. These measures were supplemented by the activities of an enlarged staff of field agents engaged in avoiding transportation congestion at individual points.

In the early part of 1942 the commission investigated petitions for increased rates and fares, principally of the railroads, with corresponding increases for other forms of transport carriers, required to meet higher wages and other operating costs. The commission authorized increases of about 3% in the rates on the basic products of agriculture, animals and mineral products, and of 6% on other commodities, except iron ore. An increase of 10% was permitted in passenger fares. All these increases were limited to the war period and 6 months thereafter.

During the year congress enacted legislation which broadened the commission's jurisdiction to include freight forwarders and defined their duties and rights. (C. B. A.)

Intestinal Disorders: *see* Alimentary System, Disorders of.

Intoxication, Alcoholic.

A report by the "Committee for the Study of Problems of Motor Vehicle Accidents," served to clarify the controversy that had heretofore revolved about the proposal of the National Safety Council that a person is drunk when the concentration of alcohol within the blood is 150 mg. or more per each 100 cc. Experimental evidence indicated that a concentration of 150 mg. will always affect visual acuity but that such concentration was too great a criterion of drunkenness for some persons and too little for others. The committee, however, interpreted the results of chemical tests for alcohol concentration in blood as follows: Persons with a concentration of 0.15% or more are intoxicated; concentration of 0.05% or less are not under the influence of alcohol; and concentration between 0.05% and 0.15% are likely to be influenced and are considered intoxicated only when a supplemental medical examination gives objective confirmation of such influence. According to the report fatal traffic accidents associated with drinking showed an increase, the greater increase, however, involved drinking drivers. Fatal accidents involving intoxicated pedestrians also increased.

The value of chemical tests for the concentration of alcohol in the blood was recognized as admissible evidence before courts of law and the year 1942 witnessed an increase in the prestige of expert testimony in this field.

There were no new methods proposed in 1942 for the treatment of alcoholism. Contributions dealt with heretofore used measures. The year witnessed, however, debarment of fraudulent schemes from the mails and the discontinuance of misrepresentations in advertising, either by agreement or by prosecution, of false claims about the value of substances to be used for the treatment of alcoholism or the removal of a desire for "drink."

The medical, public health, sociological and economic aspects of the alcohol problem continued in large measure to be ignored for those ever-present moral, profit and revenue issues that had so long dominated measures and policies for its solution. In France, however, a new law endorsed by the French Academy of Medicine restricted the number of bars, rationed the sale of wine and liquors, empowered the Board of Health to interdict the sale of drinks considered noxious, and allowed for the observation and hospitalization of drunkards. (*See* also Liquor Control; Psychiatry: *Alcoholism.*)

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Inventions: *see* Patents.

Investment Banking: *see* Banking.

Iodine. The production of iodine in the United States was not reported after 1937, when it was 299,286 lb., but it is known to have increased each succeeding year. Imports from Chile were so irregular that the figures had little significance; of more importance was the fact that the average value per pound of the imports increased from 84 cents in 1939 to $1.13 in 1941. (G. A. Ro.)

Iowa. A north central state of the United States, admitted as the 29th state on Dec. 28, 1846; popularly known as the "Hawkeye state." Area, 56,280 sq.mi.; pop. (1940) 2,538,268. The urban population was 1,084,231; rural was 1,454,037, of which 916,768 lived on farms. Of the total population, 2,403,446 were native whites, 117,245 foreign-born whites, 16,694 Negroes and 883 other races. Capital, Des Moines (159,819). Other principal cities: Sioux City (82,364), Davenport (66,039), Cedar Rapids (62,120), Waterloo (51,743) and Dubuque (43,892).

BOURKE B. HICKENLOOPER, elected Republican governor of Iowa Nov. 3, 1942

History.—The officers elected Nov. 3, 1942, to take office on Jan. 1, 1943, all Republicans, were: governor, B. B. Hickenlooper; lieutenant governor, Robert D. Blue; auditor, C. B. Akers; treasurer, W. G. C. Bagley; secretary of state, Wayne M. Ropes; secretary of agriculture, Harry D. Linn; attorney general, John M. Rankin; and superintendent of public instruction, Jessie M. Parker.

Education.—For the school year 1940–41, 358,527 pupils were enrolled in public elementary schools, 137,646 in public high schools and 2,489 in public junior colleges.

Public Welfare, Charities, Correction.—For the year 1942–43 the state appropriated $8,500,000 for old-age assistance, $500,000 for state emergency relief and $260,000 for child fare and aid to the blind. On July 1, 1942, the state mainta 15 penal, correctional and eleemosynary institutions, with a t of 14,463 inmates.

Table I.—*Leading Agricultural Products of Iowa, 1942 and 1941*

Crop	1942 (est.)	1941
Corn, bu.	596,796,000	462,519,000
Oats, bu.	201,435,000	176,702,000
Hay, tame, tons	6,709,000	5,518,000
Soybeans (grain), bu.	39,312,000	16,014,000
Soybeans (hay), tons*	486,000	446,000
Barley, bu.	4,818,000	7,315,000
Wheat, bu.	4,749,000	2,341,000
Potatoes, bu.	6,600,000	5,508,000
Rye, bu.	368,000	256,000

*Included also in the figures for tame hay.

Table II.—*Principal Mineral Products of Iowa, 1940 and 1939*

	Production, 1940	Value, 1940	Value, 19
Cement	4,605,886 bbl.	$7,641,163	$7,771,50
Coal	3,231,177 tons	8,045,630	7,503,00
Gypsum	487,379 tons	587,223	510,12
Sand and gravel	3,464,803 tons	1,852,285	1,299,44
Stone	4,013,740 tons	3,832,070	4,385,23

Finance and Banking.—Taxable property in Iowa was mated at $3,000,000,000 in 1942. The income of the state ernment for 1941–42 included $5,000,000 from the general p erty tax and some $52,748,078.64 from other taxes. The balanc the state treasury on June 30, 1942, was $29,507,779. There 103 national banks in Iowa on June 30, 1942, with deposits of $3 671,000, and 545 state banking institutions with deposits of $5 572,568. The state banks reported resources of $616,591,014.

Communication.—On July 1, 1942, 5,459 mi. of primary r in Iowa were paved, and 3,061 mi. were gravelled or other surfaced. Of the secondary road system, 45,164 mi. gravelled. For the fiscal year 1941–42 construction work on primary roads cost the state $7,353,600. On Jan. 1, 1941, t were 8,980.7 mi. of steam railroads and 431 mi. of interu tracks. Iowa in 1942 had approximately 10,385 mi. of teleg lines and 79,358 mi. of telephone lines.

Agriculture.—The total value of agricultural productio Iowa in 1942 from the 21,530,300 ac. harvested was estimate $707,272,000.

Manufacturing.—The total value of products manufact in Iowa in 1939 was $718,531,801. There were 2,670 manufa ing establishments with 11,501 salaried employees who rece $23,535,779, and 65,314 wage earners who received $73,466 Meat packing headed the list of industries, employing about sixth of the wage earners. The products were valued at $ 314,633. Second in value was butter, with a product value $60,380,974.

Mineral Production.—Iowa ranked 29th among the state importance of minerals in 1939; the total value of such proc in that year was $25,483,936. (R. A. G

Iowa, State University of. An institution of higher cation at Iowa City, Ia. established Feb. 25, 1847. It was the first state universit admit women on equal standing with men.

Geared to the war effort, the university began an acceler schedule in Jan. 1942, operating to graduate many student much as five months ahead of normal. Special courses were es lished, and confidential research work was instituted.

Facilities of two men's dormitories and the field house sports fields were leased to the U.S. navy for a naval avia pre-flight school for 2,400 cadets. More than 50 men of pr sorial rank entered some type of government war service.

For statistics of enrolment, faculty, library volumes, etc. Universities and Colleges.

wa State College. A land-grant college at Ames, Ia. During 1942, instruction in depart- ents whose work could not contribute directly to training men d women for the war effort was subordinated. The college be- n operating on a continuous 12-month basis. Three navy tech- al schools were established under which sailors were trained electricians, diesel mechanics and cooks and bakers, at the rate 6,000 a year. A laboratory building was constructed to house e diesel trainees. Fifty men at a time were trained as army d navy pilots. Construction of a new men's dormitory was mpleted. Extensive research of a secret nature was performed r the war department, as well as research bearing upon food oduction. During the year, 3,518 civilians were given various es of war industry training at points throughout Iowa.

For statistics of enrolment, faculty, library volumes, etc., *see* IVERSITIES AND COLLEGES.

an. Known before March 1935 as Persia, a country of western Asia bounded on the east by India and Afghanistan, the north by the U.S.S.R., on the west by Iraq and Turkey, d on the southwest and south by the Persian gulf and Arabian a; ruled after 1926 as a constitutional kingdom. Ruler: Shah hammed Reza; premier (1942): Qavam as-Saltaneh. Area, *c.* 8,000 sq.mi.; pop. (est.), 15,000,000. Chief towns: Tehran p., 360,000), Tabriz (220,000), Meshed (140,000), Shiraz 20,000), Isfahan (100,000). Language, Persian; religion, Mo- mmedan.

History.—The outstanding event of the year was the signature, Jan. 29, of a treaty of alliance with Great Britain and the S.S.R. This treaty, which was explicitly based on the principles d down in the Atlantic Charter, opened with a guarantee by two belligerent Allies of Iran's territorial integrity and politi- independence. They undertook to defend it against any aggres- n, and in return they were granted facilities for the passage of ops and supplies, including if necessary the control of all means communication throughout Iran. The assistance to be given by nian troops, in the event of an attack upon the country, was be limited to the maintenance of internal security. The allied vernments undertook to safeguard as far as possible the eco- mic life of Iran. Their forces were to be withdrawn from nian territory not later than six months after the cessation of stilities, and the treaty would then cease to operate. It was companied by an exchange of notes, in which Iran was assured a place at the peace conference and in any negotiations directly ecting its interests, and the Iranian government undertook to er diplomatic relations with any state having such relations ither with London nor with Moscow.

Iran's relations with Japan were not covered by this pledge, t the Japanese minister was asked to leave the country in ril, after the unfriendly activities of the legation had been dis- sed in the course of a drive against axis agents.

The tripartite treaty was accepted in Iran without enthusiasm, t it was not the cause of the fall, at the beginning of March, the government which had concluded it. Dissatisfaction with . Foroughi's administration arose rather from the rising cost of ing, food shortages and the breakdown of security in the tribal eas. Similar difficulties undermined the authority of his suc- ssor, M. Suhaili, who gave way in August to M. Qavam as- ltaneh.

Iran, like other middle eastern countries, had a poor harvest in 41, and the effective yield was further reduced by local dis- rbances, hoarding and speculation. The consequences might ve been serious but for British and Russian imports of grain, ounting to nearly 100,000 tons in the 12 months following the try of their troops into the country. The Allies, including the United States, also carried out considerable improvements in Iran's internal communications, with the primary object of enlarging the flow of military supplies to southern Russia. Numbers of British locomotives were imported, a new railway was built from Ahwaz to Khorramshahr, port facilities on the gulf were greatly increased, and the road and railway systems were improved and extended. On May 2 Iran was made eligible for assistance under the lend-lease act. An American educational mission was invited to report on education in Iran, and American advisers were engaged by a number of ministries. (H By.)

Education.—(1937) 4,939 schools; 273,600 scholars; one university at Tehran.

Banking and Finance.—Revenue, ordinary (1940–41) 3,613,768,000 rials; expenditure, ordinary (1940–41) 4,323,911,000 rials; foreign loan (May 15, 1940) £951,706; public debt (Dec. 31, 1938), 98,900,000 rials; note circulation (Dec. 31, 1941) 1,585,000,000 rials; gold reserve (Dec. 31, 1941) 310,949,000 rials; exchange rate (1942) 1 rial=2.857 cents.

Trade and Communication.—Foreign trade (merchandise) 1940–41: imports 1,018,700,000 rials; exports 2,253,500,000 rials. Communications 1938: roads fit for wheeled traffic, *c.* 8,700 mi.; railways open to traffic, 1,072 mi.

Agriculture and Minerals.—Production, est. 1937–38 (in metric tons): petroleum, crude (1940), 10,426,000; wheat, 1,942,300; barley, 706,900; rice, 382,100; cotton (1940–41), 50,000; wool (1940), 15,500; beet sugar (1939–40), 25,200; tobacco (1940–41), 12,700.

Iraq. An Arab state of the near east, between Iran, Syria and Arabia, watered by the Tigris and Euphrates; an independent kingdom after 1932, when the British mandate was terminated. Area, 116,000 sq.mi.; pop. (census Oct. 1934) 3,561,000 (est. Dec. 31, 1939), 3,700,000. Chief towns: Baghdad (cap. 400,000), Mosul (260,000), Basra (180,000). Ruler: King Feisal II; regent: Prince Abdul-Ilah; premier (1942): General Nuri es-Sa'id; language: Arabic; religion: Mohammedan.

History.—The year opened with the trial of the principal military and civilian leaders of the coup d'état of May 1941. Six of them, including Rashid Ali al-Jilani were condemned to death in absentia. Four of these, two of Rashid Ali's ministers and two of the military conspirators, were tried again after being handed over to the Iraqi government by the British military authorities who had previously interned them at Ahwaz. The second trial resulted in three death sentences, on Mahmud Salman, Fahmi Sa'id and Yunus as-Sabawi; they were executed on May 5. Measures were also taken to purge the army of disaffected elements, and to intern enemies of the regime.

General Nuri es-Sa'id resigned and formed a new cabinet in October. Twice during the year, on United Nations day and in an exchange of messages with Winston Churchill, he took occasion to reaffirm his view that the hope of realizing Arab aspirations lay in the victory of the United Nations. He also announced, in August, that Iraq would fight beside the allies if the German armies broke through the Caucasus and threatened its frontiers.

An Iraqi legation was established in Washington, the first minister, Ali Jawdat al-Ayyubi, presenting his credentials to President Roosevelt on May 4. Two days earlier, Iraq had been declared eligible for assistance under the lend-lease act. Wendell Willkie was received with enthusiasm when he visited Baghdad in September.

As elsewhere in the middle east, the authorities were preoccupied with the problem of food supply. The export of wheat was forbidden and the surplus, above the needs of the cultivators for food and seed, was requisitioned by the government. Attempts were made, by price-fixing, to arrest the rise in the cost of living.

Iraq's internal communications were of increasing importance as supply routes for Russia and Turkey. Their development, notably by improvements in the port of Basra, was accelerated by the British military authorities and the United States military mission. Transit trade had doubled in 1941 by comparison with 1940, and figures for the early months of 1942 pointed to a continued increase.

BRITISH TOMMIES having a shoeshine in Baghdad, Iraq

The exiled ex-premier, Rashid Ali al-Jilani, was active in Rome and Berlin, where he issued statements asserting his confidence in the friendly intentions of the axis powers toward the Arabs and calling for hostility to Britain. (H. By.)

Education.—In 1938: elementary schools, government, 741; scholars, 94,368; new schools opened 1938–39, 22; secondary schools, 14; scholars, 1,904; intermediate schools, 48; scholars, 10,611.

Finance.—Revenue, ordinary (est. 1941–42) 6,800,000 dinars; expenditure, ordinary (est. 1941–42) 6,700,000 dinars; notes in circulation (May 31, 1942) 13,500,000 dinars; foreign assets reserves (May 31, 1942) 15,000,000 dinars; exchange rate 1942 (currency based on sterling): 1 dinar=£1 sterling=approx. 403.5 cents.

Trade and Communication.—Foreign trade 1941 (merchandise): imports 6,948,000 dinars; exports, domestic (excluding crude petroleum) 3,906,000 dinars. Communications: roads open to traffic (1940) *c.* 4,000 mi.; railways, open to traffic (June 1940) 947 mi.

Agriculture and Minerals.—Production 1938–39 (in metric tons): petroleum, crude (1940) 3,438,000; wheat, 600,000; rice, 360,000; barley, 1,138,400; tobacco, 4,000; wool (1938) 8,300; cotton (1940–41), 3,600; cotton seed (1940–41), 8,500.

Ireland: *see* EIRE.

Ireland, Northern.

Northern Ireland comprises the six counties of Antrim, Armagh, Down, Fermanagh, Londonderry and Tyrone, forms part of the United Kingdom of Great Britain and Northern Ireland, but (since 1920) has its own parliament and executive, with limited powers for local purposes, though also represented in the imperial parliament by 13 members. Area, 5,238 sq.mi.; pop. (June 30, 1938), 1,285,000. Chief cities (pop. census 1937): Belfast (cap. 438,086), Londonderry (47,813). Language: English; religion: Christian (Roman Catholic, 33.75%; Presbyterian, 31.4%; Episcopalian, 27%). Ruler and national flag, as for Great Britain. Gov.: the duke of Abercorn; premier: John Miller Andrews.

History.—During 1942 the parliament of Northern Ireland was occupied with legislation necessitated by wartime conditions. Measures of outstanding importance were those providing for the nationalization of the fire service and for ensuring the maint nance of adequate electricity supplies in an emergency. Throu the ministry of commerce and production, working in conjuncti with the appropriate departments of the British government, clo contact was maintained with all branches of war production. the industrial field there was a marked expansion of output, t industrial capacity of the area having been more fully geared to meet the increasing demand for war supplies.

The Northern Ireland ministry of agriculture, acting on beha of the ministry of food, continued to be responsible for the pu chase, sale and distribution of most of the principal articles home-produced food. For example, more than 300,000,000 eg were shipped to Great Britain in 12 months after meeting lo rationing requirements. Flax production, which had been mo than quadrupled during the first two years of war, continued increase, thus helping to supply the needs of linen factor engaged on essential war contracts.

In introducing the budget, the minister of finance announc that the provisional contribution to the imperial treasury f 1942–43 would be £21,300,000. The estimated exchequer recei were £41,797,000. Stimulated by a series of special campaig the Ulster savings movement achieved a series of successes. Th total sum raised in war savings by the people of Northern Irela between Nov. 1939, and the middle of Nov. 1942, exceed £55,000,000.

An announcement in parliament by the prime minister d closed the character and scope of the government's plan for po war reconstruction. The program included schemes for improv housing and town planning, cheap electricity and transport fac ties, the widening of educational opportunities for youth, the e pansion of health services, the development of linen exports, f production within the province, and improvements in local go ernment administration.

The life of parliament was prolonged by special legislation view of the undesirability of holding a general election in t midst of a world war. (R. D. B.)

Education.—In 1941–42: elementary schools, 1,681; schola 183,872; secondary schools, 75; scholars, 14,772; university st dents, 1,626; technical schools, 60; students, 20,462.

Finance.—Revenue (1941–42), £34,932,138; expenditure (cluding £15,900,000 imperial contribution, and surplus £42,47 £34,932,138; 1942–43, estimated revenue, £41,797,000; estimat expenditure (including £21,300,000 imperial contribution, a surplus £84,000), £41,797,000; exchange rate (1942) £1 = 40 cents U.S.

Trade and Communication.—External trade 1938: impor £54,385,000; exports, £51,061,000. Communications 1939: roa fit for motor traffic, 13,043 mi.; railways, standard gauge, 741 m narrow, 121 mi., canals, 180 mi. Shipbuilding, tonnage launch (1938), 79,468; value of linen goods exported 1938, £5,480,000.

Agriculture.—Total area under crops 1942, 1,263,131 ac., cluding 522,050 ac. cereal crops, 187,320 potatoes, 72,916 flax a 435,429 ac. hay. Cattle 826,651; sheep 741,601; pigs 271,22 poultry 13,339,558. In 1941–42, cattle and sheep to value £2,820,000, bacon and pigs to value of £2,480,000, eggs £3,50 000, potatoes £850,000, and fruit more than £500,000 we shipped from Northern Ireland to Great Britain. In additi about 100,000 gal. of milk per month were shipped during t winter months.

Irish Free State: *see* EIRE.

Iron and Steel.

As a matter of convenience the treatm of the general field of iron and steel subdivided into the three heads, iron ore, pig iron and steel. Ho er, there is little to record, since data were suppressed in all jor countries outside of the United States, and in most of the nor countries as well. Hence, such data as are presented in the les since 1939 is scanty, and includes many estimates.

Iron Ore.—Such data as was received on iron ore output in ent years is presented in the accompanying table. Later figures re available only from the United States.

Table I.—*World Production of Iron Ore*
(In millions of long tons)

	1929	1932	1937	1938	1939	1940
orth America—						
Newfoundland .	1.5	0.1	1.6	1.7	1.7	1.4
United States . .	73.0	9.8	72.1	28.4	51.7	73.8
outh America—						
Chile.	1.8	0.2	1.5	1.6	1.6	1.7
urope –						
Austria.	1.9	0.3	1.9	2.6	?	?
Czechoslovakia .	1.8	0.6	1.8	?	?	?
France	49.9	27.2	37.3	32.6	?	?
Germany . . .	6.3	1.3	9.4	10.8	?	?
Luxembourg . .	7.5	3.2	7.6	5.0	2.3	?
Spain	6.4	1.7	1.0	2.5	2.2	2.8
Sweden.	11.3	3.2	14.7	13.7	13.6	?
U.S.S.R.	6.9	12.0	27.6	26.0	?	?
United Kingdom.	13.2	7.3	14.2	11.9	?	?
sia—						
China	2.6	2.2	?	?	?	?
India	2.4	1.8	2.9	2.8	3.1	?
Malaya	0.8	0.7	1.7	1.7	2.0	?
frica—						
Algeria.	2.2	0.5	2.3	3.0	2.7	?
Morocco (Span.)	1.2	0.2	1.4	1.3	1.0	0.4
ustralia	0.9	0.6	1.9	2.3	2.6	?
World Total .	200.0	75.0	214.0	161.0	200?	208?
Ex. U.S.A. . .	127.0	65.2	142.0	132.6	141?	134?
Ex. British . .	191.1	64.3	191.6	139.5	?	
Brit. Empire .	18.9	10.7	23.4	21.5	?	

ron ore production in the United States increased by 25% in 1, to 92,499,300 long tons, a new record high. Of this total Lake Superior district produced 79,130,250 tons but shipped 210,600 tons. The only information available on 1942 is the e Superior shipments, which rose to approximately 92,000,000 s. This would indicate a total output of something like 105,-,000 tons for 1942.

ig Iron.—Some of the 1939 and most of the 1940 figures in world table are estimates, and later data were received only n the United States and Canada.

Table II.—*World Production of Pig Iron*
(In millions of long tons)

	1929	1932	1938	1939	1940
orth America—					
Canada	1.2	0.2	0.7	0.8	1.0
United States . .	42.6	8.8	19.2	31.8	42.4
urope—					
Belgium	4.0	2.7	2.4	3.0	2.2
Czechoslovakia .	1.6	0.4	1.2	0.3	. . .
France	12.3	6.8	6.0	7.8	4.6
Germany . . .	13.2	3.9	18.2	21.7	20.6
Luxembourg . .	2.9	1.9	1.5	1.8	1.1
U.S.S.R.	4.0	6.3	14.8	15.0	15.3
United Kingdom	7.6	3.6	6.8	8.2	8.3
sia—					
India	1.4	0.9	1.5	1.8	?
Japan	1.5	1.5	3.1	3.3	3.0
World Total. .	97.2	39.2	80.5	100.0	104.0
Ex. U.S.A. . .	54.6	30.4	61.2	68.2	61.6
Ex. British . .	86.7	34.3	70.3	88.5	91.6
Brit. Empire .	10.5	4.9	10.2	11.5	12.4

last furnace production in the United States rose from 47,-,529 short tons in 1940 to 56,686,604 tons in 1941, of which 100,551 tons was pig iron and 1,586,053 tons ferro-alloys. nts worked at an average of 97.1% of capacity during 1941, reached 102.3% in December. In 1942 production through October was 49,133,042 tons of pig iron, and total production for the year would probably somewhat exceed 60,000,000 tons.

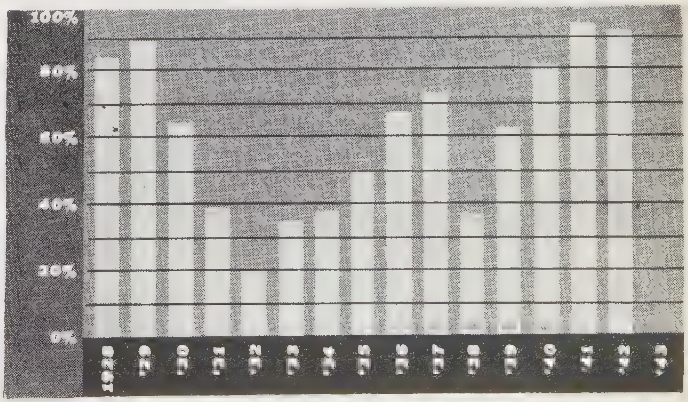
Canadian production totalled 1,741,273 short tons in 1941, 1,528,054 tons of pig iron and 213,219 tons of ferro-alloys. Through October 1942, the total of 1,817,391 tons included 1,640,055 tons of pig iron and 177,336 tons of ferro-alloys, the total being 34% above that for the same period of 1941, and in excess of the 1941 total.

Steel.—As with pig iron, much of the 1939 and 1940 data in the accompanying world table is based on estimates. Later data were received only from the United States and Canada.

Table III.—*World Production of Steel*
(In millions of long tons)

	1929	1932	1938	1939	1940
North America—					
Canada	1.4	0.3	1.1	1.3	2.0
United States . .	56.4	13.7	28.7	47.7	60.2
Europe—					
Belgium	4.0	2.7	2.2	3.0	2.2
Czechoslovakia .	2.2	0.7	1.7	0.4	. . .
France	11.7	6.9	6.1	8.4	5.4
Germany . . .	16.0	5.7	22.9	26.4	25.1
Italy.	2.1	1.4	2.3	2.7	2.5
Luxembourg . .	2.7	1.9	1.4	1.8	1.3
Poland	1.4	0.5	1.5	1.6	?
Sweden.	0.7	0.5	1.0	1.1	0.9
U.S.S.R.	4.6	5.7	18.2	18.5	19.5
United Kingdom.	9.6	5.3	10.4	13.5	13.4
Asia—					
Japan	2.3	2.4	5.9	6.3	6.3
World Total. .	118.1	49.9	107.1	134.6	159.8
Ex. U.S.A. . .	61.7	36.2	78.8	86.9	99.6
Ex. British . .	106.1	6.4	93.0	117.3	141.3
Brit. Empire .	12.0	43.5	14.1	17.3	18.5

Steel production in the United States showed successive increases over the preceding year of 27% in 1940, 24% in 1941 and 5% in 1942. The 1941 total was 82,836,946 short tons, an average of 97.3% of capacity. With plants already at near capacity all through 1941, and with only comparatively small new capacity made available, the increase in 1942 was considerably less than in the preceding years; production through November totalled 78,789,230 tons, and should approximate 86,500,000 tons for the full year of 1942. For some time production was cramped by scarcity of scrap, but this was remedied at least for the time being by a drive for scrap collection. The total scrap consumed in the steel industry in 1941 was 59,216,256 short tons, of which 33,904,680 tons was plant scrap and 25,311,576 tons was purchased scrap; in the first three-quarters of 1942 the total was 40,394,000 tons, including 22,755,000 tons of plant scrap and 17,639,000 tons of purchased scrap. These figures are respectively reductions of 9%, 11% and 7% from the corresponding 1941 averages. Stocks of scrap increased from a low of 4,324,000 tons at the end of



STEEL PRODUCTION in the United States; monthly average percentage of capacity (figures compiled by American Iron and Steel Institute)

April 1942 to 5,545,000 tons in September.

The Canadian steel output increased to 2,701,313 short tons in 1941, and to 2,580,715 tons in the first ten months of 1942, indicating a total in excess of 3,000,000 tons for the full year of 1942. (*See* also Business Review; Metallurgy; War Production, U.S.) (G. A. Ro.)

Iron and Steel Institute, American: *see* American Iron and Steel Institute.

Irrigation.

United States.—Throughout the western mountain states, snow surveys are made by the federal government during the late winter months to provide information regarding the expected run-off during the following irrigation season. From this information forecasts are made each month from Feb. 1 to May 1, summarizing the irrigation water supply outlook. The accumulated snow survey data gathered over previous years permits of forecasting the coming run-off within 10% of the actual amount for the period April to July, inclusive. For some drainage basins, where other factors are introduced in the forecast equation, the deviation between the predicted and actual flows has sometimes been even less than 10%.

The water supply throughout the irrigated west during the year 1942 was, on the whole, adequate. In Colorado, Wyoming and New Mexico the water held in storage reservoirs during the spring months practically assured the irrigation requirements, during the summer months. The stream flow during the irrigation season, together with timely precipitation, made possible the holding of reserve water in reservoirs so that by Nov. 1, 1942, many reservoirs remained practically full.

In the Columbia river basin, prediction of a sufficient irrigation water supply was supported by the fact that there was no shortage of irrigation water in that basin during the 1942 season.

Oregon water supply prospects for 1942 at the time of issuance of the annual forecasts in the spring varied for the several regions from ample to critically short. State-wide prospects differed greatly because of varying deviations from normal of mountain snow-stored water and holdover reservoir water supplies. Shortages of greater or less extent were foreseen for the Walla Walla river basin, parts of the Deschutes river basin and parts of southern Oregon.

Later precipitation, however, occurring after the close of the snow water forecasts resulted in stream flow sufficient to supply adequate irrigation water for the year.

California had one of its best water-supply years and there was general replenishment of ground-water supplies in the areas dependent on that source of supply.

There was no remarkable construction of works or expansion of irrigated areas in any of the non-federal irrigation enterprises except that of the Imperial valley, California. In that area, the Imperial Irrigation District reported the placing of the All-American canal in full operation since Feb. 1942. From that date on, the All-American canal supplied the entire water requirements of the district. For some time prior to full operation of the canal "priming" or sealing operations were carried on, and marked decrease of seepage losses was noted.

Construction work was nearly completed on the first 75 mi. of the 130-mi. branch of the All-American canal to Coachella valley. Because of war restrictions, however, it appeared that completion of the remainder of the canal might be delayed.

The foundation for expansion of irrigation by the United States bureau of reclamation to meet war or postwar conditions in the west was strengthened during 1942. At the same time emphasis was shifted in the bureau's construction program to the completion of multiple-purpose dams and the installation of electric facilities that would quickly increase the power supply in strate areas in the Pacific and Intermountain regions. The construct of canals and other irrigation facilities, however, was halted retarded by the diversion of critical materials to more urgent purposes. (*See* also Dams.)

The storage capacity of reclamation reservoirs increased 2 to 61,610,283 ac.-ft. during 1942, while the volume of sto water available for power, irrigation, domestic and industrial u increased from 41,500,000 to 47,250,000 ac.-ft.

Preliminary reports for the crop season of 1942 indica that nearly 4,000,000 ac. of land were irrigated by reclamat projects. This area for the first time included the Imperial va of southern California which received its complete supply thro the All-American canal of the Boulder canyon project. The p duction of essential war foods of 45 projects in operation a showed substantial increases in commodities like sugar be alfalfa for dairy and beef herds, vegetables and fruits.

Power installations at multiple-purpose projects of the bur of reclamation increased from 953,962 kw. in July 1941 to 448,362 kw. by Aug. 1942. With the completion of the 2 (Parker dam) power plant on reclamation projects, the t capacity on these multiple-purpose developments was increa to 1,538,362 kw. The bureau of reclamation's projects in ope tion or under construction also permitted of further power pansion in the war emergency. By May 1944 additional insta tions were scheduled which would bring the installed capa to nearly 2,500,000 kw.

The bureau was prepared to supply water in 1942 to 4,915, ac. of land. Projects in the construction program when comple would increase the total area to be served to 12,231,298 ac. this area 5,115,224 ac. were expected to receive a complete full supply of water, and 7,117,074 ac. inadequately irriga by other systems would receive supplemental water or be ot wise benefited by bureau systems.

China.—Although China was at war for more than five ye she continued to carry on reclamation and irrigation proje During 1942 there were completed 258 irrigation projects, tailing an expenditure of about Ch. $137,847,000, benefiting 936,743 mow. in the provinces of Szechwan, Kweichow, Yun Kwangsi, Kwangtung, Hupeh, Kiangsi, Anhwei, Honan, Sh and Kansu. Of the amount of money expended, loans to amount of Ch. $29,324,000 were extended.

Irrigation loans approved for 1942 amounted to Ch. $97,3 300 of which Ch. $77,876,300 would be granted through the j board of the four government banks. The loans would be g to 14 provinces including Sikang and Fukien. The big amounts were to go to Kansu and Shensi where many ca were being built. Kansu was to get Ch. $25,676,300 and Sh Ch. $15,000,000.

The agencies handling irrigation projects financed by the ernment loans were either the provincial irrigation loans com sions organized jointly by the joint board of the four governm banks and the provincial governments or the provincial w conservancy bureaus under the supervision of the joint bo Projects concerning two or several provinces were to be un taken by the National Water Conservancy commission. The j board of the four government banks was giving agricultural l to 317 co-operative banks in 13 provinces.

India.—The Central Board of Irrigation of India contin its research studies into the many phases of irrigation and technical problems such as meandering of rivers, design channels in alluvium, flow of rivers and canals, design of distr tary heads, design of falls or drops, silt excluders and ejec the silting of reservoirs and many other troublesome probl

The India Sarda canal extension project involving the const n of 352 mi. of new channels, 77 mi. of drains and the re-odelling of 225 mi. of existing channels, was near completion. e total cultivable area served by the project was 281,000 ac. e original canal, completed in 1928, took off from the Sarda er on the borders of Nepal, in the north of the United Prov-es and was in 1942 the longest canal in the world.

Mexico.—The principal activities of the Mexican Commission Irrigation during 1942 involved work in the several states of t country. In Chihuahua, the Delicias irrigation district com-ted embankments and lateral structures. The Las Virgenes m, upon which work was started during the year, was expected store 36,481 ac.-ft. of water for irrigation and generation of ctrical energy. The dike on the right hand side of the dam s almost completed and clearing and excavation at the dam e was well along at the close of the year. Also in the state of ihuahua, in the Juarez irrigation district, a portion of the in canal was lined, and the widening and extension of the rranza canal and the intercepting drain were completed. The llway of the Sauza dam was completed. On the canal system appurtenant structures were completed.

n the state of Sinaloa, the Culican irrigation district conserva-n practices and operation of 56,834 irrigated acres were con-ued. Construction on the by-pass tunnel and the Aforador e, which would form part of the Sanalona dam, was begun. is dam when completed was expected to form a reservoir stor-68,800 ac.-ft. of irrigation water and would increase the irri-ed area to 244,000 ac.

n the state of Guanajuato, in the Alta Lerma irrigation dis-t, construction was continued on the Salamanca canal. Con-uction was also continued on the Solis dam, which was begun 1941. The reservoir created by the completion of the Solis n will store 32,428 ac.-ft. The great Angostura dam of the qui river irrigation district was completed during the year and s inaugurated on June 14, 1942.

he irrigation district of the Lagunera region in the states Coahuila and Durango started construction of Palmito dam, ticularly undertaking protective work on the inlet and outlet the tunnels, clearing the sidehills and excavating for the laying the piping in the valve galleries. (*See* also DAMS; DROUGHT; L EROSION AND SOIL CONSERVATION.)

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am.

The year 1942 had its repercussions on the Islamic world as on other worlds of thought and life.

ooking at the Mecca annual pilgrimage, whose numbers in ny ways reflect movements in the whole of the Islamic world, find that the number of non-Arabian pilgrims at the Hadj of 2 was only 19,000 instead of the hundreds of thousands ex-ted in normal years. King Abd-ul-Aziz ibn Sa'ud was not per-ally present at the pilgrimage, but made a donation of a sum al to his normal expenditure for the relief of the poor.

he Azhar university in Cairo attained its 1,000th year of life, the celebration of the millenary was postponed on account of war. It was intended to invite to the celebration representa-es of universities from other Muslim countries. This would y be possible after the cessation of the war and the restoration of normal communications in the world.

An interesting development in the direction of better understanding among the Muslims in different countries of the world was reported from Hyderabad (Deccan) in India. The powerful broadcasting station there was broadcasting not only in the Indian languages but also in Arabic and Persian, to reach the whole of the Muslim world.

The Hyderabad quarterly, *Islamic Culture*, for July 1942, contained a further contribution to the discussion of a certain document claiming to contain the text of the letter which the Prophet in his lifetime addressed to the Negus (*Najasi*) of Abyssinia. The fact of such a letter having been sent is generally accepted by Muslims, but the precise terms used are open to argument and discussion.

There was a movement among the Indian Muslims, under the leadership of Mohammed Ali Jinnah, for the establishment of a separate Muslim state to be known as Pakistan, but the idea was still at the discussion stage. (A. Y. A.)

Isle of Man: *see* BRITISH EMPIRE.

Italian Colonial Empire.

The table gives essential information relating to the so-called Italian colonial empire. Except for Albania, the conquest of which in 1939 was not recognized by the United States and Great Britain, and for the Aegean islands, the "empire" at the end of 1942 had practically ceased to exist. Ethiopia was again independent, and most of the remaining African territory was under British military occupation.

History.—After the occupation of Italian East Africa by British and imperial forces in 1941, news from this territory was scanty. In 1942 a railway was planned to link the Sudan with Eritrea, while it was reported that the U.S.A. was establishing a great base for war supplies to the near east in the latter colony.

In Libya, fighting continued and on May 26–27 flared into a gigantic battle when Erwin Rommel attacked the British and imperial forces and by June 26 had succeeded in driving them back across the Egyptian frontier. On Oct. 23, the British and Imperial forces under Gen. Bernard L. Montgomery launched a powerful offensive, dislodging the axis troops from their positions at El Alamein and pursued them far into Libya. (*See* WORLD WAR II.)

War activities in the Italian Aegean islands consisted mainly of

LIBYAN NATIVES of Cyrenaica defied the Italian police as British troops pushed forward in their second North African offensive early in 1942

*Italian Colonial Empire**

Country and Area Square miles (approx.)	Population (000's omitted) (est. Dec. 1939)	Capital, Status Governors, Premiers, etc.	Principal Products (in metric tons)	Imports and Exports 1938 (in lire, 000's omitted)	Road, Rail and Shipping 1938	Revenue and Expen ture (in lire, 000's omitted)
AFRICA Italian provinces of LIBYA, 213,821	800†	Tripoli; included in the national territory of Italy.	(1939) barley 22,600 wheat 20,700	imp. 882,057 exp. 108,961	rds. 3,250 mi. rly. 271 mi. shpg.: passengers arrived 127,458 departed 122,521	(est. 1939–40) rev. and exp. 600,115
LIBYAN SAHARA, 465,362 . . .	49†	Homs; colony, under military authority.				
ERITREA, 86,166	1,000	Asmara; colony, under British occupation.	barley (1937) 19,000	No separate figures	rly. 215 mi.	No separate figure
SOMALILAND, ITALIAN, 270,972 .	1,300	Mogadishu; colony, under British occupation.	maize (1938) 25,000	No separate figures	rly. 70 mi.	No separate figure
ASIA Italian islands of the Aegean sea, 1,035	122	Rhodes; colony	barley (1939) 2,200; olive oil (1940) 400; wine (1939) 33,000 hectolitres	imp. 157,421 exp. 21,851	rds. 382 mi.	(1934–35) rev. and exp. 48,000

*See the first paragraph of the accompanying article.
†Libyan population census 1936, Italians excepted, the latter (approx. 150,000) being included in Italy.

bombing raids by the United Nations. Albania apparently completely acquiesced in the program outlined by the new premier, Mustafa Kruja, for its complete absorption by the Italian empire. On the other hand Yugoslavia, part of which had been annexed by Italy, part by Germany, continued active guerrilla warfare under Gen. Draja Mikhailovitch and under "partisan" groups. (*See* also ALBANIA; ETHIOPIA; YUGOSLAVIA.)

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Italian East Africa: *see* ITALIAN COLONIAL EMPIRE.

Italian Literature. The year 1942 furnished convincing evidence that Italian cultural life was following the pattern of Italian political and military events. Passive resistance became the most effective weapon against the regime. Fascist literary, art and dramatic critics, aware of this phenomenon, excoriated it in the press. An official of the Fascist Association of Artists stated in the *Corriere della Sera* that the commission for the Venice biennial exhibition "was faced with the dilemma of either calling off the contest, dedicated to 'War and Life Under Fascism,' because of its poor showing, or of interpreting the requirements as broadly as possible." And the art critic of *Regime Fascista* (June 12) was forced to confess: "The contests were an utter failure. . . . We must add that the mediocrity of past years has deteriorated into absolute nullity."

Many complaints were lodged against the "absenteeism" of Italian dramatists. Both the government and the public evidently expected that the war would bring forth "a new word" from Italy's playwrights. But none came. A critic, writing in *Il Piccolo* (June 25–26), explained this dearth as the consequence "not merely of spiritual unrest and insecurity but of material and professional disorientation and bewilderment." The disappearance of an Italian dramatic literature and of an Italian drama technique was candidly acknowledged. Meanwhile, stock companies had to turn to foreign plays and to the old Italian repertory of 1900–25.

The drive against translations of foreign works, though relaxed toward pro-axis writers, grew increasingly stringent against democratic authors.

In Aug. 1942 the ministry of popular culture announced the outright suppression of 735 periodicals, the curtailment of 478 others and the elimination of half the periodicals for young people. The pretext was "the paper shortage" which, strangely enough, did not militate against the appearance of new all-out fascist publications. One of these, *Il Primato Italiano*, a bulky monthly intended "to alleviate the lack of books," featured in its first issue an essay by Mussolini on "Ancient Rome and its Seapower."

The sorry plight of Italian culture in 1942 was best epitomi by a tirade contained in the *Popolo d'Italia* of July 19 against refractory Italian intelligentsia: "The so-called 'representati men," wrote Mussolini's paper, "represent one thing alone: most complete lack of faith in the things they are called upon represent. They fail to understand, nay, they even abhor the v currents of culture, art, social opinion and technical developm which they are called upon to represent."

The novels of some importance which appeared during 1 included: T. Gallarati Scotti, *La Confessione di Flavio Dos* B. Tecchi, *La Vedova timida;* G. Comisso, *Un Inganno d'Amo* F. Rusconi, *Calice d'Oro;* M. Gallian, *Gente di Squadra;* Corra, *Laura svegliati;* R. Bacchelli, *La Fine d'Atlantide, Il E gante di Tacca del Lupo;* R. Calzini, *Lampeggia a Nord di Sa Elena.*

Among works of history and literary criticism were: U. Paoli, *Urbs Romana;* V. Varonini and G. Salocchi, *L'Appo dell'Italia alla Guerra dell'Asse*, vol. I; V. Vitale, *La Diploma Genovese;* R. Quazza, *La Diplomazia Gonzaghesca;* L. Giusso *Viandante e le Statue*, II series; P. Pancrazi, *Scrittori d'Og* A. Savinio, *Narrate, Uomini, la vostra Storia.*

Most noteworthy among the works of Italian writers in e were: *The Principles of Power* by G. Ferrero, who died in Gen on Aug. 4; *Les Guerres Modernes et la Pensée Catholique* Don L. Sturzo; *The Seed Beneath the Snow* by I. Silone; *Quaderni Italiani* (New York) a series of studies on Italian pr lems. (M. F. C.

Italian Somaliland: *see* ITALIAN COLONIAL EMPIRE.

Italy. A kingdom consisting mainly of the peninsula project south into the Mediterranean from the mass of cent Europe. The land boundaries, which reach as far north 46°40′, are formed by France, Switzerland, Germany and Yu slavia. Capital, Rome. Ruler: King Victor Emmanuel I chief of government (il duce): Benito Mussolini (*q.v.*). tional flag: green, white and red in vertical stripes, with arms in the white stripe.

Area and Population.—Excluding Libya: area, 119,764 sq. pop. (est. Jan. 1, 1940), 44,815,000. Chief cities (pop. 193 Rome (1,155,722), Milan (1,115,848), Naples (865,913), Ge (634,646), Turin (629,115). Language, Italian; religion, Ro Catholic.

History.—The year 1942 opened with Italian defeats concluded with Italian disasters. As the year commenced, British advance in Libya continued and the besieged Italians the Egyptian border at Halfaya pass had surrendered. As ar closed, gloom covered Italy; its armies in North Africa had lted away; its contingents in Russia were being hammered mercifully by Stalin's troops; its industrial cities lay in ruins; d its independence had virtually become a farce as more and re German troops were rushed to defend it against the United tions.

From the end of Jan. 1942, however, until late October a rage of victory caused Italian hearts to brighten. Erwin mmel, the German general commanding the joint Italian-rman forces, emerging from his lair at Agedabia, recaptured ngasi from the British on Jan. 29, and in June swept them k all the way to the Egyptian border. Whereupon, compling the surrender of Tobruk, by midsummer he was deep in ypt itself, advancing to El Alamein, within 70 mi. of Alexandria. ce the Italians served under him, they might be considered torious in Africa; but the real fighting was done by the Gerns and not by the Italians. Mussolini, to be sure, visited ya in June, intent, it was said, upon entering Cairo in triumph; the allied line held firm and the duce returned discomfited Italy. Italian arms likewise met with temporary success in the raine and in the Caucasus in the summer. But the Italians l no stomach for fighting there, and on Oct. 20 a north Italian iment mutinied on being ordered to Russia. Willy-nilly, howr, Italian contingents were forced to join those of Hungary l Rumania in Hitler's second offensive in that country. And in there was the mirage of victory which melted away as ckly as it came when soviet Russia struck at its foes before lingrad in November and December (*see* WORLD WAR II).

Throughout 1942 the food situation deteriorated steadily, and lian morale weakened. From Germany cereals and coal were mised, but they failed to materialize; to Germany, on the er hand, went Italian fruit, vegetables, olive oil. The bread on was only half that of Germany and even less than in ne of the occupied countries, and the amount of spaghetti wed each individual was reduced to 12 oz. weekly. Italy, anwhile, was the only country in Europe in 1942 where there s industrial unemployment, for raw materials for manufacture ually were unobtainable.

As Italian morale declined, the nazi overlords tried to stiffen by strongarm methods, and the Americans endeavoured to ken it still further by holding out an olive branch to noncist Italy. In October Heinrich Himmler, chief of the dread tapo, visited Italy on a tour of inspection and subsequently uged that unhappy country with a new flood of gestapo agents. that same month the United States government announced t no longer were Italian-born immigrants to be considered my aliens but as good fighters for liberty and against fascism n announcement unfortunately somewhat neutralized by the . press and by radio propaganda praising the Croats, whom lians have always hated, and intimating that a democratic olution in Italy would not necessarily be a *sine qua non* for peace treaty with the Italian kingdom—this a dash of cold er on the underground movement for freedom in the penina.

The last three months of the year were dreary. Rommel's reat from Egypt commenced on Oct. 26 and from that day until last day of the year, the 8th British army continued to maul retreating Italian divisions. Deserted by Rommel, who paid attention to his allies in trying to save his own panzer divins, the Italians surrendered in droves to the British, and soon total number of Italians captured since the war began unted to 231,000 men (Mussolini's own figures). So anxious, leed, were Italian soldiers to surrender that they did so in ge numbers to unarmed British doctors and even to war corpondents. And then, beginning also in October, came a long series of raids on the industrial heart of Italy—the triangle composed of Turin, Milan and Genoa. The destruction wrought in Turin in 1942 by the R.A.F. far exceeded that wrought in London in 1940 by the luftwaffe, since the bombs dropped were much larger and the anti-aircraft defense was inferior. In Genoa, harbour facilities were ruined, and 1,000 ac. of city streets blotted out. Night after night the R.A.F. raiders made the 1,400-mi. round trip from England, and out of their ruined cities the population flocked incontinently. "And this is but the beginning," said Prime Minister Churchill in London, "of a prolonged, scientific and shattering air attack."

Mussolini, reputedly a very sick man, appeared at a special meeting of his National Council of Corporations and made answer. His reply reflected impotent rage. He promised that the Germans would supply Italy with anti-aircraft defense. As for Churchill, he, the duce, was more a gentleman than that man, "intoxicated with alcohol and tobacco."

The U.S. occupation of North Africa came as a final blow. It gave Italy an opportunity which it promptly seized to occupy Corsica and the French Riviera, an occupation which almost every intelligent Italian knew would be temporary. Meanwhile, U.S. bombers from North Africa began destroying Italian shipping in the harbour of Naples, and the Germans began demanding that Italy hand over its defense to their skilled keeping. Italy could not even sue for peace if it so desired; the nazis would not permit it that option.

Education.—Public elementary schools in 1937–38, 131,580; pupils, 5,411,596. Students in secondary schools, 647,505; in universities, 77,429. A special school charter of 1939 required all education in Italy to have a fascist stamp.

Defense.—In 1939 (estimated): army, 900,000; planes, 5,500; battleships, 6; cruisers, 22; destroyers, 61; torpedo boats, 71; submarines, 105.

Finance.—Estimates for year ending June 30, 1940: revenue, 24,560,000,000 lire; expenditure, 29,316,000,000 lire. Lira quoted Dec. 1939 at 5 cents; in June 1941, 5.262 cents.

Trade and Communication.—In 1939: imports, 11,061,000,000 lire; exports, 8,007,000,000 lire. Railway, 29,220 km. Shipping: 2,301 sailing vessels, 1,057 steamships, 293 motorships. Total over 2,000,000 metric tons.

Agriculture, Manufacture and Minerals.—Livestock in 1938: horses, 791,120; asses, 791,390; mules, 431,150; cattle, 7,666,890; pigs, 2,940,440; sheep, 9,467,400; goats, 1,828,070. In thousand quintals: wheat, 12,420,000; maize, 3,724,000; beans, 1,625,000; olives, 2,038,000.

Most important industry, textiles, with 938 factories in 1938. In minerals, sulphur continued to lead, there being mined, in 1938, 2,363,000 metric tons, to 930,000 tons of iron pyrites, next competing mineral. (*See* also ALBANIA; ANTI-SEMITISM; ITALIAN COLONIAL EMPIRE; NAVIES OF THE WORLD; YOUTH MOVEMENTS.)

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(W. P. HL.)

Ivory Coast: *see* FRENCH COLONIAL EMPIRE.

Jackson, William Henry (1843–1942), U.S. photographer, artist, writer and explorer, was born April 4 in Keeseville, N.Y. From his father, an amateur daguerreotypist, he learned the mechanics of photography and got his first job in a "portrait gallery" in 1857. He travelled westward in 1866, photographing scenes of the construction of the Union Pacific railroad, of Indians and frontiersmen in the Wyoming territory. He became official photographer of the U.S. Geological Survey of the Territories in 1870. He was the first to photograph the Yellowstone region before it became a national park and made some of the earliest pictures of the lofty Colorado peaks. Jackson moved to Washington in 1924 to devote himself to painting and writing, and in 1935 he was commissioned by the department of the interior to do a series of murals for its new building in the capital. He wrote *Time Exposure,* an autobiography, in 1940. He died in New York city, June 30.

Jamaica: *see* WEST INDIES, BRITISH.

James, William Roderick (1892–1942), U.S. author, and illustrator, was born June 6 in a covered wagon in Judith Basin, Mont., while his parents were on the trail. Orphaned at four, he was adopted by a French-Canadian trapper and lived in Canada. When he was 13 he returned to Montana, where he became an expert bronchobuster at rodeos. An injury 15 years later ended his riding days and he took seriously to writing and to drawing horses, a hobby which he had cultivated assiduously since childhood. His illustrated articles and stories, written in the simple language of the cowhand, were popular. His book, *Smoky,* won the John Newbery medal for the most distinguished children's book of 1926. He also wrote *Cowboys, North and South* (1924), *The Drifting Cowboy* (1925), *Sand* (1929), *Lone Cowboy* (1930), *The Three Mustangeers* (1933), *Home Ranch* (1935), *Flint-Shears* (1938), *The Dark Horse* (1939), *Horses I've Known* (1939) and *The American Cowboy* (1942). He died in Hollywood, Calif., September 3.

James Tait Black Memorial Prizes: *see* LITERARY PRIZES: *Great Britain.*

Japan. An empire, consisting of a chain of islands in the western Pacific, stretching from South Sakhalin (Karafuto) (50° latitude) to the South Seas mandated islands, which extend over a great expanse of the Pacific, some being located near the equator. The Japanese empire includes Chosen (*q.v.*) on the mainland of Asia and the small Kwantung leased territory, with the city of Dairen, on the Liaotung peninsula. Chosen, Formosa (Taiwan) (*q.v.*) and South Sakhalin, together with the South Seas islands, are administered as colonies. The area of the Japanese empire is 263,359 sq.mi., of Japan proper (the four large islands, Honshu, Hokkaido, Shikoku and Kyushu, with many adjacent smaller islands) 148,756 sq.mi. Population of the empire (census of 1935) was 97,697,555, of Japan proper, 69,254,148. An estimate of the Cabinet Statistics bureau placed the population of the empire at 103,087,100 on Dec. 1, 1937. The same source estimated the population of Japan proper at 72,875,800, as of Oct. 1, 1939.

Capital, Tokyo (*q.v.*). Japan's six largest cities are Tokyo (pop. 5,875,667, census of 1935; 6,581,100, estimate of 1939); Osaka (pop. 2,989,874, census; 3,394,200, estimate), Nagoya (pop. 1,082,816, census; 1,249,100, estimate), Kyoto (pop. 1,080,593, census; 1,177,200, estimate), Kobe (912,179, census; 1,006,100, estimate) and Yokohama (704,290, census; 866,200, estimate). Buddhism is the most prevalent religion, followed by Shintoism, the indigenous faith of Japan. There were 41,127,307 Buddhists in Japan in 1936, 16,525,840 Shintoists, 215,166 Japanese Christians of Protestant denominations, 111,856 Roman Catholics and 41,251 Greek Orthodox believers in 1938. U.S. and British missionary work was necessarily suspended after the outbreak of hostilities, although some of the mission schools and hospitals continued to function under Japanese direction.

The Japanese sovereign is Emperor Hirohito. The premier, at the end of 1942, was Gen. Hideki Tojo.

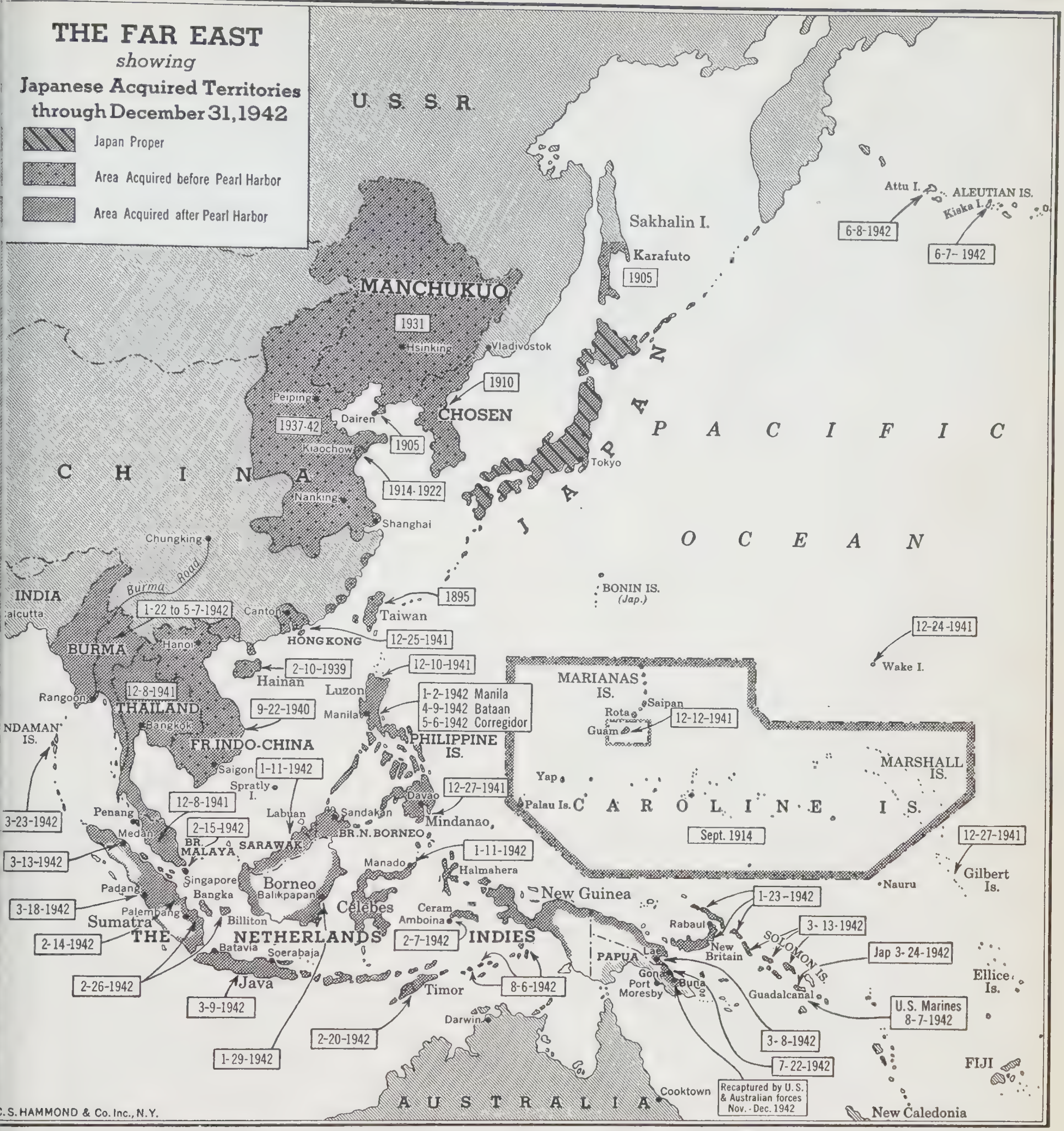
History.—The year 1942 ranked among the momentous y of Japanese history. The first few months were marked by unbroken series of Japanese victories, some of these paid for w substantial losses, but leading to Japanese control of an area more than 1,000,000 sq.mi., rich in tin, rubber, oil and other materials, in southeastern Asia and the archipelagos of the rounding seas. British and U.S. naval strength in the orient thus temporarily crippled, and the Japanese in the first mon of the war possessed very great air superiority. They also p sessed the advantage of a unified command, while the Un Nations forces, dispersed over a wide area, were not str or well equipped enough in any one place to make a succes stand.

One by one the bastions of western trade and empire fell the hands of the Japanese. The international settlement at Sha hai had been taken over without resistance as soon as the began. The British crown colony of Hongkong, held by a Bri and Canadian garrison, had been captured on Dec. 25, 1941, Japanese occupation, according to some eyewitness testimo being marked by a number of outrages against women, woun and prisoners. The capital of the Philippines was taken on Jan 1942. General Douglas MacArthur, commander in chief of U.S. and Filipino forces, retired into the fastnesses of the Bat peninsula. Under MacArthur and his successor, General Jonat M. Wainwright, appointed when MacArthur was transferred Australia to take over command of the United Nations forces that area, there was stubborn and prolonged defensive fightin Bataan. Inability to reinforce the forces on Bataan and to s ply them with munitions, food and medicines, together with Japanese superiority in men and equipment, brought about collapse of this resistance on April 9, 1942. The fortress of C regidor, commanding the entrance to the harbour of Manila, rendered on May 6. Organized military resistance in the Phi pines came to an end.

Meanwhile the Japanese forces were pressing on to new still more important conquests. A rapid sweep down the narr elongated Malay peninsula ended in the capture of Singap the great British naval base in the orient, on Feb. 15. A ga son of some 70,000 British, Australian and Indian troops rendered. The Japanese then moved on rapidly from Singap to the Netherlands Indies. Some points in the outlying isla of the archipelago had been captured in the first weeks of campaign. The decisive struggle for Java, centre of the Du defense preparations, took place in March. After a fierce na engagement in the Java sea and some brief land engagements, Japanese gained control of Java and the base of United Nat resistance shifted southward, to Australia. Later in the yea was announced from Tokyo that the last Dutch troops, w had been carrying on irregular warfare, had surrendered in Bor The blackout and curfew regulations in the Netherlands In were then suspended.

The last event in the period of rapid Japanese advance was overrunning of Burma, which took place in April and early M Besides giving the Japanese possession of one of the great producing countries of Asia, a land rich in oil, teakwood other natural resources, the occupation of Burma was a se blow to China. The Burma road, which had been China's p cipal artery of communication with the outside world after Japanese occupation of the main Chinese ports, was closed at source. Supplies to China could only be sent by air o the Himalayas and the other high mountains between C and India.

An official Japanese claim as regards the spoils of the first months of war, listed the following items: 342,000 war prison including 25,000 Americans; conquest of an area inhabited



6,670,000 people; 3,763 guns; 1,440 tanks; 31,859 motor cars; ,200 locomotives and freight cars; 240 planes; 11,548 heavy and ht machine guns; 216,714 rifles; 48 large ships and 299 smaller ssels.

The Japanese also claimed control of an annual production of 300,000 tons of petroleum, 760,000 tons of rubber, 110,000 tons tin, 5,000,000 tons of rice, 2,720,000 tons of sugar, 49,000 tons manganese and quantities of copper, bauxite, tungsten and her valuable raw materials. A Greater East Asia ministry was t up to exploit the conquered areas.

The high tide of Japanese success was perhaps reached in May, hen the conquest of southeastern Asia had been completed and e Japanese forces seemed poised for new springs at India, Australia and Siberia. After this there were no major victories in 1942, and some severe setbacks and defeats. The first important check which the Japanese forces sustained was in the battle of the Coral sea, in May, when a Japanese fleet, moving toward Australia, was defeated and turned back by U.S. and Australian naval and air units.

More serious for Japan's sea power was the repulse, with heavy losses in aircraft carriers, planes and cruisers, of a Japanese attack on Midway Island in a battle which occurred June 4–6. About the same time the Japanese obtained a foothold in the western Aleutians, following an air attack on Dutch Harbor. While subjected to periodic pounding by U.S. planes, Japanese forces remained in Kiska until the end of the year, abandoning some of

HAGGARD BRITISH AND U.S. PRISONERS at Woosung prison camp in occupied China, listening as a Japanese propaganda officer reads the news of the fall of Singapore Feb. 15, 1942. This picture appeared in an English-language magazine published by the Japanese in Shanghai

the smaller islands which had first been occupied.

U.S. bombers under the command of Gen. James Doolittle bombed Tokyo on April 18. Some of the fliers were forced to land in occupied China and were captured. There was no other air blow directed at Japan proper during 1942, although U.S. fliers, the so-called Flying Tigers, under the command of Gen. Claire Chennault, bombed Japanese installations in various occupied regions, such as Hongkong, the Kailan coal mining region of north China, Thailand and Indo-China.

A United Nations counteroffensive against Japan started on August 7, when U.S. marines landed in the southern Solomons. The most important immediate result of this move was the occupation of a new airfield which the Japanese had constructed on Guadalcanal. The Japanese made repeated but unsuccessful efforts to retake Guadalcanal, losing heavily in ships and planes in the process. The war also took an unfavourable turn for Japan in New Guinea. Early in the war the Japanese had occupied Lae and Salamaua, on the northern coast of the eastern part of New Guinea, an Australian mandated territory. Extending their occupation eastward to the Buna-Gona area in July, they subsequently launched an offensive across the Owen Stanley mountain range which at one time brought them close to Port Moresby, United Nations base on the southern coast. Then reinforcements arrived and U.S. and Australian troops, under the command of General MacArthur, pushed the Japanese back to their starting point; toward the end of December the Japanese were clinging to a narrow beachhead near Buna and apparently facing destruction or surrender.

So by the end of 1942 Japan, while still retaining a vast rich conquered colonial area, had lost its initial advantages of surprise and special preparation and was apparently feeling more and more the technical superiority of U.S. war production. There were wide discrepancies in estimates of Japanese losses. A Japanese official statement issued in December admitted 21,166 killed and 42,577 wounded up to Nov. 1, 1942, excluding losses in China, where the fighting was not very heavy and the military situation remained substantially unchanged during the year. U.S. intelligence officers estimated Japanese losses in all theatres during 1942 at 250,000 killed and disabled.

Internal Events.—There was no visible disturbance of internal stability in Japan during 1942. An election for the diet was held in the spring and was officially described as revealing full support for the government's policies. The political parties, in any case, had been pretty completely deflated in significance even before the outbreak of the war. The resignation of Foreign Minis Shigenori Togo in Sept. 1942 was interpreted as a possible prelu to a Japanese attack on the soviet union. But this attack, althou rumoured as impending several times during the year, did n take place.

An exchange of interned diplomats, journalists, missionari businessmen and other civilians was arranged between the Unit States and Japan during the summer, and also covered America in occupied parts of China. A similar arrangement was work out for British and Canadians. The treatment of the persons terned varied widely; there were some cases of brutal maltre ment and imprisonment under hard and unhealthful conditio In other cases the foreigners were permitted to remain in th homes under mild surveillance. The principal offenders in reso ing to physical brutality were members of the gendarmery, military police.

Education.—There were 48,637 schools of all types in Jap in 1938, with 15,638,780 pupils. Elementary education is co pulsory between the ages of 6 and 14. There were 563 mid schools, with 364,486 students, and 45 universities, with 6, professors and 72,968 students. Governmental expenditure education in 1937–38 was 145,642,185 yen, while the educatio appropriations of local public bodies in the same year amoun to 487,069,482 yen.

Defense.—All estimates of the strength and disposition of Japanese armed forces were necessarily conjectural in 1942. T Japanese army is based on the principle of conscription on a t ritorial basis, copied in many details from the pre-1914 Germ army. There is liability to service between the ages of 17 and Japan in 1942 probably had about 80 divisions, strung out ove very wide area, from the northern frontier of Manchuria to N Guinea, the Solomons and Burma. There were supposed to be tank regiments, with 150 tanks apiece; the full mobiliza strength of the island empire was in the neighbourhood of 2,5 000 to 3,000,000.

The Japanese navy at the outbreak of the war was believed have consisted of 10 battleships, 8 to 9 aircraft carriers, 35 to cruisers, 108 to 126 destroyers, 69 to 80 submarines and a p portionate number of torpedo boats and auxiliary craft. Tow the end of 1942, Japanese official sources admitted the loss of warships, including a battleship and three aircraft carriers, a the damaging of 22 others, including one battleship and two a craft carriers. United Nations claims were that during this per 129 Japanese warships, including two battleships and six aircr carriers, were sunk. At the same time Captain Hideo Hira official spokesman for the Japanese navy, declared that "a c tain number of powerful battleships," together with "aircraft c rs of unique construction" had been put into service since the ginning of the war. The personnel of the Japanese navy was re than 300,000.

Finance.—The unit of currency is the yen (officially valued 23.48 U.S. cents at the time of the outbreak of the war in the cific). The budget for 1942–43 called for expenditures of 30,- ,000,000 yen, with revenue receipts estimated at only 8,000,- ,000 yen. This represented a tremendous forward leap from budget of 1941–42, set at 13,875,000,000 yen, of which 7,574,- ,000 yen was to be raised by borrowing. The severity of this ancial strain could be gauged from the fact that Finance Min- r Okinori Kaya estimated the Japanese national income in 2 at 45,000,000,000 yen. The national debt was 41,123,670,- yen on April 30, 1942 and was, of course, increasing at an remely rapid rate. Currency in circulation on Sept. 30, 1941: 19,000,000 yen.

he Bank of Japan is the central bank of note issue. The kohama Specie bank is in charge of foreign exchange trans- ions and finances foreign trade. Commercial banking is mostly he hands of seven large banks, which are closely tied in with industrial companies and commercial undertakings: the Mitsui, tsubishi, Daiichi, Sumitomo, Yasuda, Dai Hyaku and Sanwa.

rade and Communication.—Trade figures for Japan proper cluding its colonies) were as follows:

	1939 (yen)	1940 (yen)
orts	2,917,000,000	3,709,035,000
orts	3,576,000,000	3,972,400,000

ublication of detailed trade figures ceased in 1940. A tendency Japanese trade up to that time had been to develop a surplus exports to Manchuria and occupied China, while sustaining a cit in trade with countries outside the so-called yen bloc. retaliatory economic measures applied by the United States, at Britain and the Netherlands Indies after the Japanese occu- ion of southern Indo-China in July 1941 cut off Japan's trade h almost all countries except those which were under her itical control. The danger of seeing its reserves of oil and other tegic raw materials exhausted was undoubtedly a strong mo- impelling the Japanese southward drive which began with the ck on Pearl Harbor. Both Japan proper and the countries of yen bloc are deficient in oil.

rade in any real sense of the term ceased altogether, except some limited exchange of goods with the soviet union and h exchanges with the axis powers as might run the United tions blockade when Japan launched its war against the west- powers in Dec. 1941. From that moment Japan was almost irely dependent on the products which could be extracted from itory already under its control, or which it might conquer.

here were 27,294 km. of state and private railways in Japan 938 besides 5,206 km. in Chosen, 3,470 in Formosa and 342.9 South Sakhalin. An important link in the Japanese railway munication system was added with the completion in 1942 of undersea tunnel between Shimonoseki, in Honshu, and Moji, Kyushu. This made it possible to transport troops and freight hout transshipment across the narrow Kwannon strait and was tep long advocated by the army on military grounds. At the of 1939, Japan possessed 4,084 ships of over 100 tons, the regate tonnage being 5,728,779 tons. The number of sailing s, as of Sept. 30, 1938, was 17,791, with a tonnage of 1,046,- . The United Nations claimed to have sunk 265 Japanese rchant ships during the first year of the war, while the Japanese nitted the loss of 65.

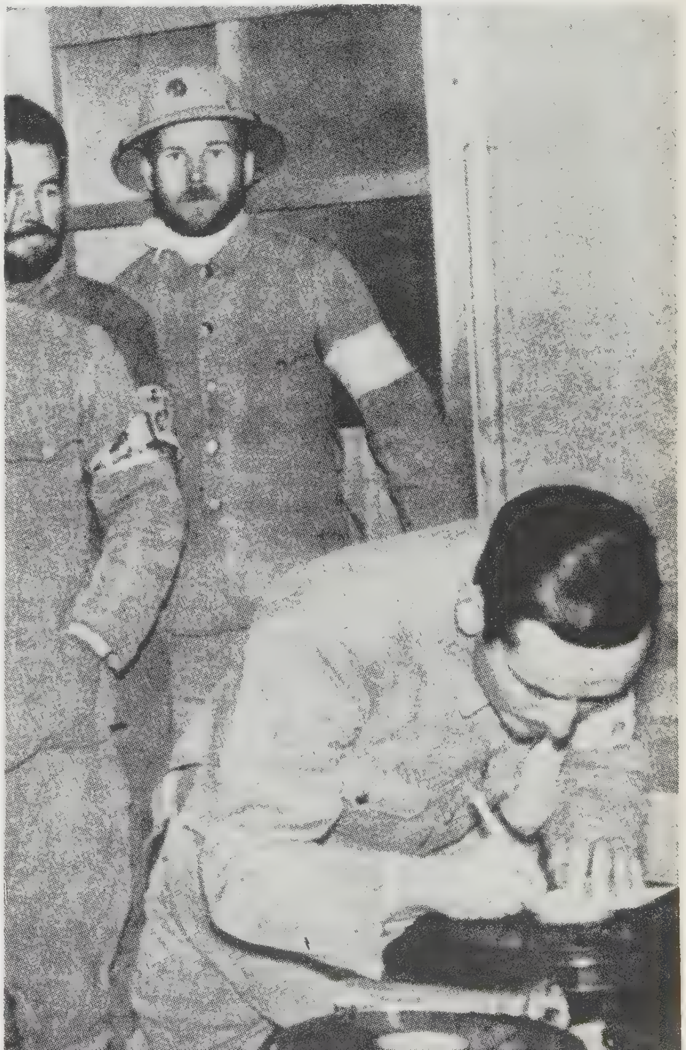
ommercial aviation is centralized in the hands of a semigov- mental monopoly, the Japan Airways company, which was blished in 1939 with a capitalization of 100,000,000 yen. The gth of its routes in 1938–39 was about 10,000 mi. The number of flights was 17,144, the aggregate length of flights 6,209,873 km., the number of passengers carried 69,268, the quantity of goods conveyed 297,807 kg., the amount of mail carried 819,261 kg.

There were 13,648 telegraph stations in Japan proper in 1939, and 75,838,875 domestic and 1,261,295 foreign messages were handled in the year 1938–39. The length of the inland telegraph lines was 425,752 km. in 1938. There were 6,197 telephone exchanges in Japan on Sept. 30, 1939, and 1,006,498 subscribers to telephone service.

Agriculture.—There were 5,519,480 farm households in Japan in 1938, and the amount of land under cultivation was about 15,000,000 ac. There was a slight decline in the number of farm households, extending over several years; the cultivated area showed very little change. Rice is Japan's largest crop and represented about half the reported value of Japan's agricultural produce in 1939. (The total reported value, excluding meat, milk and eggs, on which no data were given and which do not figure very largely in Japanese agriculture, was 5,614,000,000 yen. The value of rice produced in that year was 2,874,000,000 yen.) Silk is a secondary agricultural product, and has always been one of Japan's staple exports, although it suffered from a severe price recession during the '30s until the outbreak of World War II. The value of silk cocoons produced in 1939 was 883,000,000 yen.

Livestock plays little role in Japanese agriculture; there were 1,894,261 cattle, 1,140,479 swine, 114,000 sheep and 281,741 goats in Japan in 1938. In 1936 there were 1,431,920 horses.

U.S. MARINES at a Japanese prison camp recording their names and messages to relatives on phonograph disks which they then sign. According to the Japs, who released this picture in 1942, the records are broadcast over radio stations, apparently beamed for U.S. listeners



Agricultural Production in Japan, 1940

	Cultivated area (hectares)	Yield (metric tons)
Rice	3,173,234	9,071,313
Wheat	841,305	1,311,422
Barley	340,462	752,525
Rye	404,696	626,234

Manufacturing.—There were 112,332 factories employing more than five persons each in Japan in 1938, with 3,604,283 workers and an output valued at 19,667,219,686 yen in 1938, the last year for which detailed figures were available in 1942. This was an increase of almost 20% over the value of production in 1937 and reflected the stimulation of the war with China. The most important industries, and the value of their output in 1938 were as follows: metal (4,687,166,000 yen); spinning and weaving (3,984,829,000 yen); machine and tools (3,821,881,000 yen); chemicals (3,460,581,000 yen); foodstuffs (1,786,275,000 yen). There were 1,442,713 persons engaged in the fishing industry in 1938. There was a tendency in later years to push up the production of "producers' goods," while cutting down the output of consumers' goods—a Japanese version of "guns instead of butter."

Mineral Production.—Japan is a poor country in natural resources. Its principal minerals are coal (41,803,000 tons, valued at 305,537,000 yen); gold (22,235 kg.; value, 74,828,000 yen); copper (77,973,000 kg.; value, 66,617,000 yen). These figures are for 1936, since the publication of statistics of mineral output after that year was forbidden. There have been experiments with extracting oil from shale in Manchuria and with manufacturing oil from coal in South Sakhalin. (*See* also COMMUNISM; FASCISM; UNITED STATES; WORLD WAR II.)

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Japanese-Chinese War: *see* WORLD WAR II.
Japanese Relocation, U.S.: *see* ALIENS.
Java: *see* DUTCH EAST INDIES; NETHERLANDS COLONIAL EMPIRE.

Jeffers, William M.

(1876–), U.S. railroad executive, was born Jan. 2 in North Platte, Neb. He started work with the Union Pacific railroad in 1890 as an office boy. He was then telegrapher, clerk, dispatcher, trainmaster, superintendent and vice-president and, by Oct. 1937, president of the road. On Sept. 15, 1942, Donald Nelson, WPB chairman, made Jeffers head of the rubber administration and gave him the task of executing the Baruch committee's proposals for tire conservation, gasoline rationing and expansion of synthetic rubber production. Ten days after he took over, he ordered nation-wide gas rationing to save tires, which became effective Dec. 1. Although there was sectional criticism of gasoline rationing, particularly in the middle west, Jeffers held steadfastly to his course; he warned, in a statement before the military affairs committee on Dec. 4, 1942, that the supply of crude and synthetic rubber would be down to the "absolute dangerous deadline of 120,000 tons" by the fall of 1943. Lack of machine tools for synthetic production, rather than lack of raw materials, was responsible for this situation, he declared. Later that month, Jeffers revealed that the government would open its first synthetic rubber plant, with an expected capacity of 80,000 tons yearly, in Jan. 1943.

Jewish Religious Life.

Until 1942, the campaign by the nazis to eradicate Judaism took the form of expropriating synagogues or dynamiting or burni them. Jewish libraries were plundered. Jewish schools and ins tutions of higher learning were closed and scattered to the win Jewish publications were suppressed. Jewish religious commu ties were dissolved. Rabbis and other Jewish religious lead were tortured and murdered. With characteristic thoroughness t nazi regime ruthlessly carried out its avowed policy of the an hilation of Judaism from the Atlantic shores of western Euro to the easternmost battleline in Russia. To this tragedy the ye 1942 added a new and paralyzing horror by putting into eff Hitler's oft-repeated intention to eradicate not only Judaism b also the Jewish people from Europe. By the end of 1942 the m hands of the nazis had wiped out in Europe 2,000,000 Jewish m women and children.

Beside this atrocity, unparalleled in all history, other aspe of the story of Jewish religious life in 1942 paled into insign cance. When the incredible facts became so clearly authenticat and attested that they could no longer be doubted, the f Jewries of both hemispheres gave themselves over to a solem day of fasting. Some comfort was found in the forthright sta taken in the declaration of the United Nations. In his messa for the Jewish New Year President Roosevelt declared that th "shall be no compromise in the struggle against hate, intoleran or bigotry." Similar ringing words were spoken by Christian and religious leaders in the free countries of the world, and country after country the clergy in pastoral letters and brave dividual utterances spoke out in horrified protest against the b barous massacres of Jews and the obliteration of Judaism fr the spiritual tradition of civilized Europe. The Vatican itself a proached Gen. Pétain in an attempt to intervene in France, b without success.

Outside of the shambles of Europe, Jewish religious life no certain elements of added strength. The dispersion of refug brought to established communities new religious strength of m tested and steeled in the flame of suffering. Refugees from E rope were organizing communities and synagogues in such te tories as Kenya, Northern Rhodesia, Nyasaland, Tanganyika a points in Latin America. The recognition of the organic ident of anti-Judaism with some of the worst aspects of naziism w reflected in government indictments of the forces of anti-Judai Protestant, Catholic and Jewish leaders in the United Sta jointly issued a declaration of the fundamental religious prin ples which they share in common. In Russia there was a mark subsidence of militant godlessness. For the first time in ma years synagogue services and other open observances of Judai were allowed without restraint. The armies of the United N tions furnished innumerable instances of Judeo-Christian int faith co-operation by chaplains. In general, the intimate comra ship of army life created a new religious understanding betw men of all faiths, and the world over, among Jewish men as w as those of other denominations, the stark realities faced by m in the armed forces awakened new depths of religious experien which might in the future give sorely needed strength to gri ously wounded Jewry. (*See* also ANTI-SEMITISM.)

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Jewish Welfare Board.

The Jewish Welfare board w formed on April 9, 1917, to p vide for the religious, spiritual and welfare needs of the Jew men in the military forces of the United States. It continued t work with a greatly expanded program. The board is a mem organization of the United Service Organizations, Inc. (U.S.C The board also continued its services to veterans of World Wa and their families. It initiated and carried on services to mbers of the Civilian Conservation corps. In all its welfare ivities for men in uniform, the board has the co-operation of national Jewish organizations comprising the leading religious, tural, fraternal, women's, veteran and educational groups, all which are affiliated with the board. The board employed, in 42, 210 full-time workers, of whom 10 were stationed overseas. ere were also 22 part-time workers. This staff served at 508 ny and navy stations, 39 of which were at overseas points. The al program had the co-operation of 310 army and navy volun- r committees, of which 17 were outside continental United tes.

The board is also the parent body of 328 Jewish community tres in the United States and Canada. These organizations in 12 were in more than 225 cities, and had an aggregate member- p of 435,000 individuals at the beginning of 1942. Of these mbers, 260,000 were below the age of 26, and of them, 152,000 re between the ages of 13 and 25 inclusive.

With the advent of the war, the board instituted a war efforts vice, designed particularly to stimulate intelligent planning and ticipation in the war program of the nation. The department war efforts co-operated closely with government and quasi- ernment agencies in bringing their material and plans to the ention of the Jewish Center field.

n 1942, a women's division was formed to co-ordinate the rts of national and local women's groups in behalf of the gram of service to men in uniform and civilian war efforts.

The 1942 annual meeting of the board, commemorating the h anniversary of the organization, was held in New York city April 18, 19 and 20. The president of the board in 1942 was nk L. Weil. Walter Rothschild was chairman of its army and y committee, and Louis Kraft was the executive director. The ces of the board are located at 220 Fifth avenue, New York .

(F. L. W.)

nah, Mohammed Ali (1876–), Indian lawyer and politician, was educated at Kara- and in Great Britain. In 1906 he was advocate to the Bombay court; he served on the Imperial Legislative council and in 2 was re-elected president of the Moslem league. In this acity he pressed with energy and outspokenness the views of league, claiming to represent 100,000,000 Muslims, on the ure government of India. He had discussions with Sir Stafford ops, Gen. Archibald Wavell, Gen. Chiang Kai-shek, C. Raja- alachari and the Sikh leaders, and it clearly emerged that Moslem league's policy was one of uncompromising insistence Pakistan (the setting up of a separate Muslim state). He ed the British government not to be stampeded into a consti- onal change prejudicial to the Muslim demand for Pakistan, stated also that the solution of the constitutional problem ad- ced by Sir Tej Bahadur Sapru (*q.v.*) could not be accepted the Muslims, that no other solution could be adopted without r consent, and that if the British government permitted a du overlordship, it would "lead to the gravest disaster for ia."

hns Hopkins University. An institution of higher education at Baltimore, Md.; sident, Isaiah Bowman. In June 1942 the university intro- ed an accelerated program of study in the school of medicine, school of engineering, the college of arts and sciences and the nce departments of the school of higher studies, to prepare more speedily for the armed services and war industries. ler the new schedule students would obtain the bachelor's ree in two and two-thirds years instead of the conventional . The university carried on an intensified program of war training and war research in spite of heavy faculty losses due to the demands of the armed services and other governmental agencies. As an active participant in the research program of the Office of Scientific Research and Development, Hopkins undertook some 40 separate research projects in 1942 under contracts involving several millions of dollars. The Engineering Science Management War Training program prepared approximately 2,500 men and women for positions or promotions in war industries. For statistics of enrolment, endowment, library volumes, etc., *see* UNIVERSITIES AND COLLEGES.

(I. Bo.)

Johnson, Hugh Samuel (1882–1942), U.S. soldier, lawyer, government official and newspaper columnist, was born August 5 in Fort Scott, Kan. He ran away to join the army when he was 15, but was brought back home by his father and sent to West Point. He was graduated from the U.S. military academy in 1903 and served in the Philippines, 1907–09. On returning to the United States, he studied law and went along as judge advocate with Pershing's forces during the Mexican campaign of 1916. During World War I, he helped organize and establish the machinery for the draft law and also served on the war industries board. Johnson, who was a brigadier general when the war ended, resigned in 1919, and entered private business. He was president of an automobile carpet company in 1933, when President Roosevelt called him to administer the National Industrial Recovery act. Gen. Johnson was given wide authority to operate the machinery intended to guide business in the national recovery program. He resigned a little over a year later when the NRA was reorganized. He then became a newspaper columnist for the Scripps-Howard chain and displayed the talent for blunt language and colourful invective that earned him the nickname of "Old Ironpants." At first, Johnson defended the New Deal against the "tories." Later, he bitterly attacked the Roosevelt administration and its "radical" trend. Johnson died in Washington, D.C., April 15.

Jones, Jesse Holman (1874–), U.S. secretary of commerce, was born in Robertson county, Tenn., on April 5. At Dallas, Tex., in 1895 he became manager of a lumber company and seven years later organized his own firm. He engaged in extensive real estate operations and bought control of the Houston *Chronicle,* of which he is publisher. President Hoover appointed him a director of the Reconstruction Finance corporation in 1932 and he became chairman the following year. In July 1939 Jones was appointed administrator of the Federal Loan agency. On Sept. 13, 1940 President Roosevelt nominated him secretary of commerce to succeed Harry L. Hopkins, after congress had enacted a special law permitting Jones to retain the office of federal loan administrator. In the defense program of 1940 and 1941, Jones held an all-important position, since it was through the Federal Loan agency and RFC that most of the additions to plants and industries working on defense orders were financed. On March 24, 1942, William L. Batt, official of the War Production board, testified before a senate committee that Jones in 1940 had overruled proposals to expand U.S. synthetic rubber production. Jones later denied this assertion, and on July 15 said that the U.S. had ample rubber stocks for 1942 and 1943, but warned against tire wastage. He was named to the Economic Stabilization board in Oct. 1942.

Joseph Ferdinand, ARCHDUKE (1872–1942), son of the Grand Duke Ferdinand IV of Tuscany and Princess Alice of Bourbon Parme, was born May 24 in Salzburg. Head of the Tuscany branch of the Habsburg royal family, he served as a colonel general in the Austro-Hungarian army in World War I. He succeeded Gen. Moritz Ritter von Auffenberg-Komarow as commander of the Austrian 4th army in 1915 and became commander of the air force in 1917. He married Rosa Jockl, a commoner, in 1921. He later divorced Frau Jockl and in 1928 married Gertrude Tomanek, by whom he had two children, a daughter and a son. Shortly after Hitler annexed Austria in 1938, Archduke Joseph Ferdinand was arrested by the nazis in Mondsee. His activities thereafter were not reported. His death was reported in a Vienna dispatch of August 28.

Judaism: *see* Jewish Religious Life.
Jugoslavia: *see* Yugoslavia.
Julius Rosenwald Fund: *see* Rosenwald Fund, The Julius.
Jumping: *see* Track and Field Sports.
Justice, U.S. Department of: *see* Government Departments and Bureaus.

Jute. Shortage of burlap bags continued acute in the western hemisphere in 1942 because of greatly reduced shipments from India. At one time in the summer of 1942 the market in Calcutta, centre of the Indian jute industry, suspended operations. In the United States, the War Production board made it an offense to mutilate bags and ordered that "no person shall sample the contents of a bag except by opening the seam or closure." Probes or triers were permitted in sampling if their use did not injure the fabric. The Office of Agricultural Defense Relations, in co-operation with a large U.S. bag manufacturer, distributed to potato growers and mills instructions on prolonging the life of bags. The government allotted sufficient cotton goods which, with paper bags, were substituted for burlap bags. Some concern was voiced in Cuba lest the shortage of burlap interfere with marketing the sugar crop. Trade reports late in 1942 indicated that sufficient bags had been received to handle the sugar production. It was reported in Dec. 1942, that the Indian government was lending £1,500,000 to the Bengal government for relief of jute growers in the province because of a large surplus and low prices. The 1942–43 production was reported as 9,014,130 bales compared with 5,422,500 bales in 1941–42. Production, it was estimated, might create a surplus of 2,000,000 bales over domestic consumption and export sales and add further to the accumulating carry-overs from 1940 and 1939. (S. O. R.)

Juvenile Delinquency. Statistical evidence was not available throughout the United States, but juvenile offenses seemed to have increased since the beginning of the war, while adult male offenses decreased. The increase of juvenile delinquency and young women offenders seemed to follow the pattern of World War I. Adults were drawn into the armed forces and war industries. Children were denied stable home life and in a general social restlessness which excluded their participation they committed petty delinquencies. Thus, as Plant explained, the delinquent is the sensitive indicator of the pressures put upon children by current ways of life.

Sex offenses accounted for an increase in the delinquent girl population in the majority of state correctional institutions, an increase amounting to 20% in some states. The task of social workers was to maintain touch with broken families and unprotected adolescents. The federal social security established a protective service to co-operate with state boards of health, local law enforcement agencies and private social agencies to deal with cases of migratory youth, especially girls.

The higher courts of Illinois, New Jersey and Virginia gave decisions upholding the conviction in criminal courts of children of juvenile court age. This was a trend in conflict with the law and practice of the majority of courts after 1898, when the principle of *parens patriae* was affirmed as a child-saving meas Official and uniform reporting of juvenile delinquency was u upon all courts by the federal children's bureau. However, c about 38% of the population of the United States were in reporting area (375 courts in all, representing 27 states and District of Columbia). Approximately 80,000 cases were posed of, white children being involved in 78%; Negro chil in 22%: children of other races less than 1%. (*See* also Cri

PSYCHOLOGIST of the Child Study institute at Toledo, Ohio, interviewin young Negro inmate. The institute's scientific methods decreased juvenile linquency in Toledo during 1942 at a time when the rate was increasing an estimated 20% nationally. The number of "repeaters" fell 50%

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(M. V. W

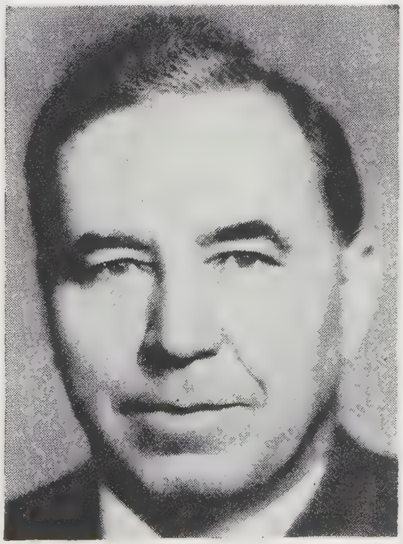
Kahn, Albert (1869–1942), U.S. architect, was born M 21 in Rhaunen, Ger., and emigrated to United States with his family in 1881. His first job was a apprentice in an architect's firm. Impressed with the boy's ta an architect placed him with another firm where he spent 14 y learning his craft. During World War I, he built camps, w houses, airfields and hangars all over the country. After the he concentrated on construction of industrial plants. He credited with having designed some of the first belt-line facto which revolutionized U.S. economy by facilitating mass pro tion. He drew up plans for more than 1,000 factories and bu ings for Henry Ford alone, including the Ford Willow Run p regarded as one of the industrial marvels of the age. He also signed 127 buildings for General Motors and more than 500 tories in 125 cities of the soviet union under the first Five- plan. Outside the industrial field, he drafted plans for and su vised construction of scores of hospitals, university build shipyards and office buildings. He died in Detroit, Dec. 8.

Kaiser, Henry J. (1882–), U.S. construction ex was born May 9 in Canajoharie, After 16 years with road construction projects in Canada, fornia and Cuba, 1914–30, he entered the dam construction and by 1933, became head of Six Companies, Inc.—the orga tion that built Boulder and Parker dams. Kaiser, who was fa for completing construction jobs ahead of schedule, entered s building in Jan. 1941. In 1942, he obtained control of four yards on the west coast. He revolutionized shipbuilding by fabricating ship sections. By June 1942 it was said that iser's shipyards had been assigned one-third of the U.S. shipilding program. On Nov. 18, his yards in Vancouver, Wash., nched a 10,500-ton liberty ship in 3 days 23 hours and 40 utes. Kaiser startled the United States in June 1942 with a posal to convert nine shipyards building merchantmen to protion of giant air transports. He further stated that ten months r such a program was set in motion these yards would be ducing transport planes at a rate of 5,000 yearly. Although B Chairman Donald Nelson was impressed with the Kaiser eme, other authorities declared that such a program would di- essential materials needed for bomber construction. The B, however, was willing to try the proposal, and on Sept. 18, 2, Nelson authorized Kaiser to begin immediate construction hree flying cargo boats on an experimental basis for comple- in 25 months at an estimated cost of $18,000,000.

meroons: *see* British West Africa; French Colonial pire.

neko, Kentaro, Count (1853–1942), Japanese statesman, son of an old Samurai family, was luated from Harvard law school in 1878. He returned to yo to teach school, but before long began to take part in irs of state. He was appointed private secretary to Prince Ito during this period was sent on a mission to study the conitions of foreign countries. He was later instrumental in ting Japan's constitution. Count Kaneko served as chief secry of the House of Peers, vice-minister and minister for agriure and commerce, and minister of justice. He was a delegate he peace conference at Portsmouth, N.H., in 1905, which ed the Russo-Japanese conflict. A friend of President Theo- Roosevelt, Count Kaneko was an exponent of cordial relas with the United States. He voiced sharp disapproval of the nese exclusion clause in the U.S. immigration laws in 1924, was then reported to have said that "America is sending us ell." In the days just prior to the Japanese attack on Pearl bor, he pleaded for peaceable settlement of differences with United States. He died in Hayama, Japan, May 16.

nsas. A central state of the United States, admitted Jan. 29, 1861; popularly known as the "Sunflower state." l area, 82,276 sq.mi., of which 82,113 sq.mi. are land; pop. , 1,801,028, a dese of 79,971 or 4.3% 1930. In rank the us placed the state in comparison with in 1930. Capital, eka (67,833). The larger cities were sas City (121,458) Wichita (114,966). he state's population 1940, 753,941 were n or 41.9%; 96.3% white, 3.7% Negro, % foreign born.



ANDREW SCHOEPPEL, elected governor of Kansas on the Republican ticket Nov. 3, 1942

istory.—In the bien- election of 1942 the ublican party in Kan- won an overwhelming ory. The executive ers elected were: Andrew F. Schoeppel, Ness City, governor; J. C. Denious, Dodge City, lieutenant governor; Frank J. Ryan, secretary of state (ninth term and sixth consecutive term); George Robb, auditor, fourth term; Walter E. Wilson, treasurer, third term; A. B. Mitchell, attorney-general; George L. McClenny, superintendent of public instruction, third term; Charles F. Hobbs, commissioner of insurance, eighth term; William C. Austin, state printer, sixth consecutive term. Arthur Capper was elected United States senator for the fifth term. As a result of the reapportionment on the basis of the census of 1940, Kansas was reduced to six representatives in congress. Former Democratic governor and ex-New Deal cabinet member Harry Woodring proposed, Dec. 8, 1942, the formation of a new political party, an "agrarian party directly representative of . . . agriculture, and its ramifications . . ." and based on the restoration of state and individual rights.

In preparation for the legislature of 1943, the legislative council approved 31 measures for submission to that body for action, and urged that the federal government compensate the state for some $3,000,000 worth of land taken off the tax rolls by government purchase. The school code and the tax code were completed in the council and bills prepared. The tristate (Kansas-Colorado-Nebraska) compact governing the distribution of the waters of the Republican river was vetoed by President Roosevelt because of alleged infringement upon federal rights. A new compact, the third such agreement, was negotiated, and signature by the Kansas representatives was authorized by Governor Ratner Jan. 5, 1943.

Industrial development in agricultural Kansas as part of the war effort was probably the most remarkable aspect of the year, the state ranking third after California and New York in aircraft production.

Several air training centres were assigned to the state as well as munition and other industries.

Education.—Enrolment in the public elementary and secondary schools declined from 460,036 in 1930 to 365,970 in 1940 and the number of teachers from 19,141 to 18,944. The high school enrolment in 1940 was 111,953. In 1937 there were 83,001 pupils enrolled in one-teacher rural schools, reduced in 1939 to 69,335. During the school year 1941–42, 219 small school districts were closed and superior opportunity was provided. A total of 1,611 districts had thus closed over a period of 33 years, about five-sixths of them in the final decade.

Communications.—The state had 9,349 mi. of primary and 9,862 mi. of rural highways; 8,667 mi. of railroads and 342,277 telephones in 1939.

Banking and Finance.—As of June 29, 1940, there were 671 active banks, 181 of which were national, with total deposits of $407,500,000. Savings banks held $79,500,000 of deposits. The legislature in 1941 voted a budget of $19,106,794 for the biennium 1941–43, divided about equally between the two years.

Agriculture.—Kansas farmers produced the second largest crop on record in 1942, being exceeded only in the year 1931. Although the acreage in crops was decreased about 1.4%, the 1942 production was 21% higher than in 1941 and about 74% above the five-year average (1936–40). Crops and ranges were benefited by the subsoil moisture remaining from the exceptionally heavy rainfall of 1941 and were helped along by the above-normal rainfall of 1942. The wheat crop of 206,775,000 bu. was second only to that of 1931. The corn crop of 90,060,000 bu. was the largest since 1932, the hay crop larger than in any year since 1928, flax production the largest since 1891 and the soybean crop more than four times the production of any previous season. The wheat yield of 1942 was 19.5 bu. per acre and had been exceeded only twice in Kansas history, in 1882 and 1914, when the yield was 20 bu. Yields for the western half of the state exceeded all previous records in producing bread wheat for the war effort, while the eastern counties were far below average. The corn yield was 28.5 bu. per acre, the highest since 1915, when it was 31 bu. The Kansas winter wheat acreage seeded for harvest in 1943 was estimated in December at 10,449,000 ac. or 94% of the fall of 1941. This was 26% below the 10-year average (1930–39) seeded area of 14,045,000 ac. In the fall of 1942 Kansas seeded 28% of the total United States winter wheat acreage. The Dec. 1 condition of the winter wheat was 91% of normal compared with 88% a year earlier.

Manufacturing.—The total value of manufactures in 1939 was $464,353,506; wages paid were $36,928,000. The five principal industries were meat packing, petroleum refining, flour, chemicals and creamery butter, rated according to value of their products.

Mineral Production.—The total value of mineral production in Kansas in 1939 was $123,391,521 as compared with $129,675,438 in 1938. In 1941 and 1942 the petroleum industry was operating at top production to meet defense needs.

Principal Mineral Products of Kansas, 1939 and 1938

Mineral	Value, 1939	Value, 1938
Petroleum	$63,100,000	$72,100,000
Natural gas	29,356,000	27,485,000
Zinc	7,172,984	7,010,304
Cement	5,614,112	4,949,018
Coal	5,490,000	5,263,000
Stone	4,550,000	4,958,723

(J. C. Mn.)

Karnebeek, Herman Adriaan Van (1874–1942), Dutch statesman, was born August 21 at The Hague. He had been foreign minister, 1918–27, minister of state and commissioner governor of the province of South Holland. A report of his death came from London, April 2. See *Encyclopædia Britannica* for a biographical note.

Keitel, Wilhelm (1882–), German army officer, born Sept. 22, was a commander of artillery during World War I. On April 1, 1934, he was promoted to major general and the following year, when Germany introduced conscription, he took charge of the personnel section (*Wehrmachtsamt*) in the war ministry, and was thus connected to a certain extent with the reoccupation of the Rhineland in 1936, and with the dispatch of German reinforcements to Nationalist Spain. In Feb. 1938, during Hitler's "army purge" of Gen. von Blomberg and other conservative members of the high command, Gen. Keitel was appointed chief of the supreme command of the German armed forces. He thus directed operations against Poland, Norway, the Netherlands, Belgium, France and Britain in 1939 and 1940. On June 22, 1940, he signed the German-French armistice and on July 19 he was created field marshal by Adolf Hitler. In the various campaigns of 1941 and 1942 Keitel's name was not prominently mentioned, although he continued to direct operations of the German forces. Of the nazi high command triumvirate at the start of World War II—Brauchitsch, Halder and Keitel—the latter was the only one to survive Hitler's successive purges throughout the 1941–42 period.

Kenny Treatment: *see* Infantile Paralysis.

Kent, Duke of (Prince George Edward Alexander Edmund) (1902–1942), youngest brother of King George VI of England, was born December 20. He was trained at the Royal Naval college at Osborne and served eight years at sea, first as a midshipman then as a lieutenant, but left the service in 1929 because of his health. With his brother, Edward, then Prince of Wales, he made a 15,000-mi. good-will t of Canada in 1927 and an 18,000-mi. journey through So America in 1931. Alone, he toured South Africa. While travell in Europe in 1934, he met Princess Marina of Greece, and th engagement was announced in August of that year. Their m riage took place on Nov. 29, 1934, and for this occasion the t of Duke of Kent was revived and bestowed upon him. couple had three children: Prince Edward George Nicholas P rick, born Oct. 9, 1935; Princess Alexandra Helen Elizabeth C Christabel, born Dec. 25, 1936; and Prince Michael Geo Charles Franklin, born July 4, 1942, who was given the na Franklin in honour of President Franklin Delano Roosevelt. Oct. 1938, the Duke was named to succeed Lord Gowrie, gover general of Australia, but the outbreak of World War II preven his assuming the post. In July 1941, he inspected Canadian tra ing schools and visited President Roosevelt at Hyde Park. duke, who was an air commodore on the staff of the inspector g eral of the R.A.F., was killed in active service on August when his flying boat, bound for Iceland, crashed in North Sc land.

Kentucky. An east south central state of the United Sta admitted June 1, 1792, popularly known as "Blue Grass state". Area, 40,598 sq.mi., of which 489 sq.mi. c stitute a water area, the Ohio river being its northern bounda Pop. (1940) 2,845,627, of which 1,996,300 or 70.2% was r and 849,327 or 29.8% urban. Negroes constituted 214,031 7.5%; and 15,631 were of foreign birth. Capital, Frankfort (492); largest city, Louisville (319,077). Other cities: Coving (62,018); Lexington (49,304); Owensboro (30,245); Padu (33,765); Ashland (29,537). The U.S. census bureau estima that war and war industries reduced the population in 1942 2.5%, or 61,140.

History.—The general assembly convened Jan. 6, 1942, in ular session. It increased the penalties for prostitution; gran more leniency in paroling convicts during the war period; vote war emergency fund of $500,000 for the governor's use, and duced state holidays to three: July 4, Labour day, Christmas. a special session (March 10 to April 8) the various legislative tricts were rearranged, both state and federal. In the electio Nov. 3, 1942 all the congressmen were re-elected. Senator Al B. Chandler (Dem.) won by 216,958 votes to 175,081 for his ponent, R. J. Colbert. A commission published the Kentucky vised statutes (3,200 pages) replacing the Baldwin edition former years. The chief officers of the state in 1942 were K Johnson, governor; Rodes K. Myers, lieutenant governor; Ge G. Hatcher, secretary of state; Hugh Meredith, attorney gene E. E. Shannon, treasurer; and John R. Brooker, superinten of public instruction.

Education.—The elementary schools of the state in 1942 rolled 498,599 pupils; 716 high schools had 5,988 teachers 139,910 pupils. The total number of teachers in the public sch exceeded 19,000. The Teachers' Retirement pensions began t paid in 1942.

Public Welfare, Charities, Correction.—Public assista gradually consumed a larger amount of public funds. Old- pensions in 1941 amounted to $6,195,166; in 1942 to $6,517, The correctional institutions in 1942 were the La Grange refor tory (2,871 male inmates and 93 in the women's division); E ville penitentiary (1,458 inmates); and the reform school. Cou votes during the year increased the "dry" area of the state t counties, nearly 64% of the area, and 42% of the population.

Banking and Finance.—The general budget for 1942–43 $28,554,917; that of 1943–44, $28,774,207. The budget did include road and bridge projects separately maintained by

Table I.—*Leading Agricultural Products of Kentucky, 1942 and 1941*

Crop	1942 (est.)	1941
Vheat, bu.	5,194,000	5,625,000
orn, bu.	82,200,000	73,080,000
ats, bu.	1,760,000	1,722,000
arley, bu.	3,105,000	2,825,000
obacco (all types), lb.	284,773,000	285,240,000
rish Potatoes, bu.	4,560,000	3,901,000
ay, tons	2,170,000	1,591,000

d sales of fuel. Sources of the general fund in the fiscal year 41 were: alcoholic beverage taxes, $7,802,272; income taxes om corporations and individuals, $5,382,671; property, $6,123,-o; excise taxes $7,385,858; licences of various sorts $1,767,287. ie motor and road revenues exceeded $19,400,000. In Dec. 42 Kentucky had a general surplus of $6,094,000.

There were 307 state banks and 94 national banks in 1942, with al deposits of $650,000,000.

Agriculture.—The leading agricultural crops for two years re reported as in Table I.

Manufacturing.—Ranked by value of output, the chief indus-es in 1939 were the following: tobacco products $91,362,000; n and steel $50,158,000; meat packing $22,312,000; petroleum ining $21,305,000; distilled liquors $20,401,000; flour and grain oducts $15,157,000. No others exceeded $15,000,000. A com-rison of all factories appears in Table II for 1937 and 1939.

Table II.—*Industries of Kentucky, 1937 and 1939*

Year	No. Estab.	Employees	Cost of Material	Sales Value
37	1,624	77,799	$323,001,000	$504,897,000
39	1,640	70,718	293,629,000	481,629,000

Mineral Production.—In 1941 there were 54,145,813 tons of l mined; the production of oil amounted to 4,854,587 bbl. tural gas was not reported officially. There were 161 fatal acci-nts in the coal mines in 1942. (E. T.)

nya: *see* British East Africa.

dnapping.

There were no marked trends in the annual record of kidnappings in the United States er the enactment of the federal act in 1932. As the subjoined ole shows, 1942 was marked by an increase in the reported es by comparison with 1940 and 1941, but still at a level that s not out of line with that of preceding years.

Kidnappings in the U.S., 1932-42

Year	Total Number Kidnappings	Number Wherein Ransom Demanded
32 (from June 22)	5	5
33	14	10
34	18	5
35	26	1
36	31	1
37	20	4
38	37	5
39	20	0
40	12	1
41	9	0
42	19	0

During the period covered by this table there were 474 kid-oping convictions in federal and state courts, resulting in 12 ith sentences, 44 life sentences and others totalling 5,206 years, nonths and 20 days. Nine kidnappers committed suicide, eight re killed, seven were murdered by their accomplices and two re lynched. Fines amounting to $34,270.80 were imposed on napppers during this eleven-year period.

s the year 1942 ended, nine cases were either awaiting prosecutive ac- n or were pending because the kidnappers were still at large.

n addition to the 19 cases occurring in 1942, prosecution was completed seven other cases originating in 1941.

rom June 22, 1932, the federal bureau of investigation handled 238 es of kidnapping and conspiracy to kidnap. All but two of these cases e solved.

Without question the most widely publicized criminal case of 1942 was the kidnapping, rape and murder of Helen and Margaret Lynch, aged respectively eight and seven years, at Bedford Village, New York. Edward Haight was indicted for the crime in September, and was convicted and sentenced in November. In near-by Pelham Village, Mrs. Kathryn Batchelder, nurse, was implicated in what was described as a kidnap hoax involving Nancy Joyce, and the sending of an extortion letter.

Other U.S. cases included Mrs. A. T. Lussier, who was held for kidnapping the Botsford infant in Waukegan, Ill., in November; W. H. Thompson (alias du Bois), sentenced in October for kidnapping V. Miller of San Francisco, Calif.; Edward S. Horton, held for robbing and kidnapping Mr. and Mrs. J. Smith at Cold Spring, New York, in July; and the kidnapping (and later release) of the driver of a liquor truck in Jersey City, N.J., in June. Charles Ross Heath was sentenced for the kidnap murder of Gloria Jean Nault. Louis Francone, an infant twin, was abducted in New York by an unidentified woman.

In March, at Ogden, Utah, Bill Baker and James Quillen were held for abducting Ira Gourley and James Giles in connection with a robbery, while in Detroit, Mich., H. G. Roels was sentenced for abducting a number of department store employees, also in the course of a robbery. In New York state, H. J. Elling and J. W. Bender were sentenced for the kidnapping, robbery and murder of Paul Skaritza.

Reminiscent of the John J. O'Connell, Jr., kidnapping in Albany, N.Y., in 1933, was the attempt by Harigan and Crowley to have their conviction for that crime set aside. The motion was denied.

In Havana, Cuba, Cesar Rodriguez was wounded and his nephew Evenicio Hurriz was killed, while fighting off three kidnappers. Maximo Del Llano was held for the crime in July.

Kidnappings in the far east, a common feature of past years, were notable by their absence. (*See* also Federal Bureau of Investigation.)

(Br. S.)

King, Ernest Joseph

(1878–), U.S. naval officer, was born Nov. 23 in Lorain, O. He left Annapolis to serve in the Spanish-American War, returning to the naval academy to graduate in 1901. During World War I he was assistant to the chief of staff of the commander in chief of the U.S. fleet. In 1933 he was promoted to rear admiral and he was vice-admiral in command of the fleet's aircraft battle force, 1938–39.

On Feb. 1, 1941, Adm. King was made commander of the Atlantic fleet and on Dec. 20, 1941, 13 days after the Japanese attack on U.S. possessions in the Pacific, he was designated commander in chief of the U.S. fleet, in what was apparently a shake-up in navy organization as well as personnel. In his new post, King outranked the chief of naval operations, and assumed supreme command of all U.S. naval operating forces in Atlantic, Pacific and Asiatic waters. King then became possessor of the two highest offices in the navy, March 9, 1942, when he succeeded Adm. Harold R. Stark as chief of naval operations and in addition retained his post as commander in chief of the U.S. fleet.

King, William Lyon Mackenzie

(1874–), Canadian politician, was born at Berlin (now Kitchener), Ont., Dec. 17. His grandfather, William Lyon Mackenzie, had been prominent in the struggle for political freedom in 1837. King entered parliament in 1908, became leader of the Federal Liberal party in 1919, and was returned to office as prime minister for the third time on Oct. 23, 1935. Shortly after Canada entered World War II, King's foes charged him with negligence and incompetence in handling the war effort. But the country did not support this view, and in March 1940 his party won a landslide election, adding 25 seats to its parliamentary majority. In Aug. 1940, when a nazi invasion of Britain appeared imminent, the Canadian prime minister and President Roosevelt agreed to set up a permanent joint board of defense to study common defense problems. The fruit of another parley with President Roosevelt on April 20, 1941, was a U.S.-Canada pact for co-operation in producing war materials for Britain.

On Dec. 29, 1941, his government decided to cancel the British war debt of $1,500,000,000 that had accumulated for the purchase of war munitions in Canada after 1939. In April 1942 King asked for a plebiscite for authority to send conscripted soldiers overseas for duty if necessary. He won an overwhelming majority, with only Quebec province and its predominantly French Catholic population voting against the proposal. He made several trips to Washington to attend sessions of the Pacific war council and was present at the Churchill-Roosevelt talks in June 1942.

Kiska: *see* ALASKA; WORLD WAR II.

Kiwanis International. Kiwanis International is an organization of men's service clubs in the United States and Canada. In 1942 there were 112,000 members in its 2,190 clubs.

The first Kiwanis club was organized in Detroit, Mich., Jan. 1915. In Canada, the first club was organized in Hamilton, Ont., Nov. 1916. Each club is made up of not more than two leaders from each business, professional and agricultural classification in a community. These men are brought together to give civic and social service to that community. The name "Kiwanis" is a coined word receiving its real meaning from the constructive, unselfish work of Kiwanians; the motto of the organization is "We build."

The general office in 1942 was at 520 N. Michigan avenue, Chicago, Ill. President (1942–43) was Fred G. McAlister, London, Ont., Canada; secretary O. E. Peterson, Chicago, Illinois.

(W. A. D.)

Kleist, Paul Ludwig von (1881–), German army officer, was born Aug. 8 in Braunfels, Prussia. Product of a German military school, he served as a lieutenant of hussars and regimental commander in World War I. After the armistice, he was a cavalry instructor in Hanover, but during Hitler's rule he was lifted from the obscurity of the classroom to command of an army corps. Kleist participated in successful operations in Poland, 1939, France, 1940, and led the mechanized column that took Belgrade in the Yugoslav campaign, 1941. Early in the Russian campaign, his tank army led the nazi attack on Kiev and the advance through the Ukraine. Kleist's armies also captured Dnepropetrovsk in Aug. 1941, but this proved a pyrrhic victory, since the Russians had destroyed the famous dam there before retiring. In Nov. 1941 Kleist's armies captured Rostov, only to lose it a week later when General Timoshenko launched a counter-offensive. When the nazis renewed their offensive in the summer of 1942, Kleist, then commander of the First German Tank army, drove to the foothills of the Caucasus near Mozdok before his advance was stopped by stiffened Russian resistance and winter snows.

Knabenshue, Paul (1883–1942), U.S. statesman, was born Oct. 31, in Toledo, O. He entered the U.S. consular service in 1906, serving as vice-consul in Belfast, Ireland. He was in Cairo as vice-consul and deputy consul general, 1911–1917, and was consul from 1917 to 1919. From Cairo he was sent to Beirut, Syria, where he served as consul, 1919–28, and as consul general, 1928. Knabenshue was consul general to Jerusalem, 1928–32; was appointed minister resident and consul general at Baghdad, 1932, and subsequently was named minister to Iraq. He died in Baghdad, Feb. 1.

Knickerbocker, Cholly: *see* PAUL, MAURY H. B.

Knights of Columbus. Organized in 1882, this fraternal order is dedicated to the preservation and the championship of Catholic and traditional U.S. principles. The traditional slogan of Columbianism, "For God and Country," received special emphasis after U.S. entry into World War II.

The total membership as of Aug. 1942 was 424,823. The ass ciate members numbered 206,442; insurance members 218,38 There were about 2,480 local councils in 48 states, U.S. terr tories and possessions, Canada and Latin America. The insu ance department in 1942 reported total assets of $52,448,863.5 total liabilities $46,592,666.81. The total income was $7,984 358.93, and total benefits paid by death claims and old age ben fits $3,147,610.39.

The 60th supreme convention was held Aug. 18–20, 1942, Memphis, Tenn.; 270 delegates from 272 state and regional juri dictions attended. A message was read from Cardinal Maglion papal secretary of state, conveying the benediction of Pope Pi XII on the 60th anniversary of the organization. The repo showed the greatest net increase in membership since 1921. Of cers re-elected for another term were: supreme knight, Franc P. Matthews; deputy supreme knight, John E. Swift; suprem secretary, Joseph F. Lamb; supreme advocate, Luke E. Har supreme chaplain, Rev. Leo M. Finn.

The order in 1942 eagerly met war conditions, as in World W I. It merged its activities with the National Catholic Communi service in behalf of the men of the army, the navy and the m rines. Members assisted in the sale of war bonds, in civilia defense works, in supplying blood banks through blood-don units. A National War Activities committee was set up, wi deputy supreme knight Swift as chairman. All jurisdiction national, state and local, gave fullest co-operation to the N tional Catholic Community service and the U.S.O. In Canada t councils acted as the direct agency of the Catholic hierarch in directing and operating the Knights of Columbus Canadia army huts.

In the field of youth guidance, the order for the 19th successi year continued its summer schools of boy leadership. The wo of the Columbian Squires, lads too young for membership, w carried on by a staff of trained workers who visited more th 400 councils during 1942. The Special Jubilee committee for t Vatican decided to erect in Rome a church in honour of St. E gene, to commemorate the 25th anniversary of the episcopal co secration of Pope Pius XII. The offer was accepted by the Po through the cardinal secretary of state.

National headquarters in 1942 were at New Haven, Con *Columbia,* a monthly illustrated magazine, and *News*, a week are the official publications.

(J. LAF.)

Knowlson, James S. (1883–), U.S. corporation o cial and industrialist, was born Ju 29 in Chicago. After graduating from Cornell university, 19 he was an electrical engineer in Schenectady, 1905–09. He w first chairman of the board and then president of Stewart-Warn corporation. In Sept. 1941 he was appointed deputy director the OPM priorities division as a dollar-a-year man. On Jan. 1942, he was named head of the WPB division of industrial op ations, with the task of speeding the conversion of U.S. factor to war production. When Chairman Donald Nelson realigned t WPB on July 10, 1942, the conversion problem had been solv and Knowlson was made vice-chairman on the WPB program termination staff. Two months later Ferdinand Eberstadt su ceeded Knowlson in this post; it was then explained that Kno son needed more time to devote to his increasingly heavy dut on the Anglo-American Combined Production and Resour board, of which he was a member. He was also chairman of t U.S. section of the U.S.-Canada joint war production committ an agency which had been set up to speed war production of b countries.

He retired from the latter post on Dec. 1, 1942, and resign as WPB vice-chairman early in Jan. 1943.

Knox, (William) Franklin (1874–), U.S. publisher, statesman and soldier, was born Jan. 1 at Boston and was educated at Alma (Mich.) college. He joined Theodore Roosevelt's Rough Riders, with whom he served from April to Sept. 1898. He was in France from May 1918 to Feb. 1919 and became colonel in the 365th field artillery. His newspaper career began shortly after his service in the Spanish-American war, when he was successively reporter, city editor and circulation manager of the Grand Rapids, Mich., *Herald.* From 1901 to 1912 he was publisher of the Sault Ste. Marie, Mich., *News,* and in 1913 he purchased control of the Manchester, N.H., *Union and Leader.* Later he became associated with the Hearst newspaper chain and was its general manager until 1931, when he became publisher of the *Chicago Daily News.* In 1936 Col. Knox was the Republican candidate for vice-president. On June 20, 1940, he was appointed secretary of the navy by Pres. Roosevelt.

In Oct. 1941, Secretary Knox, who had advocated immediate U.S. entry into the battle of the Atlantic, announced that U.S. convoys were enroute to Iceland. On Dec. 15, 1941, after an inspection of the damage at Pearl Harbor, Knox said one battleship, three destroyers, a target ship and a minelayer were lost in the attack because naval forces there were not on the alert. A year later, the navy revealed that eight battleships alone had been put out of action in the attack. Knox was ruthlessly criticized by his political foes for withholding the facts. His defenders, however, asserted that immediate revelation of the facts would have been of invaluable aid to the Japanese. In a review of the war on Dec. [illegible], 1942, Knox said that the U.S. navy was larger and more powerful than the day before Pearl Harbor and that Japanese casualties were five times those of the United States.

Knudsen, William Signius (1879–), U.S. industrialist, was born in Copenhagen, Denmark, on March 25 and as a youth worked in a bicycle shop in his native town. At the age of 20 he emigrated to the United States, where he found work in a shipyard in New York. After working in a railroad shop, he went to Buffalo, where he ultimately became superintendent of a mill. He then worked for Ford Motor company and became associated with Chevrolet Motor company, of which he was made vice-president in 1922 and later president. From 1933 to 1937 he was executive vice-president of General Motors corporation, and in the latter year he became president. On May 28, 1940 President Roosevelt appointed him commissioner of industrial production for the national defense advisory commission.

When President Roosevelt created the Office of Production Management Jan. 7, 1941, he named Knudsen director general. Knudsen continued to be the "top man" in the production phase of national defense until Jan. 1942, but gradually matters of general policy were delegated to other agencies such as the Office of Price Administration and the War Production board. In July 1941, Knudsen admitted friction with the OPA and Leon Henderson over the curtailment of motor car production. Knudsen had contended that an arbitrary reduction of 50% would dislocate U.S. economy. On Jan. 16, 1942, he was appointed production director of the war department and made a lieutenant general.

Korea: *see* Chosen.

Kuwait: *see* Arabia.

Kyanite. Shipments of kyanite from United States mines rose to 8,335 short tons in 1941, nearly double the 1940 output. At the same time, in spite of shortage of shipping space and rising freight costs, imports from India increased from 7,658 tons in 1940 to 6,211 tons in the first nine months of 1941.

(G. A. Ro.)

Labor, U.S. Department of: *see* Government Departments and Bureaus.

Labor Relations Board, National: *see* National Labor Relations Board.

Labour: *see* Agriculture; American Federation of Labor; Congress of Industrial Organizations; International Labour Organization; Labour Unions; Law; Motion Pictures; National Labor Relations Board; Negroes (American); Radio; Relief; Shipbuilding; Strikes and Lock-outs; Supreme Court of the United States; Unemployment; United States; Wages and Hours; War Labor Board, National; War Production, U.S. *See* also under various states.

Labour Party. The British Labour party continued during 1942 to be represented in the British government, C. R. Attlee and Ernest Bevin being members of the war cabinet where they were joined by Herbert Morrison in November, and Hugh Dalton, Thomas Johnston, A. V. Alexander and Sir William Jowitt occupying other important positions. Sir Stafford Cripps, also a member of the war cabinet from February to November, did not rejoin the Labour party after his expulsion, and counted as an Independent. Arthur Greenwood, on leaving the war cabinet, resumed his position as acting leader of the party in the House of Commons, and was re-elected to this position.

Total Labour party membership showed a slight decline during 1941. This was due to a sharp fall in individual membership, as affiliated trade union membership slightly increased. Individual membership fell from 304,000 at the end of 1940 to 227,000 a year later, male membership declining by 46,000. The main causes were the calling up of men for the armed forces and the migration of labour to new areas, which made organization difficult; and the suspension of party warfare also lessened political interest in the constituencies. Such by-elections as were contested were fought by independent candidates, including several of a "popular front" complexion who met with success. There was much discontent in the party over the electoral truce, and the party machine was criticized for filling vacant seats with elderly candidates.

The party conference in May 1942 approved the preliminary draft of a reconstruction program, which was later being amplified by a number of special committees. This program was in general an expression of moderate, evolutionary socialism. Later in the year, party opinion was much exercised over the Indian situation. While generally disposed to support the government on the basis of the Cripps offer, the main body of the party urged the keeping open of the door for renewed negotiations. In parliament the party pressed for an improvement in pay and allowances for the forces and their dependents, for the reorganization of the coal industry and for fuel rationing and for reforms to meet the position of pensioners, injured workmen receiving compensation and other special classes. It gave solid support to the war effort; but some sections went much farther than the party as a whole in criticizing the government, and especially in pressing for more complete public control of the war industries, more extensive rationing and further restrictions on luxury expenditure. There were misgivings within the party at the weakening of its electoral influence, which it shared with the other established parties, and at the growth of new socialistic movements outside its ranks. But the party leaders were disposed to regard such movements as mushroom growths. One notable feature of the year 1942 was the rapid growth of the Fabian society, which launched out through a socialist propaganda committee to form numerous local groups in order to reinforce and supplement the activities of the local Labour parties in the propagandist field. The Fabian society remained affiliated with the Labour party, which it helped to found 43 years ago. (*See* also CABINET MEMBERS.) (G. D. H. C.)

Labour Unions.

United States.—With the country at war in 1942 union activities during the year were concerned mainly with war problems and the operations of war agencies. The central issues of wages, the closed shop and the position of organized labour in the administration of the war, which were the cause of numerous and prolonged strikes in 1941, were on the whole settled amicably and with the co-operation of union leaders.

In arriving at a wage policy the paramount purpose of the government was to prevent the traditional war inflation of prices and wages. Although the unions began the year by demanding increases of $1 a day in the steel and automobile industries, the War Labor board, created by the president on Jan. 12 to replace the Defense Mediation board of 1941, held the demands under advisement until the president could announce the government's policy of wage and price stabilization. This announcement was made in a statement to congress on April 27. The burden of the statement was that wage increases, except in cases of gross inequalities or sub-standard wages, be kept in check in order to permit the administration to stabilize prices and the cost of living.

On July 15 the War Labor board issued the famous "little steel" decision. This decision embodied the first principle of wage determination which the board had seen fit to adopt. It provided that wages should maintain their purchasing power as of Jan. 1941. Since between that date and the middle of 1942 the cost of living had risen about 15%, the decision meant that the board would undertake to keep the total increases in wages granted within this period of 18 months from exceeding 15%. The steel workers, therefore, were awarded, instead of $1 a day or 12½ cents an hour, an increase of something more than 5 cents. The unions protested the decision, but finally accepted it. But, for exceptional cases, the "little steel" formula became the guiding principle of the year's wage settlements.

The troublesome issue of the closed shop was likewise settled by the board through a compromise between the position of unions and the employers. Following John Lewis's success fight for the closed shop in the bituminous coal industry, ganized labour generally pressed for the same concession a supported its demand by arguing that the pledge not to str for the duration of the war required some such measure as closed shop to protect unions against the loss of their membe Public opposition to the closed shop was, however, so great t granting it was politically impossible. The board, therefore, vised a provision, known as maintenance of membership, where employees who were members of a union or who joined at time a contract with the employer was signed, were requi to remain members for the life of the contract. This ruling, l the "little steel" formula, was applied in settling virtually disputes about this issue.

The more or less successful disposition of wages and the clo shop by these decisions of the board drastically curbed the casions for quarrels and strikes. Interruptions to work, con quently, while numerous, were short-lived and the losses fr strikes and lock-outs were far less than in preceding years. De sions of the board were generally obeyed. But in a few cases government was forced to take over plants, either to end a str or to impose the board's decision upon an unwilling employ

As war administration grew more elaborate and was entrus with the authority to make more and more vital decisions, labour movement continued to insist upon fuller representation the Washington councils. This demand became increasingly sistent upon the retirement of Sidney Hillman, one of the lead of the C.I.O. and co-director of the Office of Production Mana ment, when that agency was superseded by the War Product board under the chairmanship of Donald Nelson. While organi labour failed to win representation equivalent to that held Hillman, it made its influence felt by appointments to vari advisory boards and by the effective pressure it was able to ex on Washington.

The result was that the unions had their way on many ba issues. Union-management committees, originally proposed by C.I.O. and later endorsed by the A.F. of L., were swiftly int duced into a substantial number of war plants. In spite of mu public clamour for lengthening the work-week, the 40-hour w was retained. Union influence prevented the freezing of ployees on their jobs and in general reduced to a minimum amount of compulsion used in administering the country's m power program. Only in relation to the overall problems of production did labour influence appear to subside. For the sw conversion of peace to war industry and the phenomenal rise munitions production rendered obsolete the Reuther plan, wh had been a universal subject of discussion and contention in 19

Efforts to compose the differences between the A.F. of L. the C.I.O. made little progress. At the beginning of the ye John Lewis proposed that peace negotiations be reopened. T fear that Lewis might succeed and thereby gain in prestige influence caused both William Green and Philip Murray to rej his offers of intervention. The administration joined in this action. To counteract Lewis's peace proposals, the president up a joint C.I.O.-A.F. of L. committee (the so-called lab victory committee) to meet with him for the purpose of cussing and settling questions affecting the two organizati and labour policy in general.

This public rebuff of Lewis exacerbated his differences w the C.I.O. and Murray. Lewis immediately took steps to pun Murray and to separate the United Mine Workers from

THE FOURTH OF JULY, 1942, was only another day of work for labourer U.S. war plants. Strikes were at a minimum in 1942 as labour unions avoi stoppage of work during disputes. In the first half of the year, fewer man-h of work were lost through strikes than in any six-month period in U.S. hist

I.O. At successive meetings of the Miners' executive board d convention, the union withdrew from the C.I.O., displaced urray as vice-president of the Miners and expelled him from embership in that organization. The United Mine Workers, w free of any affiliations, amended its constitution to extend jurisdiction over all industry and by that act virtually conrted itself into a third federation of labour competing for memrs with all other existing unions.

Meanwhile the standing peace committee of the A.F. of L. and I.O., which had not met for a long time, resumed its conversans. Before the year was over it had agreed to recommend to two organizations the creation of an arbitration board, emwered to settle inter-union disputes. The recommendation was vourably received. But before it could be adopted, a bitter ntroversy, which broke out between C.I.O. and A.F. of L. ions over union control of the Kaiser shipyards, again reduced chances for peace.

Under the favourable influences of full employment and rising ges, most unions continued to grow. The A.F. of L. added ughly 500,000 members. The C.I.O.'s total membership reined unchanged during the year, but this meant that it made in other directions the loss of the 600,000 members of the ited Mine Workers. Organized labour's gains in numbers were, wever, not matched by the enhancement of its prestige. Unions ne increasingly under criticism for their reluctance to abandon 40-hour week, the suspicion that they were indifferent to slowwns and restrictions of output, and the continuance of interion quarrels. In consequence, organized labour, together with administration, lost heavily in the congressional elections November. (*See* also American Federation of Labor; siness Review; Congress of Industrial Organizations; w; National Labor Relations Board; Strikes and Lockts.) (L. Wo.)

Great Britain.—British trade union membership again inased during 1941. The membership of the unions affiliated to Trades Union congress rose from 5,079,094 to 5,432,644, de up of 4,509,515 male and 923,129 female workers. Figures re not available for the unions outside the congress, of which most important were the teachers' societies and the unions the civil service and the post office, which latter groups were l precluded from affiliation by the Trade Unions act of 1927. orts to get this act modified again broke down in face of the position of the Conservative party and the refusal of the prime nister to take any action without its consent. This refusal proked strong resentment at the 1942 congress.

Trade union membership continued in 1941–42 to increase idly among workers in the munition trades. The principal neficiaries were the Amalgamated Engineering union (550,000) resenting mainly the more skilled workers, and the two "genl labour" unions—the Transport and General Workers (650,) and the General and Municipal Workers (548,000)—which ol the less skilled workers. The former now included 190,000 l the latter 147,000 women. Other big increases were in the ectrical Trades union (97,000) and the Fire Brigades' union ,000), which enrolled a large proportion of workers in the rtime National Fire service. As against these advances, there re shrinkages in many of the unions catering for workers in des subject to wartime contraction, notably in the cotton instry. Apart from these instances, membership remained fairly ble, despite the war.

Wages and conditions continued to be regulated by the normal cesses of collective bargaining, supplemented by the resort to itration by the National Arbitration Tribunal or by *ad hoc* unals, in place of resort to strike action. Strikes were relaely few and unimportant, and mostly of short duration. The largest number occurred in the mining industry, which accounted for 390 stoppages out of a total of 804 in all industries during the first eight months of 1942. But most of the mining stoppages were small and brief, and in general the workers showed a high determination to do their best in furtherance of the war effort. In the munition trades and in coal mining, the sphere of collective recognition was extended by the establishment in most of the larger factories and collieries of joint production committees and joint pit committees, with a mandate to consider all possible methods of increasing output, without interfering with the normal process of collective bargaining between trade unions and employers' associations. These joint bodies, of which the workers' sides in the war factories worked in closely with the shop stewards' committees created by the employees, were undoubtedly effective in raising output and improving relations where they were given a fair trial.

APPEARING ON A PLATFORM TOGETHER for the first time, April 7, 1942, at Pittsburgh, Philip Murray (left), president of the C.I.O., and William Green (right), president of the A.F. of L., pledged unity in the ranks of U.S. labour for the duration of World War II. Between them is Paul V. McNutt, Federal Security administrator and later chairman of the War Manpower commission

The Trades Union congress, held in Sept. 1942, was exceptionally interesting because it revealed a sharp conflict of tendencies. The general council, which received the support of the two "general labour" unions, was assailed on several issues by the more advanced sections, headed by the miners, railwaymen and engineers. A demand for a larger measure of "workers' control" in industry was carried against the general council, and a proposal to set up an enquiry into the basis of trade union organization, sponsored by the National Union of Railwaymen, was only defeated by a small margin. Sir Walter Citrine's account of his negotiations with the American Federation of Labor in the matter of trade union unity between the three movements of Great Britain, the United States, and the soviet union was received with considerable dissatisfaction, many delegates holding that the congress secretary should have insisted on negotiating directly with the C.I.O. and the Railroad Brotherhoods, as well as with the A.F. of L. British labour opinion was solidly in favour of a triple alliance of the labour movements of the three countries on an all-inclusive basis, and was much distressed at the refusal of the A.F. of L. to take part in such an alliance. In general, the British trade unions continued to improve their position, without making any sensationally rapid advance. There were affiliated to congress four unions with upwards of 500,000 members, three others with over 100,000 (railwaymen 376,000, distributive workers 234,000 and woodworkers 157,000), and 15 others with over 50,000. The total number of affiliated trade unions was 252; and there were in addition 412 recognized local trades councils up and down the country, including a number of smaller unions not affiliated to congress. Total trade union membership was probably between 6,500,000 and 7,000,000, including civil servants, local government officers, teachers and other nonaffiliated groups. (G. D. H. C.)

Labrador: *see* Newfoundland and Labrador.

Lacrosse. Fielding the finest team in its history, Princeton university won the Inter-collegiate Lacrosse championship in 1942 and thus wrested the title from the state of Maryland for the first time in many years. The Tigers' 12–10 victory over the University of Maryland and their 4–2 decision over Johns Hopkins of the same state were the high lights of the season.

A year ago it was Johns Hopkins which returned to top strength to win the championship, and the year before that it was the University of Maryland which finished in top place. Army finished in fourth place behind the two Maryland teams. In its annual game with navy, army won by a score of 6–3.

The annual north-south game in Baltimore resulted in a 6–4 victory for the north, but in a special abbreviated game two weeks later in New York, the south was the winner, 5–1.

Like most college sports which had been affected by the 18–19 draft board, lacrosse probably was expected to be slowed down for the duration. This might increase the interest in women's lacrosse which in 1942 was represented by teams from Boston, Baltimore, Philadelphia, Westchester, New York, and a few cities in the middle west where the game was being introduced at girls' colleges. (T. J. D.)

La Guardia, Fiorello Henry (1882–), U.S. politician, was born in New York city, Dec. 11. He went to high school in Prescott, Ariz. From 1901 to 1906 he served in U.S. consulates in Hungary and Austria. He graduated from New York university law school in 1910 and was congressman from New York, 1917–21 and 1923–33. He commanded the U.S. flying force on the Italian front during World War I. In 1933 he was elected mayor of New York city; he was re-elected in 1937 and again in Nov. 1941. In Aug. 1940, Pres. Roosevelt appointed him chairman of the U.S. section of the Canada-United States permanent joint board of defense, and in May 1941 the president named him director of the Office of Civilian Defense. La Guardia resigned the directorship on Feb. 10, 1942. In the fall of 1942, La Guardia made several broadcasted appeals to the Italian people to overthrow Mussolini and join the Allied side.

Land Emory S. (1879–), U.S. naval officer and government official, was born Jan. 9 in Canon City, Colo. He was graduated from the University of Wyoming, 1898; Annapolis, 1902; and the Massachusetts Institute of Technology, 1907. During World War I, he served on the staff of Admiral William Sims in London. Associated with problems of naval construction after 1904, he was assistant chief of the navy's bureau of aeronautics, 1926–28; chief of the bureau of construction and repair, 1932–37. Made a rear admiral when he retired from the navy in 1937, he was named commissioner of the U.S. maritime commission in 1937, and succeeded Joseph Kennedy as chairman in 1938. Soon after the United States entered World War II, Admiral Land was also made administrator of the War Shipping Administration, established Feb. 7, 1942. He had control of the operations, purchases, requisitioning and use of all U.S. merchantmen. He was also a member of the Anglo-U.S. combined shipping adjustment board, which was created in Jan. 1942. He declared on Nov. 12 that President Roosevelt's goals of 8,000,000 tons of new shipping for 1 and 16,000,000 tons for 1943 would be achieved on schedule.

Land Banks: *see* Federal Land Banks.
Laos: *see* French Colonial Empire.

Lard. There was an unprecedented volume of U.S. lard p duction and yet a serious shortage for civilian consum tion in 1942. Production was estimated roughly by the depa ment of agriculture as more than 2,500,000,000 lb., which w short of the 1942 goal of 2,820,000,000 lb. The Food Distri tion administration bought more than 1,000,000,000 lb. of ve table oils and animal fats. Of this total, 654,000,000 lb. was la 171,000,000 lb. vegetable oil, 96,000,000 lb. margarine, 45,0 000 lb. shortening, 33,000,000 lb. butter, 26,000,000 lb. edi beef fats. Predominant purchases for military and lend-lease u made it difficult for housewives to buy lard in the latter mon of 1942. Also in these later months hogs, although averag about 7 lb. heavier, yielded about 2 lb. less lard per carcass th in 1941, indicating that packers were trimming carcasses to rea on the higher prices for pork. Storage supplies of lard in United States Dec. 31, 1942, were 11,190,547 lb. compared w 111,953,101 lb. Dec. 31, 1941. From Dec. 1941 to Dec. 19 the price of lard advanced 38%. Butter prices in the same per rose 32%. At the beginning of 1943 the top price for lard about 3 cents per lb. above the ceiling price a year earlier, OPA having revised lard ceilings several times in 1942. (*See* a Hogs; Meat; Vegetable Oils and Animal Fats.) (S. O. R.

Latin America: *see* Argentina; Bolivia; Brazil; Brit Guiana; British Honduras; Chile; Colombia; Costa Ri Ecuador; French Colonial Empire; Guatemala; Hispa America and World War II; Honduras; International La Nicaragua; Panama; Paraguay; Peru; Salvador, El; Su nam; Uruguay; Venezuela.
Latter Day Saints: *see* Mormons.

Latvia. One of the Baltic states of northeastern Euro north of Lithuania, south of Estonia, formerly a public; in 1941 it became part of the German "Ostland." A 25,016 sq.mi.; pop. (est. Jan. 1, 1939), 1,994,500. Capital, R (385,063 in 1935); the other principal city is Liepaja (57,0 Language, Latvian. Religion, Christian (Protestant, 56%; Ro Catholic, 24.5%; Greek Catholic, 9%; Greek Orthodox, 5.5 The country was ruled, after the German occupation in 1 by Commissioner-General Drechsler for Latvia, and Reichsc missar Heinrich Lohse, whose seat of government not only Latvia but for the entire Ostland (*q.v.*) was established in R

History.—Like her neighbours Estonia and Lithuania (*qq.* Latvia was forced to bow first to one, then another, of the w ring great powers: from June 1940 to June 1941 she was oc pied and largely collectivized by the U.S.S.R.; in July 1941 was occupied and "new ordered" by the nazi reich. Mass depo tions were carried through by both the conquerors, and the ec omy was forced through violent changes. Before 1940 less t 3½% of Latvian trade was with the U.S.S.R., then for a yea was entirely Russian-controlled; in 1941 this trade was c pletely choked off. Before 1940 some 35–40% of her exports w to Great Britain; then that trade was stopped. In 1942 the C mans were frankly having difficulty in reviving normal econo life. An appeal to countries like Denmark and Belgium was tempted to help in colonization and economic development, inspection trips were arranged in the Baltic States for such as Gunnar Larsen, Danish Minister of Transport.

Internal conditions in Latvia were of course largely depen the war, which toward the end of 1942 again approached her rders as the Russians advanced. Large stocks of goods were quisitioned for the war, but details of food and clothing conditions were not available.

Beyond the country's borders several Latvian ships flying the imson-white-crimson flag were torpedoed in the Atlantic and sewhere. A Latvian pro-soviet government continued to exist exile in Russia, while in Great Britain and the United States e ministers appointed prior to the soviet occupation continued function. Latvians were deeply interested in the signature of e Anglo-Russian 20-year alliance (June 1942), which, although did not specifically mention the Baltic states, was assumed to arantee their restoration after the war.

Statistics of education, finance and economic conditions ceased be issued in Latvia after the soviet occupation in 1940; the est available figures at the end of 1942 applied for the most rt to 1938 and 1939.

Education.—In 1938–39 there were 1,895 elementary schools th 229,825 pupils and 114 secondary schools with 25,225 pupils. rolment at the University of Riga was 7,281.

Finance.—The monetary unit is the lat (=19.3 U.S. cents at r, established as equivalent to the Swiss franc in 1921). Effects German control were still uncertain at the end of 1942. In 39 the budget estimates envisaged revenue of 190,878,000 lats d expenditures of 190,481,000 lats.

Trade and Communication.—Imports in 1938 were 227,336,-o lats; exports 227,204,000 lats. Chief articles of import were dustrial machinery, agricultural machinery, automobiles and cessories, coal, cotton textiles, cotton (raw) and wheat. Chief ticles of export were timber, flax, plywood and butter. Exports nt chiefly to Great Britain, Germany, the U.S.S.R. and the etherlands. Imports were primarily from Germany, Great Brit-ı, the U.S.S.R., Sweden and the United States. In 1940 the tvian state railways operated over 2,200 mi.; bus lines over 300 mi. The principal harbours are Riga, Liepaja and Ventspils.

Agriculture.—The principal crops with their yields (in short ns) were as follows in 1939: rye, 493,830; barley, 245,041; ts, 534,395; wheat, 233,247; potatoes, 1,807,882; flax, 54,123. vestock included 414,470 horses, 1,271,730 cattle, 1,469,570 eep, 891,470 pigs, 4,729,120 poultry, 222,460 beehives.

Manufacturing.—After the decline in 1931 and 1932, Latvia's dustrial production rose rapidly to a general index figure of 148 1937 (based on 100 in 1930). Strong efforts were made up to 39 to increase the self-sufficiency of the country.

At the beginning of 1939 some 5,970 industrial establishments ıployed 98,500 persons, and in 1938 produced a value of 695,-o,000 lats. Chief industries were foodstuffs, wood and paper d textiles. (F. D. S.)

aval, Pierre (1883–), French statesman, was born June 28 at Châteldon, Puy-de-Dôme. For a brief ographical sketch, see *Encyclopædia Britannica*. Laval had reained in comparative obscurity after the start of war in 1939 itil Marshal Pétain, after France's defeat, named him his sucssor as well as vice-premier. An opportunist, Laval consulted th Hitler on several occasions in 1940 and displayed obvious o-nazi inclinations. A rift between Pétain and Laval occurred, d the latter was abruptly dropped from the Vichy cabinet ec. 13, 1940. Laval was not reinstated until April 18, 1942, hen he formed a new cabinet and assumed the title of chief government. In the summer of 1942, most French workers nored Laval's plea that they help "crush bolshevism" and lease French war prisoners by working in German factories. n Oct. 20, he said that French workers "must go" to Germany orders of the government. On Nov. 18, a week after the Germans had occupied all of France, Pétain gave Laval dictatorial powers to make laws and decrees on his own responsibility. Within 48 hours, Laval delivered a violent tirade against Britain and the U.S., proclaimed confidence in eventual axis victory and asserted that a pact with the reich was the sole guarantee of keeping peace in Europe.

"THE ONLY WAY—IN" a British portrayal of the strange doorway constructed for France in 1942 by Pierre Laval. Cartoon by Butterworth of the Manchester *Daily Dispatch*

Law. Global war overshadowed all developments of the year 1942 and from its effects not the minutest phase of civilian life or activity was exempt.

Against this background law had a dual aspect—regulations on the home front governing the regular workaday relations and problems of a civilian economy, and war regulations, more summary in nature and sweeping in scope, whose direct impact was everywhere reflected.

Accordingly the year's most significant decisions and regulations are reviewed under the following headings:

Administrative Law
Agriculture
Arbitration
Banking
Bankruptcy
Civil Rights
Constitutional Law
Criminal Law
Domestic Relations
Housing
Insurance
Labour
Libel
Patents
Public Contracts
Public Utilities
Social Security
Tax: Local, Federal
Trade Regulation
Unemployment Compensation
War Regulations
Workmen's Compensation

Administrative Law.—The right to judicial review of board findings was the outstanding issue of administrative law. While arising in cases involving broadcasting, rate making and labour relations, the principles promulgated are applicable to practically every field of business operation.

The supreme court refused to grant a review of rate-making orders (*FPC* v. *Natural Gas Pipeline Co.; Board of Trade of Kansas City, Mo.*, v. *U.S.*). Courts will not substitute their judgment in these technical matters for that of the commission, where the board has not overstepped the limits of due process.

Since, however, it has the force of law, a commission's "order" may be reviewed before it is invoked as well as after (*Columbia Broadcasting Co., Inc.*, v. *U.S.*). A decision of the Railroad Retirement board that persons employed by a copper mining company were "employees" within the meaning of the act so as to subject them to the jurisdiction of the board was not final and hence subject to review by the court (*Utah Copper Co.* v. *Railroad Retirement Board*). A determination by the FPC that a company was a public utility within the definition of the act and that therefore the purchase of its stock by another company, admittedly a public utility, unauthorized by the commission, violated the act, likewise was subject to review (*Jersey Central Power & Light Co.* v. *Federal Power Comm.*). The supreme court overruled the commission's orders to the extent that they limited the types of commodities that might be carried over designated routes (*Howard Hall Co., Inc.,* v. *U.S.; U.S.* v. *Carolina Freight Carriers Corp.*). The supreme court held that the U.S. court for the District of Columbia had the power to stay the enforcement of an order of the FCC pending determination of an appeal to preserve the *status quo* (*Scripps-Howard Radio, Inc.,* v. *FCC*).

In a proceeding to enforce an NLRB order, the court properly refused to allow the employer to produce additional evidence that all its assets had been conveyed to a newly-organized corporation (*Southport Petroleum Co.* v. *NLRB*). Nor can such a reviewing court require as a prerequisite to enforcing the board's order a determination through an election that the labour organization, formerly chosen, still represents the majority of the employees involved (*NLRB* v. *P. Lorillard Co.*).

Agriculture.—The Agricultural Adjustment act of 1938 as amended in 1941 was held a valid exercise of the interstate commerce power of congress as applied to that portion of a farmer's wheat intended for consumption on the farm where it was produced. The control of local farm production is merely incidental to the constitutional control of the marketing of wheat, and necessarily follows from congressional intent to control the total wheat supply. Application of the increased penalties of the 1941 amendment to a crop already planted is likewise valid even though a retroactive penalty, since application of the penalty was contingent upon the actions of the farmer subsequent to enactment of the amendment (*Wickard* v. *Filburn*).

The Florida commercial fertilizer law (which requires inspection on a fee-basis and analysis of fertilizer prior to its being offered for sale within the state) was held inapplicable to the importation and distribution to Florida farmers of fertilizer by the United States department of agriculture in furtherance of the Federal soil conservation program (*United States* v. *Mayo*). But a provision of the California Milk Control act prohibiting distributors from purchasing, processing or otherwise handling milk which is sold at any place within the geographical boundaries of a designated marketing area, whether such place is part of the marketing area or not, at less than the minimum prices established for such marketing area was valid as applied to milk processed and handled for sale at less than prescribed minimum prices to the federal government on federal territory (*Pacific Coast Dairy, Inc.,* v. *Department of Agriculture of California*). (*See* also AGRICULTURE.)

Arbitration.—Though commercial as well as labour disputes have greatly enhanced the scope of arbitration, the inconsistent emergency legislation has curbed it. Thus, an order of OPA made performance of a contract for sale of goods impossible, hence nonperformance was excused and the entire contract, including the arbitration clause, was terminated as inconsistent with an OPA schedule. (*Eddington Fabrics Corp.* v. *M. Lowenstein & Sons, Inc.*). Similarly held unenforceable was a contract, containing an arbitration clause, which had become impossible of performance because of the establishment of ceiling prices by the Office of Price Administration and certain regulations issued by the Office of Production Management (*Matter of Kahn & Feldman, Inc.; Rothschild et al.;* etc.).

However, an order of the Defense Communications board directing the closing of defendant's radio station did not excuse it from its agreement to arbitrate any controversy which occurred during the period of its operation (*Matter of Sell, Pres. of American Communications Assn.; French Telegraph Cable Co.*).

Nor could one avoid his obligation under an arbitration ag ment on the ground that the WPB order limited his invent The regulation did not invalidate the contract; it merely pro ited delivery of the merchandise by the seller and acceptance the buyer, if at that time the inventory of the buyer is the unduly enlarged (*Federated Textiles, Inc.,* v. *Glamour G* Denial of a contract (charter party) did not constitute a wa of an arbitration agreement embodied in that contract (*K Kundis Shipping Co.* v. *Amtorg Trading Corp.*). Though erally an infant may disaffirm his contracts, an infant appren may not reject arbitration provisions of his contract with employer while affirming the provisions relative to his tenur employment (*Farin* v. *Sercarz*).

In confirming an arbitrator's award (that an employer executed a collective bargaining contract with a union "shall voke . . . the rule announced by it excluding the lunch or hour from the eight hours per day to be paid for") a court r that it did not bar employees from maintaining a subsequ action against the employer to recover pay for the lunch hou provided in the contract (*Alper* v. *Greater New York Broadc ing Corp.*). But an award of an arbitration board increa wages was invalidated because the board did not decide the q tion of a fair work load in arbitrating the question of a fair of wages and fair work load (*Boott Mills* v. *Board of Conc tion and Arbitration*).

Banking.—To prevent the occupied countries from b looted, an executive order froze bank deposits of invaded c tries and their nationals. The prohibition extends only to the ment or transfer of the funds. The sole purpose of the order to prevent the funds of certain foreign nations and their natio from falling into the hands of the aggressor powers. The or however, did not preclude a state court from subsequently e cising its jurisdiction in an action by a domestic corporatio which were attached New York bank deposits belonging to national bank of a country subject to such executive order (*C mission for Polish Relief, Ltd.* v. *Banca Nationala a Ruman* An attempt of a New York bank to credit its branch in Pa France, with the proceeds of a check deposited in such branch a French national for collection was ineffectual and void as a lation of the executive order extending the restrictions on tr fers of credit to transactions in which France or any natic thereof has any interest (*Philip* v. *Chase National Bank of City of New York*).

But an executive freeze order, prohibiting payments by ba to nationals of foreign countries except as authorized by the retary of the treasury, did not prevent a levy, under a warran attachment, on the bank account of a foreign national; nor di affect the court's acquiring dominion, by virtue of such a le over the defendant's rights and interest in the account (*Com sion for Polish Relief, Ltd.* v. *Banca Nationala a Rumani* (*See* also BANKING.)

Bankruptcy.—The decisions considered conflict between eral and state laws, priority of federal claims and the jurisdic of the bankruptcy courts.

A New Jersey statute authorizing a refunding plan more t a year before the enactment of the Municipal Bankruptcy did not conflict with the latter, nor did the state statute unc stitutionally impair the obligation of the contract (*Faitoute & Steel Co.* v. *City of Asbury Park*).

A bankruptcy court need not apply local law governin liquidation of insolvent estates, the Bankruptcy act prescrib its own criteria for distribution to creditors. Hence a guarar and its creditors could not be deprived of the benefits of usual bankruptcy rule of equality by a N.Y. state law requi t their rights be subordinated to those of other certificate lers (*Prudence Realization Corp.* v. *Geist*).

armer-debtors were entitled to file a petition for relief under Frazier-Lempke act (bankruptcy provisions affecting farm- four years after composition proceedings had been insti- d, since that right is not to be conditioned on the diligence n which the farmer sought composition or extension of time *right* v. *Logan*).

bligations which had accrued under the California Unem- ment Reserves act plus a 12% interest were allowed as prior ms against a bankrupt employer (*Meilink* v. *Unemployment erves Comm. of Calif.*). When the assets of the bankrupt e insufficient to meet claims, the claim of the U.S. for social rity taxes was held entitled to priority and the excess of % required was not such a penalty as could not be proved in kruptcy (*U.S.* v. *N.Y.; N.Y.* v. *U.S.*). In a state court receiv- ip proceedings, the claims of the U.S. for gasoline taxes were n priority over the claims of Texas (*U.S.* v. *Texas*).

ivil Rights.—A vigorous press campaign by newspapers de- ding the reversal of a constitutional amendment improperly mitted to the voters, which campaign was waged during the dency of judicial proceedings, could not be adjudged in con- pt of court. Under the doctrine of the Bridges case, the er of the court to punish for contempt is limited to publica- s creating a clear and present danger of substantial evils—*i.e.*, air influence on the court (*Graham* v. *Jones*).

wholly new element was injected into the doctrine of the rnhill case, that peaceful picketing in labour controversies is rm of free speech. The supreme court in a 5 to 4 decision fined the right of peaceful picketing to the "industry" in ch the labour dispute arose. In *Carpenters' Union* v. *Ritter's e,* the supreme court upheld a Texas decree, based on the e antitrust act, enjoining picketing by a painters' and car- ters' union against a restaurant, the owner of which had en- ed a nonunion contractor to erect a building some distance y from the restaurant. In *Bakery Drivers' Union* v. *Wohl,* ided on the same day, the court reversed a New York injunc- forbidding picketing by a bakery drivers' union against the er who sold to, and the grocer who bought from, peddlers of d who refused to hire a union man for one day a week. In instance the picketing was peaceful, truthful and directed hird persons outside the immediate dispute.

he Fair Labor Standards act does not violate the right of edom of the press guaranteed to newspaper publishers by the amendment to the federal constitution (*Walling* v. *Sun Pub- ing Co.*).

he distribution of handbills containing commercial advertise- ts may be regulated without encroaching upon the freedom he press. The court even sanctioned the licensing of the dis- ution of literature (*Jones* v. *City of Opelika*). A federal dis- t court granted an injunction against a compulsory flag salute. ontrary ruling by the U.S. supreme court, though unreversed, ot controlling, it ruled, since a majority of the present mem- s of the supreme court who have expressed an opinion have icated that the holding therein is unsound (*Barnette* v. *West ginia State Board of Education*). A petition by an American zen of Japanese ancestry claiming illegal restraint because of curfew ordered by a military commander of the Pacific coast a was held prematurely brought. The restraint was merely oral" as opposed to "actual" and hence did not warrant the ance of the writ (*Ex parte Ventura*).

n one of the most dramatic incidents of recent supreme court ory, the high court decided that the Nazi saboteurs, arrested e 27, 1942, could be tried constitutionally by a military com- sion and that the commission had been properly established and had followed the correct procedure. When the military trial was completed on Aug. 8, the president announced that six of the saboteurs had been executed and two imprisoned. Further evidence of the desire to safeguard civil liberty in time of war was the supreme court's special session to consider petitions of habeas corpus on behalf of the prisoners. The high court, in effect, required the military commission to show its credentials (*U.S. ex rel. Burger et al.* v. *Cox*). (*See* also CIVIL LIBERTIES.)

Constitutional Law.—Emergency legislation was sustained against attack on its constitutionality. Freeze orders prohibiting sales of commodities, *e.g.*, tires, typewriters, etc., were upheld as proper regulations, since they did not constitute an unlawful taking of property within the restriction of the 5th amendment of the federal constitution (*Henderson* v. *Bryan*).

The supreme court ruled that New York's property law must yield to executive agreements as the supreme law of the land, *i.e.*, the Litvinov agreement under which the U.S. rather than foreign creditors was entitled to the assets of the First Russian Insurance Co. (*U.S.* v. *Pink*).

A Georgia statute was invalidated which penalized one who contracted to perform service without intending at the time to perform, since the threat of punishment resulted in involuntary servitude (*Taylor* v. *Georgia*).

Discriminatory classification of crimes rendered the Oklahoma Criminal Sterilization act unconstitutional since it violated the equal protection clause of the federal constitution. It subjected to sterilization habitual criminals, defined as any person thrice guilty of crimes involving moral turpitude, exempting embezzlement, political offenses, violations of prohibitory laws and the revenue acts (*Skinner* v. *State ex rel. Williamson*).

Refusal of a state court to appoint counsel for an indigent defendant indicted for a noncapital offense was not a deprivation of liberty in violation of the 14th amendment. Not every denial of counsel constituted denial of due process. The cases in which the supreme court held a denial of due process were those in which the accused had been denied a fair trial (*Betts* v. *Brady*).

A former U.S. attorney, charged with conspiracy to defraud the U.S., was deprived of his constitutional rights when he was denied separate counsel in a joint trial of the alleged conspirators, since he did not waive this right. There was no deprivation of due process by the exclusion of women from the federal jury lists from which the indicting federal jury, sitting in Illinois, had been selected, despite an Illinois statute providing for women jurors (*Glasser* v. *U.S.; Kretske* v. *Same; Roth* v. *Same*). It was held that one not an attorney may waive his right to counsel and trial by jury in federal criminal court proceedings (*Adams* v. *McCann*).

Criminal Law.—To be punishable, fraudulent statements must be intended to affect the federal agency involved (*Terry* v. *U.S.*). The unauthorized taking of scrap from a plant under government contract was adjudged a federal crime (*U.S.* v. *Anderson*). A conviction for intimidating witnesses was sustained although no proceedings were pending at the time (*U.S.* v. *Perlstein*). The addressing of disparaging remarks to a member of the armed forces was held to constitute disorderly conduct (*N.Y.* v. *Vogt*).

Testimony adduced by divulging to a witness the contents of an illegally intercepted telephone message was held admissible in evidence, since no use of the intercepted communications or their contents was made at the trial. Such a disclosure would have been a violation of the Federal Communications act (*Goldstein* v. *U.S.*). Likewise, the overhearing, through the use of a detectaphone placed in an adjoining room, of what a person stated into a telephone transmitter was not a violation of the Federal Communications act, since there was neither a communication nor an interception within the terms of the act. Neither the trespass involved in placing a detectaphone in the room on the previous day nor the use of the detectaphone violated the 14th amendment of the federal constitution (*Goldman* v. *U.S.*).

A convicted defendant's charge that his plea of guilty had been obtained by FBI coercion should have been heard (*Waley* v. *Johnson*) as should have been a charge that perfection of an appeal was prevented by prison officials (*Cochran* v. *Kansas*). A convicted defendant was entitled to a writ of habeas corpus to prove that his conviction was based on testimony known to be perjured and the suppression of favourable testimony through intimidation (*Pyle* v. *Kansas*).

A plea of guilty at a preliminary hearing was not admissible as evidence when at the time of making it the accused had neither counsel nor was he advised of his rights (*Wood* v. *U.S.*).

Domestic Relations.—Insanity does not bar a person from maintaining, through a legal representative, an action for divorce under a New York statute which contains no provisions expressly precluding such an action by an incompetent (*Mohrmann* v. *Kob*).

A person in the military service of the United States was held entitled to relief from an order requiring payment of alimony (*McGlynn* v. *McGlynn*).

The full faith and credit clause of the federal constitution required that a North Carolina state court recognize Nevada divorce decrees in a prosecution under a North Carolina statute for the bigamous cohabitation of two individuals who obtained such divorce decrees in Nevada on substituted service, neither spouse appearing in the Nevada actions. The decision overrules the leading case, a milestone in supreme court history, *Haddock* v. *Haddock* (201 U.S. 562) (*Williams* v. *North Carolina*).

Sentence of life imprisonment, resulting in the civil death of the husband released the wife from any property obligation to her husband without any further action by her (*In re Lindewall's Will*).

Housing.—The obligation of the Federal Housing administrator as insurer of a loan by a bank to an industrial corporation could not be avoided in its entirety because the loan contained certain items which were ineligible for insurance, in the absence of fraud or an intent to evade the provisions of the National Housing act (*Ferguson* v. *Union National Bank*).

A state housing project was held not "public property used exclusively for any public purpose" within the meaning of the provision of the Ohio constitution authorizing enactment of a statute exempting such property from taxation (*Columbus Metropolitan Housing Authority* v. *Thatcher*).

A covenant prohibiting under penalty the sale or transfer of a residence to a "Negro or coloured person" was not enforceable in equity where the neighbourhood was changing as to character and environment so that enforcement would impose a hardship rather than a benefit (*Hundley* v. *Gorewitz*). (*See* also HOUSING.)

Insurance.—A federal court had jurisdiction of an action by a state insurance commissioner seeking a decree to entitle him to administer assets deposited with him by an insurance company for which a receiver had been appointed by another state and, it was held, should determine the rights of the commissioner as receiver, and of his state under its state law (*Fischer* v. *American United Life Ins. Co.*). The supreme court decided that an action brought by a reinsurer in a federal district court, on the basis of diversity of citizenship, for declaratory judgment to determine its rights under a reinsurance agreement, was improperly dismissed by the district court (*Brillhart* v. *Excess Ins. Co. of America*).

Evidence of disability, on or before the expiration date of his war risk insurance policy, was held to be established by a veteran's personal history of 15 years subsequent to injury (*Halliday* v. *U.S.*). However, failure to contradict, qualify or explain by evidence government proof of an insured veteran's admis after reinstatement of a war risk policy, contradictory to sentations concerning his health made in his application for statement, led the court to sustain a directed verdict in f of the government on its defense of fraud (*Pence* v. *U.S.*)

X-ray burns acquired in professional practice, resulting in putation, constituted a compensable injury under an acc policy insuring against loss from bodily injuries "through ext violent and accidental means" (*Murphy* v. *Travelers Ins.* Death from drowning due to a forced plane landing at sea held to result from participation in aeronautics within the r ing of a life insurance policy clause excluding it from d indemnity (*Neel* v. *Mutual Life Ins. Co.*) (*See* also INSURA

Labour.—*National Labor Relations Board.*—Managemen the right to freedom of speech (*NLRB* v. *Virginia Electr Power Co.*), but this right could not be used to utter derog statements about unionization, or to convey anti-union sentin to its employees through a public-address system. Such union language could be construed as interference if accomp by anti-union acts. Management had the right to due delibera but could not use it to avoid or delay the collective barga process. It also had the right to effect non-discriminatory t fers of its employees from one job to another; to threaten rep ment of economic strikers; to retain in his job an employee declined to apply for union membership, where the contrac not call for discharge; to refuse to handle employees' grie with an outside union; and to appeal to strikers and the p in defense of its version of a controversy.

It was management's duty to refrain from coercion, favouritism, from failing to follow grievance procedure called for. It was also management's duty to bargain collec in good faith and not to interfere with its employees' righ collective bargaining. The duty to bargain included the du bargain over the meaning of the contract as well. Manage it was held, must refrain from discriminatory discharge employee and from giving any assistance to a union. Nor an employer reduce the work day in violation of a contract.

Employees were held entitled to the protection of the W act even though they passed a resolution condemning thei ployer. A union could not take measures against members ing to strike in violation of a binding stabilization agree Economic strikers were held entitled to reinstatement ove or former workers, where no valid reason existed for not stating them. But there was no reinstatement for strikers v ing a no-strike agreement. Employees were held entitled to statement even though they participated in a demonstration. had the right to be represented by a collective bargaining ag and when discriminatorily discharged, were entitled to back and to vacation pay, even though the vacation was spent o picket line.

A union could not employ violence to influence an ele nor could the union penalize its members for using a labou ing device in furthering the war program. Labour was hel mune from the Antiracketeering act (*U.S.* v. *Local 807,* *national Brotherhood of Teamsters*), but not from the kickback law, nor from being held in contempt of court fo lating an injunction.

The burden was on NLRB of proving discrimination, could rely on circumstantial evidence in establishing the labour practice. For discriminatory discharge, reinstatemen back pay were ordered by the court. Part of the penalty on agement was the posting of notices to its employees in accor with the board's orders. A union was deprived of its barg status as a result of an economic strike; enjoined from pic during pending NLRB proceedings, and from compelling sto materials in an effort to impose a closed-shop contract. Work ppage in violation of a contract was held grounds for penaliz- labour. An election was voided where the union electioneered.

air Labor Standards Act.—The Fair Labor Standards act, ose constitutionality was upheld at the 1940–41 term, was the ject of five opinions of the court. The act was given a broad lication in an opinion that building service employees of a llord leasing quarters to tenants producing goods for inter- e commerce are subject to the Wage-Hour act (*A. B. Kirsch- m Co.* v. *Walling; Arsenal Building Corp.* v. *Walling*).

he court upheld an employer's freedom of contract to fix gular rate of pay" on the basis of which overtime compensa- is computed (*Walling* v. *A. H. Belo Corp.*) and the provi- of the act for liquidated damages (*Overnight Motor Trans- tation Co., Inc.,* v. *Missel*). The court also ruled that the inistrator of the wage and hour division does not have ority to delegate his subpoena power (*Cudahy Packing Co. a., Ltd.,* v. *Holland*); and that tips may be treated as "wages" er the act (*Williams* v. *Jacksonville Terminal Co.; Pickett* v. *on Terminal Co.*).

here there was a premium for night work, and an employee paid both rates, his overtime was to be computed on both s. Where two jobs were involved under the Wage-Hour and lsh-Healey acts overtime was to be computed as time and a of average hourly earnings for the entire work week or the rly or piece rate at which he was employed during overtime rs. Overtime is 150% of the regular, not the minimum wage. as held that employees could not bargain away their right to rtime. Employees in both intra- and inter-state commerce l not show the time spent in each for recovery under the ge-Hour law.

lanagement was held entitled to a detailed charge against it violation of the act, and on management was the burden of owing its agents' activities. It was held that the Wage-Hour inistrator may not delegate his power to subpoena, nor em- on "fishing expeditions" in demanding the production of ords.

onsent decrees prescribed acceptable employer conduct and ricted the delivery of "hot goods." Penalties were imposed on employer who accepted a "kickback" of part of restituted es; contempt of court in disobeying an order or violating a sent decree was punished by imprisonment. Injunctions were ained against employers even where violation had ceased. vever, where there was full compliance, an injunction against her violations was held unnecessary. Going out of business or orate reorganization afforded no protection against an injunc- . Evidence of past violations was held inadmissible. The idated damages award was ruled mandatory and not to be ved; an employee's release to such effect was held worthless.

ibel.—The insertion of a picture of the complainant's house a bank's institutional real estate advertisement warranted a l action. In the particular case, there appeared beneath the ure the words: "An important question 'To rent or to own'— nge a house into a home by owning it—we will help you de- how." Readers of the newspaper, the court stressed, might draw the inference that the bank was offering the house for and had acquired it upon a foreclosure due to the home er's (plaintiff's) financial inability to perform his obligations. plaintiff testified that the defendant had no mortgage upon house. Although inability to meet one's obligations does not essarily show want of good character, it may lower one in the mation of the community (*Goss* v. *Needham Co-operative k*).

woman against whom a libellous charge of incontinency was le in a telegram may recover from the telegraph company transmitting the message. Even though the telegram was libellous on its face, the defendant, being a public service corporation, was required by law to transmit it, provided in so doing it acted in a manner free from malice. The telegraph company acted under a qualified privilege, the qualification being that the receiving, sending and delivering of the telegram was bona fide, in the regular course of its business and free from ill-will or malice. The burden of proving want of good faith or malice was upon the plaintiff, which the jury here found (*Parker* v. *Edwards*).

A circular of a labour union which, among other recitals, contained a question whether the employer had "the inspiration to establish herself as the American 'Hitler' in the laundry industry" was held not to be libellous, but a privileged communication from the union to its employees whom it was seeking to unionize. Finding no evidence of malice, the court noted that it was only the implication in the question that contained any sting. It was a question and not direct characterization of the employer and was used in a communication to persons interested by one who was also interested, and thus was privileged if made without malice (*Wood* v. *Amalgamated Clothing Workers of America*). But an unincorporated union, through its president, may maintain an action in a New York state court to recover damages from a newspaper publisher for a libel injurious to the union's reputation. The union did not need to form a corporation in order to be recognized as possessing a reputation which the law would protect (*Kirkman* v. *Westchester Newspapers, Inc.*).

In *Sweeney* v. *Schenectady Union Pub. Co.*, the plaintiff, a representative in congress from Ohio, was characterized by the defendant publisher in its newspaper as a spokesman of Father Coughlin who had opposed a Jewish appointee to a federal judgeship. The publication was held libellous *per se* and the plaintiff was not required to allege special damages to recover.

Patents.—The supreme court for the first time in several years held a patent valid in a case involving the issue of patentability. In companion opinions, the court held that however useful a new device may be, it must reveal a flash of creative genius, not merely the skill of the calling, to be patentable (*Cuneo Engineering Corp.* v. *Automatic Devices Corp.; Automatic Devices Corp.* v. *Sinko Tool & Mfg. Co.*).

A patent owner granting licences on condition that the patented machine be used only with unpatented material furnished by the patent owner could not restrain one selling infringing machines (*Morton Salt Co.* v. *G. S. Suppiger Co.*). The court decided that the owner of a method patent authorizing manufacturers to use it only with unpatented materials furnished by it may not enjoin infringement by one supplying the manufacturers with unpatented materials for use by the patented method and aiding in such use. The maintenance of a suit by such owner to restrain any form of infringement was deemed contrary to public policy (*B. B. Chemical Co.* v. *Ellis*).

Nor may recourse be had to the doctrine of equivalents to recapture claims surrendered by amendment in the patent office. The amendment to a claim substituting one phrase for another was said to recognize and emphasize the difference between the phrases and to proclaim the patentee's abandonment of all embraced in that difference (*Exhibit Supply Co.* v. *Ace Patents Corp.; Genco, Inc.,* v. *Same; Chicago Coin Machine Co.* v. *Same*). (*See* also PATENTS.)

Public Contracts.—The supreme court awarded to a shipbuilding company profits which had been characterized by the government as "excessive" and "unconscionable." These profits were paid to a shipbuilding corporation under the terms of World War I contracts, containing "bonus for saving" clauses. The court rejected the government's claim that the profits were unconscionable, that the contracts were signed under duress because of the immediate need for ships in 1917–18, that the profits exceeded the customary profits of the time, and that the corporation did not show special efforts on its part to reduce the costs in order to participate in the bonus for savings (*U.S.* v. *Bethlehem Steel Corp.; U.S. Shipping Board Merchant Fleet Corp.* v. *Bethlehem Shipbuilding Corp.*).

To prevent a recurrence of this, control of profits was instituted through renegotiation. In accordance with a presidential order of April 8, 1942, officers of WPB, the army, navy and the maritime commission were authorized to inspect the books and plants of all companies with a large volume of war contracts to determine whether they had accumulated unreasonable profits. On April 28, the 77th congress passed the Sixth National Defense Appropriations act authorizing and directing the secretary of each department, whenever in his opinion excessive profits have been realized, or are likely to be realized from any contract with such department or from any subcontract thereunder, to require the contractor or subcontractor to renegotiate the contract price; to withhold from the contractor or subcontractor any amount of the contract price which is found as a result of such renegotiation to represent excessive profits; and to recover such excessive amount if paid. The law, which affects contracts exceeding $100,000, also provided that all future war contracts should have a clause permitting their renegotiation, but not more than one year after the close of the fiscal year of such contractor or subcontractor within which completion or termination of the contract or subcontract, as determined by the secretary, occurs.

The secretary of labour may require an employer to produce its wage and hour records of certain plants, even though the employer claimed that some plants were not covered by the Public Contracts act (*Perkins* v. *Endicott Johnson Corp.*).

From *Matter of Dictaphone Corp.* v. *O'Leary,* it appears that though the low bidder has not the right to have the court command the contracting officer to award the contract to him, nevertheless, he is entitled to have the question of lowest responsible bidder decided upon the criteria fixed by law for determining this standard. Should the awarding officer let the contract upon considerations other than those contained in the statutory definition of "the lowest responsible bidder," the unsuccessful bidder may petition the court to compel the award not to a particular bidder but in accordance with legal standards.

Public Utilities.—Public utilities were faced with the task of rationing electricity to effect material curtailment of power use and a state commission deferred to war authorities on the construction of electrical facilities (*Re Ark-La Electric Cooperative, Inc.*); but war, as such, did not exonerate a utility from its public duties (*Pennsylvania Public Utility Comm.* v. *Westmoreland Water Co.*).

The Federal Power commission's scope was deemed broad enough to include an electric power company which operated a generating plant only and sold electric energy to a company which transmitted part of such energy over its own facilities for resale outside of the state (*Hartford Electric Light Co.* v. *FPC*); and even to a company engaged otherwise only in intrastate generation and transmission of electricity, with all facilities within a single state (*Jersey Central Power & Light Co.* v. *FPC*). A sale of stock by one public utility to another was subject to regulation by both state and federal authority (*Jersey Central Power and Light Co.* v. *FPC*). Nor did the FPC exceed its authority in requiring a licence to make a specified accounting disposition of items allowed and disallowed in proceedings to determine the valuation of properties, for rate-making purposes, on the basis of actual, legitimate, original cost (*Alabama Power Co.* v. *FPC*). The SEC did not exceed its authority in requiring the rearrangement of the corporate structure of an operating utility not a holding company, whose fixed liabilities far exceeded the value of its assets (*In re Jacksonville Gas Co.*).

The illegal use of telephones was held to justify discontinua of service (*Pennsylvania Publications, Inc.,* v. *Bell Telephone of Penn.*). (*See* also PUBLIC UTILITIES.)

Social Security.—Generally charitable and educational org izations are exempt from social security taxes (*International form Federation* v. *District Unemployment Compensation Boa* but held not exempt were an institution organized rather for benefit of businessmen than for the public (*Better Busi Bureau of Washington, D.C.*); a military academy whose en receipts were paid as rent to a realty corporation whose offi and stockholders included the directors of the academy (*In Carroll*); and a hospital which maintained itself solely f patients' fixed fees (*Calif. Emp. Comm.* v. *Bethesda Foundati*

A department store was held the subject employer of indi uals employed in leased departments where the store retai control of operations (*Bingo Markets* v. *Administrator*). A da hall owner was held liable for taxes on the taxi dancers he gaged (*Marcovich* v. *Nickell*).

Whether an individual is covered by the Social Security depends in the main upon his status as either an employee o independent contractor; which distinction hinges upon the abse or presence of control over both the result of his work and method and manner of achieving that result. A part-time countant, not certified or registered, was held an employee though there was no actual supervision and some work was d at home (*Archer* v. *Murphy*); but auditors and accountants, cers of a corporation, contracting on their own behalf for s ices to a third party, were held independent contractors w the corporation had no control over such services (*Treas Ruling*). Piece-workers have been held employees (*Peasle Murphy*). A lessee of a soda fountain in a drug store, subjec the owner's control, was held an employee (*Rauschert* v. *M phy*), as was a truck-driver salesman, on the ground of ow control (*Zawacki* v. *Smith*), and itinerant musicians under tract to a dance-hall owner (*Maloney* v. *Wis. Ind. Comm.*).

However, independent contractor status was given to maga subscription solicitors where there was some control over res but none over performance (*Meredith Publishing Co.* v. *I Employment Security Comm.*); and to special artists under tract to a theatre to supplement the regular stage show (*R City Music Hall* v. *U.S.*).

A newspaper subscription solicitor was held unemployed eligible for benefits for any period of 7 consecutive days du which he earned less than $3, though a law effective Nov. 1942, providing for partial unemployment benefits, defines t unemployment as lack of any employment on any day, with such special provision.

Generally, participation in a labour dispute disqualifies an ployee from receiving benefits (*In re North River Logging C* Thus, refusal of intermittent workers to accept accustomed w during a strike was held a disqualification (*American-Hawa S.S. Co.* v. *Calif. Emp. Comm.*). But violent striking and pic ing following an NLRB certified election which was deeme have ended the labour dispute did not affect the eligibility member of the successful union (*Ex parte Badgett*), and ref to continue working under terms of an expired contract was not a labour dispute under the Indiana law (*Knox Consolid Coal Corp.* v. *Bd. of Review*).

Attempts to operate his own business while actively see employment did not disqualify one for benefits (*People* v. *Ne* but a wife voluntarily leaving her employment to join her band in another city was held to have left without good ca and hence disqualified (*Woodmen of the World Life Insur*

v. Olsen). (*See* also SOCIAL SECURITY.)

ıx.—*Local.*—In sustaining a tax on intangibles, the supreme
t noted that these are so associated with their owner that
and their transfer at death are taxable at the place of domi-
where his person and the exercise of his private rights are
ect to the control of the sovereign power (*Graves* v. *Schmid-*
). The court also upheld an estate tax levied by the state of
on the transfer by a New York resident of shares of stock
Utah corporation on the ground that "there is no constitu-
l rule of immunity from taxation of intangibles by more
one state" (*State Tax Comm. of Utah* v. *Aldrich*).

corporation franchise tax levied by California against a
esale distributing house which was one of a series of such
es operated by an Illinois corporation in several states was
valid on the ground that the corporation's business was a
ry and not a separate and distinct business within the state.
r such circumstances, the court ruled, "unity of use and
ıgement of the business which is scattered through several
s may be considered when a state attempts to impose a tax
ı apportionment basis" (*Butler Bros.* v. *McColgan*).

kewise, Tennessee could tax a foreign corporation which was
ged in a profit-sharing joint venture with the local distrib-
company in the distribution of gas to Tennessee consumers.
fact that the foreign corporation had established a commer-
domicile in Tennessee subjected it to a nondiscriminatory
by Tennessee upon its net income even where the corpora-
business was wholly in interstate commerce. (*Memphis*
ral Gas Co. v. *Beeler*).

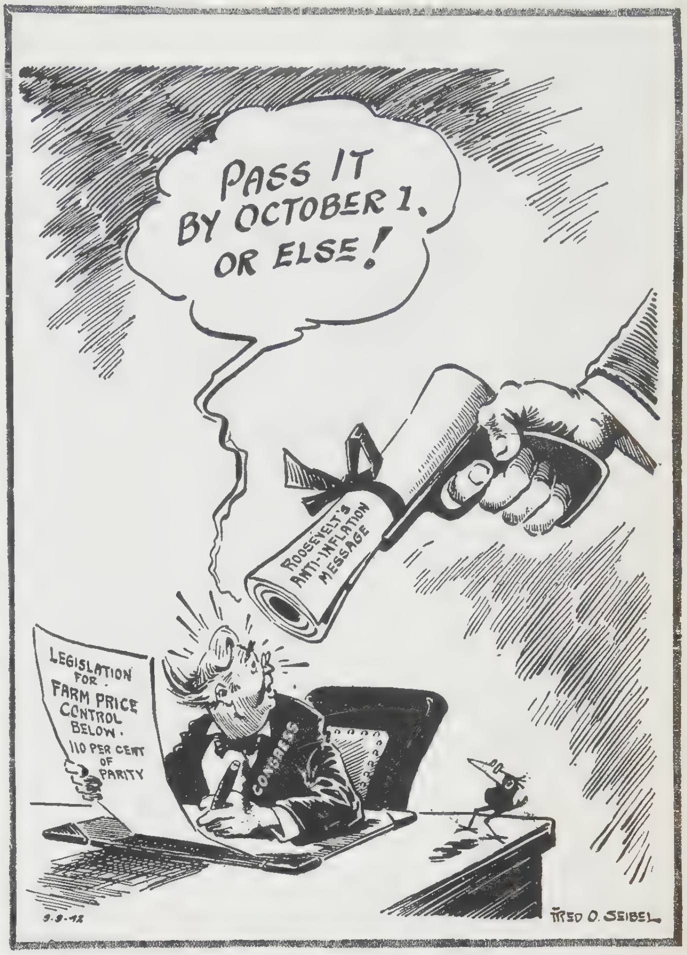
ıce post exchanges are operated as "arms of the government,"
ourt upheld the contentions of the taxpayer for immunity of
post exchanges from California's motor vehicle fuel licence
Standard Oil Co. v. *California* v. *Johnson*).

deral.—The supreme court held that recovery of a judgment
overpayment of federal income taxes against a collector of
ıal revenue does not bar a later suit against the United States
e court of claims to obtain an additional refund of taxes for
ame years (*U.S.* v. *Nunnally Investment Co.*). The court
that there was no "reorganization" as would entitle the tax-
r to exemption through a transaction whereby a bondholders'
nittee bought in the mortgaged assets of the corporation at
losure and transferred the properties to a new corporation in
n for distribution of all of the new corporation's common
to the depositing bondholders. The property was never
red from the old corporation but from a transferee of it
dholders Committee, Marlborough Investment Co. v. *Com'r*
nal Revenue; Marlborough House, Inc., v. *Same*). Nor, said
ourt, did this transaction qualify as a "reorganization" under
rovision which requires that "immediately after the transfer"
transferor or its stockholders or both" be in "control" of the
feree corporation (*Helvering* v. *Southwest Consolidated*
.).

rganization did result where corporate assets were transferred to a
orporation, new bonds and stock distributed to the bondholders of the
orporation, and stock interests eliminated except for the receipt of
purchase warrants. A beneficial owner of, or equitable claimant
operty is not barred from consummating a reorganization merely
se the actual conveyance is made by his trustee or titleholder (*Hel-*
v. *Cement Investors, Inc.; Same* v. *James Q. Newton Trust; Same*
wton).

rule that income is attributable for income tax purposes to the per-
rning it was applied in taxing a railroad company, which had leased
its property in perpetuity without a defeasance clause, where the
l dividends were paid by the lessee to the lessor railroad's stockhold-
ursuant to the lease agreement, and the federal income tax on divi-
payments was paid by the lessee (*U.S.* v. *Joliet & Chicago R.R. Co.*).

ıuity payments received by a divorced wife in accordance with a trust
nent executed prior to a Texas divorce decree were held taxable to
vorced wife, since she did not prove that the Texas court retained the
to control the income from the annuity to require the husband to
rt his divorced wife and thereby show a continuing obligation of
rt on the husband and a consequent liability on him for the tax on
nnuity payments.


PASS IT BY OCTOBER 1, OR ELSE!
ROOSEVELT'S ANTI-INFLATION MESSAGE
LEGISLATION FOR FARM PRICE CONTROL BELOW 110 PER CENT OF PARITY
CONGRESS
9-9-42
FRED O. SEIBEL

ROOSEVELT'S "ULTIMATUM" of Sept. 7, 1942, in which he threatened to decree executive curbs on U.S. wages and prices if congress failed to enact legislation by Oct. 1: cartoon by Seibel of the *Richmond Times-Dispatch*

The credit allowable with respect to dividends received from a foreign subsidiary which had paid foreign taxes, according to the court, is the proportion of the taxes paid by the subsidiary upon its accumulated profits (from which the dividends were paid), which the amount of the dividend bears to the accumulated profits of the subsidiary, which accumulated profits are the total profits or income minus taxes (*American Chicle Co.* v. *U.S.*).

The Revenue Act of 1942.—Among the most salient provisions of the act were: *Refunds.*—A postwar refund of excess profits tax was granted for an amount equal to 10% of the excess profits tax and within three months after the tax is paid; the taxpayer to receive noninterest-bearing bonds to mature on a sliding scale in such amount, which cannot be transferred, pledged or assigned until the cessation of hostilities in the war.

Salary Limitations.—Under presidential order an employer may not pay a salary which, after reduction by the federal income taxes on the amount of such salary, would exceed $25,000. The maximum salary for 1943 under the regulations will be about $67,000, except that if an employee establishes that his income from all sources is insufficient to meet customary charitable contributions, etc., without undue hardship, he may be paid an additional amount to meet such payments. Furthermore, an additional amount may be paid him if he establishes that, after resorting to his income from all sources, he is unable, without disposing of assets at a substantial loss resulting in undue hardship, to meet life insurance premiums on policies in force on Oct. 3, 1942; required payments on fixed obligations in effect on Oct. 3, 1942; and federal income taxes for prior years, not including taxes on the limited salary allowance.

Alimony.—The new law permits a husband to deduct payments required to be made to his wife, under a decree of divorce or of separate maintenance or under a written instrument incident to such divorce or separation. Such payments will be taxable to the wife.

Amortization of Emergency Facilities.—The privilege of amortization deductions extends to individuals, partnerships, estates and trusts claiming amortization of emergency facilities, and the date of the beginning of the emergency has been changed to Jan. 1, 1940.

Pension Trusts.—Serious restrictions are imposed on deductions for payments made under stock bonus, pension, profit-sharing or annuity plans, whether in the form of trusts or in the form of payments to insurance companies. The plan must be nondiscriminatory and no deductions will be allowed the employer who has failed to meet the requirements. The act further restricts the portion of contributions that may be deductible by the employer in each taxable year. Corporations can no longer deduct in one year unlimited lump sum payments to insurance companies for annuities covering past service benefits.

Nontrade or Nonbusiness Deductions.—By amendment retroactive to all prior revenue acts, an individual could now deduct "all the ordinary and necessary expenses for the production or collection of income, or for the management, conservation or maintenance of property held for the production of income."

Relief.—Special relief is accorded to taxpayers if they prove that the excess profits tax computed without the benefit of the section is "excessive and discriminatory," that the average base period net income is not a fair measure of normal earnings and that abnormal conditions affected business during the base period, such as: That in one or more years in the base period, production, output or operation was interrupted or diminished because of the occurrence of events unusual and peculiar in the experience of such taxpayer, either during or immediately prior to the base period; or that the industry of which the taxpayer is a member was depressed during the base period because of temporary economic events unusual in such industry, and as a result the business of the taxpayer during such period was depressed; or that depressed conditions prevailed caused by temporary economic circumstances unusual in its business experience generally; or that the taxpayer, either during or immediately prior to the base period, commenced business or changed the character of the business, and so the average base period net income does not reflect the normal operation for the entire base period of the business; or because of any other factor affecting the taxpayer's business which may reasonably be considered as resulting in an inadequate standard of normal earnings during the base period. A taxpayer wishing to avail himself of this section must also prove that its application to it would not be inconsistent with the principles underlying the provisions of this subsection, and with the conditions and limitations enumerated therein.

Victory Tax.—A 5% tax assessed against all income earned beginning 1943, except that of casual, domestic and agricultural labourers. Employers must withhold the tax and remit to the treasury. (*See* also TAXATION.)

Trade Regulation.—*Antitrust.*—To prevent impairment of the war program, the antitrust division agreed to grant a stay of prosecution on the joint recommendation of the secretaries of war and the navy.

Congress enacted a law suspending the running of the statute of limitations on violations of the antitrust laws until June 30, 1945, or until such earlier time as congress by concurrent resolutions, or the president, may designate. Congress went even further, and provided that whenever, after consultation with the attorney-general, the chairman of the War Production board finds and certifies in writing that the doing or omitting to do any act is in compliance with his written request or approval and is requisite to the successful conduct of the war, no prosecution or civil action shall be commenced with reference thereto under the antitrust laws, or the Federal Trade Commission act.

But the department of justice did not relax its enforcement of the antitrust laws generally. It instituted suit against the Associated Press, charging illegal restraint and monopoly by preventing nonmember newspapers from obtaining services available to AP members. In an action brought against the Great Atlantic & Pacific Tea Co., it charged the latter with attempts to use its dominant position to destroy competition through cutting prices, offsetting local losses by price fixing in dominated areas, and securing discriminatory prices and excessive, preferential discounts and rebates under the guise of advertising allowances unrelated to services rendered.

Held conspiracies in restraint of trade were the activities of a grocery bureau and its officers and directors in disseminating to member retail grocery stores admonitions to keep prices on articles sold by them, including those shipped in interstate commerce, within a minimum markup in accordance with a so-called "gentlemen's agreement" (*United States* v. *Food and Grocery Bureau*); and the activities of medical associations in interfering with a group health association, the business of which consisted of making available and financing medical and hospital services, rendering medical service through employment of physicians, and rendering hospital service through use of hospital staff and hospital facilities (*American Medical Assn.* v. *U.S.*).

Though a patent confers exclusive right to make, vend and use a patented article, the patentee's monopoly power over the article is exhausted after the sale, and he may not control the resale price or limit the source of the goods with which the patented article may be used. And where the patentee receives a substantial reward for the patented article, he may no longer control the article regardless of the legal form of the transfer (*U.S.* v. *Univis Lens Co.; U.S.* v. *Masonite*).

Several indirect checks upon the illegal use of patents were developed in recent decisions. The court held that a defendant may assert the plaintiffs' use of the patent in tying agreements, contrary to public policy, as a valid defense in a patent infringement suit (*Morton Salt Co.* v. *Suppiger; B. B. Chemical Co.* v. *Ellis*). A licensee under a licence requiring him to conform to prices fixed by the licensor (patent holder) for sales of competing patented articles by the licensor and other licensees may contest the validity of the licence patent when sued for royalties. Such a restriction on the price of articles entering interstate commerce violates the Sherman act unless it is within the protection of lawfully granted patent monopoly (*Sola Electric Co.* v. *Jefferson Electric Co.*). But charges that the owner of patents for the manufacture and sale of computer gasoline pumps and computer mechanisms, and its licensees, conspired to fix noncompetitive prices for the sale of such devices and to monopolize the manufacture and sale thereof in interstate commerce was held insufficient to constitute a violation of the Sherman act (*United States* v. *Wayne Pump Co.*).

Business Regulation.—The supreme court continued the trend of previous terms in sustaining an increasing amount of regulation of business and industry by federal and state governments.

A broad basis for federal regulation of business was laid down by the court in its opinion that the national power of regulation extends to such control of intrastate transactions as is necessary and appropriate to make the regulation of interstate commerce effective and that competition with interstate commerce affords the basis for regulation of the intrastate activity. This rule was enunciated by the court in upholding the application of a milk marketing order of the secretary of agriculture under the Agricultural Marketing Agreement act to milk produced and sold intrastate (*U.S.*
v. *Wrightwood Dairy Co.*). The supreme court also sustained the N
Gas act as a constitutional regulation under the 5th amendment of a
ness affected with a public interest (*FPC* v. *Natural Gas Pipeline C*
265, 268). The Illinois Commerce commission was held to be w
power to order the construction of facilities by a subsidiary pipe-lin
pany which purchased from its out-of-state parent company, op
wholly within the state, and sold gas at wholesale to distributors.
the pipe-line company was engaged in interstate commerce in the pu
and sale of gas, it was held subject to the exclusive jurisdiction of th
eral Power commission under the Federal Natural Gas act (*Illinois N*
Gas Co. v. *Central Illinois Public Service Co.*).

Trade Marks and Copyright.—The right to use a name "Personal F
Co." within a given trade area was protected against a newcomer's us
(*Beneficial Industrial Loan Corp.* v. *Kline*). Thus, a transportation
pany had the right to "Greyhound" (*Greyhound Corp.* v. *Goberna*)
a circus performer was denied the use of "Lone Ranger" and "
Silver" (*Lone Ranger, Inc.* v. *Cox*). "Vanaline" could not profit
similarity to "Vaseline" (*Chesebrough* v. *Hollywood Cosmetic Mfg*
And the Coca-Cola company procured a review by the U.S. suprem
of its charge of unfair competition against a company seeking to u
word "Cola" in its trade name.

Horse-racing charts were protected by copyright laws as are any
copyrightable compendiums (*Triangle Publications, Inc.,* v. *New E*
Newspaper Pub. Co.). And the right to renew a copyright to th
"When Irish Eyes Are Smiling" was held assignable (*Witmark & S*
Fred Fisher Music Co.).

Unfair Competition.—Courts, as usual, upheld the FTC rulings
misrepresentation; *e.g.*, paper processed to simulate walnut and
Copomo wood (*Haskelite Mfg. Corp.* v. *FTC*); retailers advertis
wholesalers (*Macher* v. *FTC*).

The commission branded as misrepresentation Dr. Lyon's claim t
tooth powder is an effective antacid or will correct acid mouth, a
slogans "Do as your dentist does," "Pink toothbrush" claims and
"The product which will give a beautiful smile" are relics of an ad
ing era now past.

Claims of cigarette manufacturers, coffee processers, and dispen
headache aids, as well as the use by the U.S. Shoe corporation of th
Cross" as a trade mark, likewise were cited before the commission
Alexander Smith Carpet Co. agreed not to designate its domestic p
by oriental names.

But the Federal Trade commission could not prohibit domestic c
tions from using French or other foreign terms or words to design
scribe or refer to perfumes made or compounded in the United States
an English translation appearing in connection therewith was held er
(*Etablissements Rigaud, Inc.,* v. *Federal Trade Comm.*).

Furthermore, exclusion of evidence as to the proper standard r
for the manufacture of fruit preserves was held to constitute a de
a fair hearing before the Federal Trade commission when it cha
corporation with falsely labelling products as "preserves" or "pur
preserves" (*Fresh Grown Preserve Corp.* v. *Federal Trade Comm.*).

Unemployment Compensation.—Held employees were barbers op
under "licensing" agreements granting them the privilege of using
chairs in return for one-third of the receipts to be paid the pro
(*Tharp* v. *Unemployment Compensation Comm.*); home workers
neckwear on a piecework basis for a neckwear manufacturer (*Peas*
Murphy); firemen on a drill barge engaged in dredging operation
navigable river (*Puget Sound Bridge and Dredging Co.* v. *State Une*
ment Compensation Comm.).

Held not employees were real estate salesmen working for a bro
a commission basis (*Wilson Sullivan Co., Inc.,* v. *Miller*); insuranc
men on a commission basis soliciting policies on the same basis for
other companies at the same time (*Columbian Protective Assn.* v.

Eligible for unemployment compensation was a person who lef
to attend college, for unemployment occurring after completion of th
period (*Wyka* v. *Colt's Patent Fire Arms Mfg. Co.*).

Employees participating in a strike arising out of a labour dispu
not deprived of unemployment benefits (*Nebraska Unemploymen*
pensation Law) unless there was a substantial curtailment of work (
v. *Kinney*). But employees were disqualified for the period of un
ment caused by a work stoppage due to a labour dispute (*Deshler*
Factory v. *Kinney*). Refusal to accept a former employer's offer
employment disqualified one from receiving benefits, regardless of
status or present distance from former work (*Alabama Textile F*
Corp. v. *Dept. of Industrial Relations*).

War Regulations.—Restrictions necessitated by the all-out war eff
cerned every phase of civilian as well as military operations.

Aliens.—The activities of aliens, even though American-born of J
ancestry, were affected by the curfew laws promulgated by the com
of the coastal military defense area (*United States* v. *Yasui*). A
enemies were barred from American trade by the terms of the "
with the Enemy act, even though the stock of such corporations w
by British subjects (*Drewry* v. *Onassis*). A nonresident enemy al
held entitled to maintain a suit in a state court, but any recovery
him would belong to the alien property custodian (*ibid.*). (*S*
ALIENS.)

Communications came under rigid control, and to prevent exp
by the enemy, a severe censorship barred weather reports, and
troop and ship movements, and experiments with war equipment, e
reasons of censorship, all public domestic point-to-point radio t
circuits within the United States' continental limits were closed b
of FCC and the Defense Communications board, except coastal an
to-shore stations under navy control. FCC ordered all persons po
radio transmitters who did not hold station licences to register suc
mitters with the commission before June 28. (*See* also CENSORSHIP

Manpower.—The Manpower commission was vested with power
ing on the conscription of labour. The commission listed essentia
ties which would be granted occupational deferment. It evolved th
ning Table plan providing the basis for the withdrawal of such wo
a rate that would permit others not suitable for active service to be

eplace them. The Manning Table was a recording, with appropriate orting data, of the different kinds of jobs in a plant from the view- of the type of workers needed to fill each job; the skill, training and ience needed by such worker; and the estimated length of time required ain a replacement for each worker. The replacement schedule is the based on the Manning Tables for deferment of employees.

ice Control.—Price control gained strong impetus when OPA's general mum price regulation was sustained by an injunction against C. Thomas s, Inc., and its chief supplier, Mutual Wholesale Food and Supply Co.

tioning of consumer goods was adopted as an integral part of the fed- government's regulation of the entire American economy. This highly tial control was delegated through WPB chiefly to OPA. OPA's ration- ower expanded rapidly to affect meat, coffee, sugar, etc. Certain com- ties such as typewriters, rubber and automobiles were frozen.

tioning regulations listed numerous sanctions for their enforcement, of which were applied, and the statute provided criminal prosecution ilful violations.

Colonial Operating Corp. v. *Hannan Sales and Service,* a lower court that due to rationing of automobiles, performance of a lease of prem- o be used "only for a showroom of automobiles and automobile acces- ." had become illegal and the tenant was excused from the payment of

nt Control.—In recognition of judicial supremacy over emergency ation, a Michigan state court held that it had no jurisdiction of sum- proceedings seeking eviction for nonpayment of rent higher than the num permitted by OPA rent regulation (*Vecchio* v. *Kelly*). Nor can e court render a declaratory judgment on a landlord's rights to higher OPA-permissible maximum rent (*Diefenbaugh* v. *Cook*). Exclusive ry jurisdiction to set aside provisions of the Price Control act or ations thereunder was held to be vested by the law in the emergency of appeals (*Vecchio* v. *Kelly*).

ective Service.—Bribery of Selective Service investigator, evasion of raft and wilful neglect to report for induction were penalized as a iracy to violate the Selective Service act (*U.S.* v. *Offutt; U.S.* v. *nell; U.S.* v. *Grieme*). (*See* also SELECTIVE SERVICE.)

e Soldiers' and Sailors' Relief Act of 1940 as amended and signed by resident on Oct. 6, 1942, afforded protection to accommodation co- rs, persons serving in the armed forces of the United Nations, and es on criminal bonds; limited the amount of interest that might ac- luring the period of service to 6%, unless the soldier's ability to pay not affected; granted relief to landlords against mortgages, taxes and tional sales, where relief had been granted against them; protected ages and contracts for the sale of real and personal property if ted before entry into service, permitted a lessee to terminate his when called into military service.

nsportation.—On May 2, 1942, Executive Order No. 9150 ordered ffice of Defense Transportation to assume jurisdiction over all rubber- transportation facilities including passenger cars, buses, taxicabs and s; develop programs to facilitate such transportation; and formulate ires to conserve and assure maximum utilization of existing services. ited car-load shipments for nondefense purposes, reduced special de- es, required pooling of facilities and barred pleasure driving. (*See* DEFENSE TRANSPORTATION, OFFICE OF.)

r Labor Board.—WLB became the supreme arbiter of labour rela- assuming jurisdiction over any labour dispute that it believed within omain even though the dispute was unrelated to the war effort, and where no dispute was involved. In exercising its jurisdiction over ng contracts, WLB preferred industry-wide negotiation to individual acts. It ordered modification of a union agreement, interpreted an guous contract, directed the exclusion of certain clauses from contracts, ed a change of shifts and also permitted a dissatisfied employer to e a protest clause in the contract while disallowing a duress clause, onferred union security by granting membership clauses in contracts check-off of dues by the employer.

occasion it deferred to the National Labor Relations board when an of unfair labour practice was involved, and directed compliance with board's order where a work stoppage would interfere with the war

der presidential order, after amendment to the Price Control act (Cost ving Stabilization act, Oct. 2, 1942) WLB and the treasury were ed power over increase and decrease of wages. The board announced ion of the 15% formula (Little Steel) as the basis for granting or ng any increase under which it grants increases up to 15% over wages on Jan. 1, 1941, this percentage being the estimated rise in the cost ing between that time and May 1942. If decreases had been granted lly covering the 15% gap they had to be deducted from the total in ng at increases still available. Increases were denied where a 15% n rates since Jan. 1, 1942, had already occurred and WLB modified calator clause which would have operated to raise wages above the limit. WLB departed from the Little Steel formula and granted ses above the 15% formula only to correct inequalities and inequities. arly increases were denied in rejection of the Little Steel formula where ng wages were in excess of those paid in the area and where grant- he increase would have created an inequality.

e also WAR LABOR BOARD.)

r Production Board.—WPB substituted for the Production Require- plan, under which materials were allocated by their end use, the olled Materials plan, the purpose of which was to assure a balance en the supply and demand of the controlled materials, so that they e available to consumers in the quantity and form and at the time lace required to meet authorized programs and schedules. It provided he division of available supplies of controlled materials among the us claimant agencies in the interests of the most efficient use of the ials in war production, as well as the further division of such sup- between prime and secondary consumers.

meet military requirements and the need for assuring equitable dis- ion, newspapers and magazines were cut in their consumption of print , processed foods were placed under rationing at consumer levels and inventories of consumer goods in the hands of large retailers and wholesalers were curtailed. Only small percentages of available materials remained to be distributed, requiring that each request be weighed carefully as against the need of the war program. The inventory order, L-219, limited the size of inventories of consumer goods in the hands of large retailers, wholesalers and stock-carrying branches of manufacturers. Simplification and standardization of innumerable commodities and elimination of many others released millions of tons of critical materials for military use. (*See* also WAR PRODUCTION BOARD.)

Workmen's Compensation.—Even though a worker was engaged in maritime service within the scope of the Federal Longshoreman's and Harbor Workers' Compensation act, recovery was allowed under the Washington State statute in the absence of action by federal authorities under, and of compliance by the employer with, the provisions of the federal act (*Davis* v. *Dept. of Labor and Industries of the State of Washington*).

A state may not discriminate against a foreign corporation; hence the latter could be required to register in Pennsylvania to obtain exemption from the duty to insure employees who are subject to the State Workmen's Compensation act provided they established financial ability to pay compensation (*United Fruit Co.* v. *Dept. of Labor and Industry*).

Illness caused by drinking contaminated water furnished by the employer from the same source as that used by the hospital on whose grounds the employees were working constituted an injury arising out of employment and hence compensable under the workmen's compensation laws (*Permanent Construction Co.* v. *Industrial Comm.; Union Mining Co.* v. *Blank*). Likewise compensable under the Connecticut Workmen's Compensation act was a disability resulting from an occupational disease contracted by an employee because of his peculiar susceptibility thereto (*LeLenko* v. *Wilson J. Lee Co.*). (*See* also BUSINESS REVIEW; CONSUMER CREDIT; RELIEF.)

(B. WE.)

Lawn Tennis: *see* TENNIS.

Lead.

Most of the figures in the accompanying world table are estimates, but they are presented as the best information available at the close of 1942. Figures carrying a decimal are reported outputs.

World Production of Lead
(In thousands of metric tons)

	1929	1937	1938	1939	1940	1941
Australia	177.3	234.4	235.7	252.4	280	315
Belgium	62.2	88.0	90.5	96.0	55	20
Canada	148.0	186.4	185.7	177.9	215	220
Germany	97.9	162.4	171.7	181.4	200	225
Burma	81.5	78.9	81.4	78.6	83	84
Mexico	248.8	231.2	242.7	215.7	196.3	155.3
Spain	133.3	30.0	36.0	27.0	56	57
U.S.S.R.	6.2	55.0	69.0	75.0	80	90
United States . .	624.2	426.3	344.4	381.4	389.2	438.2
World Total .	1,756.8	1,719.6	1,704.2	1,722.7	1,800	1,850
Ex. U.S. . . .	1,132.6	1,293.3	1,359.8	1,341.3	1,511	1,412

In the United States mine production of lead in 1941 was 461,426 short tons, and the refinery output was 470,517 tons from domestic ores, plus 100,450 tons from foreign ores, or a total of 570,967 tons. This supply of new metal was supplemented by a secondary recovery of 397,416 tons, besides imports which in the first nine months of the year totalled 260,982 tons—58,052 tons in ore, 23,631 tons in bullion and 178,179 tons of metal. The consumption of new lead was estimated at 812,970 tons, and total consumption, including secondary, at 1,050,000 tons. On the whole, the supply was fairly well maintained, in spite of increasing demands, while stocks at smelters and refineries declined during 1941 from 143,412 tons to 100,149 tons, consumers' stocks increased from 78,470 tons to 104,335 tons, leaving a net decrease of 17,398 tons, which was more than offset by a decrease of 20,276 tons in the metal in process and which is included in plant stocks, so that actually shipments by producers were slightly in excess of consumption.

Among the countries not listed in the table, Argentina produced 32,317 metric tons of 74% concentrates in 1941, while in Peru the output was 54,822 tons and in Bolivia 15,654 tons. The heavy decrease in Mexican output was largely due to labour troubles; exports to the United States were 90,116 tons in 1941.

In the first quarter of 1942 Spain produced 8,400 metric tons, 52,500 tons, and the United States reported 174,100 tons through April. (*See* also WAR PRODUCTION, U.S.) (G. A. RO.)

League of Nations.

The work of the League in 1942 was summed up by the secretary-general in his annual report: "As an active political power it has been almost nonexistent for some years; it lives, however, not only as a centre of economic, financial, social and humanitarian action and studies and as an instrument of reconstruction . . . but also as a possible agency for the resumption of co-operation between nations. The International Labor organization carries on bravely, holding its loyalties deep-rooted in organized labour and organized employers, to serve a high and valuable purpose. The Permanent Court . . . in spite of the fact that its activities are suspended, remains an organized reality, though driven by invasion from its seat at the Hague. All these organizations of the League of Nations are thus in being, ready at the appropriate moment to take their respective parts in the reconstruction of the world."

Details of this technical staff work at Geneva, still the official centre, at Washington and Princeton University, in the U.S., at McGill university, Canada, showed a remarkable record. Twenty years' experience in handling the problems of World War I was kept up to date; research work was continuous on the lessons to be drawn therefrom, on the effect of that war on current problems and above all on postwar reconstruction. A direct aim was to implement the Atlantic charter, now the common peace policy of all the allied nations, and to secure the acceptance by statesmen on both sides of the Atlantic of full responsibility for rebuilding the world on a basis of international collaboration.

The health organization at Geneva was collecting full data and making preparations to meet the menace of typhus, malaria, tuberculosis and other diseases increased by war. Standardization of vitamins continued and their distribution was successfully carried out. The Singapore bureau continued to function efficiently from an Australian base. The Central Board of Control at Washington worked out drug requirements for the world and was watching the traffic, decreased on the one hand by sea blockade, but increased on the other by the vast growth of military transport, notably in the Near East.

The economic and financial committee—in close liaison with the International Labour Office—held two sessions. Its program included publications such as *World Economic Survey*, the *Network of World Trade, Money and Banking, Wartime Rationing and Consumption,* while research on many other problems was in various stages of completion; *e.g.* commercial policies, raw materials, and the immediate relief and reconstruction needed when the war stops; problems of agriculture, currency, co-ordination of modern transport, economic depressions, social security with a special view to full employment and the just claims of the consumer, population problems.

The secretary-general, Sean Lester, said there could be no reconstruction without political security and confidence in peace. That must be followed, stated the report of the economic and financial committee, by restoration of international payments and re-opening of the multilateral channels for world trade. The general disequilibrium caused by war would need immediate remedies—for which purpose "a much larger degree of international co-operation than anything yet achieved will be necessary." For policies governments alone are responsible. But vital initial work on which these can be based was being done by the League of Nations. (*See* also DRUGS AND DRUG TRAFFIC; MANDATES; REFUGEES.) (M. FE.)

Leahy, William Daniel

(1875–), U.S. naval officer, was born at Hampton, Ia., on May 6. He was graduated from the U.S. naval academy in 1897. In 1912 he was chief of staff of the Nicaraguan occupation armies and in 1916 chief of staff in the Haitian campaign. Commissioned rear admiral in 1930, he became commander of the destr scouting force in 1931, chief of the bureau of navigation in and chief of naval operations in 1937. He was commissioned admiral in 1935 and admiral in 1936.

Upon his retirement from the navy in 1939, he was appo governor of Puerto Rico. In Nov. 1940, President Roos named him ambassador to the French government at Vichy this post, throughout 1941, Leahy succeeded in persua Pétain's government not to become totally immersed in Hi "new order." In April 1942, Roosevelt summoned Leah Washington "for consultations." Although one of the presid motives in recalling his envoy was to express disapprov Vichy's policies, his primary purpose was to appoint Leahy of staff to the commander-in-chief. Leahy was named to newly-created post on July 21, 1942.

"Lease-Lend" Act (H.R. 1776): *see* LEND-LEASE AD ISTRATION, OFFICE OF.

Leather.

The U.S. leather industry operated in 194 capacity levels in spite of the most difficult c tions it had ever experienced, and completed the year with is believed to have been the largest total output in its his Demands for military leathers and leathers for the manufa of military shoes, gloves, garments, and hundreds of other le products for war rose to all-time record proportions, while a same time there was no appreciable slackening of the abnorr high civilian demand which has prevailed for the past two y

Domestic slaughter increased in 1942 over 1941, and sup of domestic cattle hides, calfskins, kipskins, and sheep and skins were greater than in the previous year. Imports believed to have risen somewhat to supplement the dom supply, but import statistics were not available and trade mates varied greatly.

It was estimated that the total supply of the major typ raw stock, including both domestic production and imp amounted to around 24,500,000 cattle hides, 14,000,000 cal kipskins, 49,000,000 sheep and lambskins, and somewhat than 1,000,000 horse hides.

The tanning material situation was not favourable in At the beginning of the year the makers of shoe upper specialty leathers were threatened with a serious shortag chromium chemicals because of the excessive use of ch by war industries. This threat was alleviated later in the ye domestic production of chrome ore was increased and economies were effected in the use of chrome. A west tanner in 1942 obtained samples of waste anodizing liquors are discarded in large quantities by the aircraft industr ascertain whether the chromic acid in the waste could b covered and utilized in tanning liquors. Laboratory and ta tests of these liquors revealed that they possessed conside merit as a source of chrome tanning liquors. This study ha progressed far enough by the end of the year to evaluate pro the worth of the waste material as a tanning material sc

The situation in regard to other tanning materials was favourable than the chrome situation. About 65% of all table tanning materials used by tanners in the United Sta imported, and the war cut off many of the countries from these were formerly obtained, while difficulty in securing space from other countries limited imports. Such impo vegetable tanning materials as myrobalans, powdered myrob and extract, Sicilian sumac, valonea beards and cups, man bark, common gambier, Borneo cutch, and powdered va were not available, and supplies of some other important rials were limited.

Chestnut, formerly one of the biggest sources of domestic nning materials, had fallen victim to an unconquered blight, d only blight-killed trees remained as the chief source of estnut tanning extracts.

Much research was being done as a chemurgic project for e development of new domestic tanning materials. Alfred ssell, of the University of North Carolina, was studying the ra of the southern section of our country in search of new d desirable sources of tannin, and published a preliminary port showing some promising results. Government agencies re also studying the problem, and the activities of the depart- nt of agriculture were encouraging. Regional laboratories were ablished to encourage chemurgic developments, and at the stern regional laboratory at Philadelphia an extensive study domestic tannins was being made. The Tanners Council Re- rch laboratory at the University of Cincinnati also studied tain of these possibilities.

Among the most promising sources of domestic tannin at the se of 1942 were American sumac, canaigre, guayule, and the rk of the western hemlock and Sitka spruce.

The American tanning industry also made some use of nthetic tanning materials but, contrary to European practice, l not use these as true, complete tannins, but only as tanning ls or assistants. These synthetic agents are customarily ob- ned from industrial wastes, such as the phenols or naphthalene stes. It was believed that many other wastes could be similarly d to advantage.

One waste material thus used in increasing quantities was the ste sulphite liquor of the paper pulp industry. This liquor ntains solubilized lignin, the non-cellulosic part of wood. Lignin also a waste in such materials as straw or corn stalks.

A serious shortage confronted the tanning industry in 1942 a number of fats and oils used in leather manufacture. Several the oils which were most generally used before World War II re in 1942 unavailable or excessively high priced, and other s were substituted for these.

The nation's supply of leather raw stock, leather and finished ther products was protected through the year by a number government regulations.

In April the War Production board issued Order M-80 and sumed control of 80% of all available outsoles and insoles of litary grade and weight. Under a later amendment, the WPB dered the entire stock and production of heavyweight sole thers set aside for military and lend-lease production. Still er amendments tightened further the WPB's control of sole ther and in August the WPB ordered tanners to set aside a rcentage each month of heavier weights of manufacturers' pe sole leather, after military requirements were met, and to ake this leather available to shoe repairers. (Manufacturers' pe sole leather is used by shoe manufacturers and is a softer nnage than that of finders' sole leather which is used by shoe pairers.)

The WPB in April amended General Imports Order M-63 to quire importers of foreign hides to secure permits from the efense Supplies Corp. and to present firm offerings and firm ds before the transaction goes through. A month later the PB added many types of hides and skins to the list under neral Imports Order M-63 which require permits for im- rtation. Still later the WPB included hides and skins in a list 500 import items guaranteed preferential treatment in shipping ace assignments.

The entire supply of domestic cattle hides, calfskins, kipskins, d buffalo hides was placed under control of the WPB by der M-194, issued in July, and deliveries were made to tanners der a permit system designed to insure equitable allocation of hides and skins to increase the production of leather of suitable quality for military purposes and to direct hides from non-essential civilian uses into essential civilian uses.

Conservation Order M-265, issued by the WPB in November, restricted to military and lend-lease products the cattle hides, goatskins, kidskins, calfskins and kipskins used in the manufacture of garment leather. Horse hides were also brought under the control of the WPB through Order M-141, issued in May. The order gave the WPB complete control of all horse-nide fronts suitable for gloves, jackets, windbreakers and other military leather garments. It was amended in November to place quota restrictions also on the processing of fronts, butts and shanks.

In March the WPB placed restrictions on the processing of raw goat, kid and cabretta skins and provided for production on a monthly quota basis. It was also ordered that any skins which could be processed to more than 5¾ ft. be reserved for military use; this requirement being eased somewhat by an amendment issued Dec. 31.

Numerous regulations affecting shearlings, moutons and wool skins were issued during the year. All shearlings except grade 4 could be processed and sold only to fill orders placed by the army air forces, and the entire production and inventories of shearlings must be submitted to the AAF for inspection and grading.

Statistics of the extent of the foreign trade of the industry in 1942 were not available under censorship. However, it was known that large quantities of leather were exported for lend-lease account and large quantities of raw stock were imported to provide materials for American tanneries. (*See* also SHOE INDUSTRY.)

(R. B. B.)

Lebanon.

Independent republic, formerly French mandated territory, bordering the eastern Mediterranean. Area 3,475 sq.mi.; pop. (est.) 900,000; chief town: Beirut (cap. 180,000). President (1942): Alfred Naccache. Language: Arabic; religion: mainly Mohammedan.

At the end of Dec. 1941 King George VI sent a message of good wishes to the president of the Lebanese republic, constituting full recognition by the British government of the independence of the Lebanon. Letters of credence were presented by Brig. Gen. Spears, as first British minister, on March 27 and George Wadsworth, first United States representative, as consul-general on March 21. Allied victories in North Africa in November resulted in the reduction of hoarding. At Beirut between Nov. 1–9 the price of white flour fell from 195 to 160 piastres a kg., wheat from 130 to 105 piastres and the sovereign from 42.60 to 36 piastres.

For financial, trade and agricultural statistics, *see* SYRIA.

Ledochowski, Vladimir

(1866–1942), Superior General of the Society of Jesus, was born Oct. 7 in Lower Austria. A nephew of the late Cardinal Ledochowski, he was educated for the clergy, studied at the Tarnow seminary in Poland and at the Germanicum in Rome. He took his final vows in the Society of Jesus in 1901. He became provincial for Poland, 1902, and assistant of the German Assistancy, 1906. As Superior General of the Society of Jesus, 1915–42, he doubled the membership of the Jesuits and increased their provinces and missions. Father Ledochowski worked for unity in the Christian Church and for collaboration between the occidental and oriental churches. He established missions through the orient, where he tried to organize the native clergy. He bitterly opposed the German invasion of Poland in 1939 and condemned nazi atrocities in Europe, especially in Poland. Father Ledochowski died at the Borgo Santo Spirito, headquarters of the Jesuit Society in Rome, Dec. 13.

Leeward Islands: *see* WEST INDIES, BRITISH.

Legislation: *see* LAW.

Lejeune, John Archer

(1867–1942), U.S. marine corps officer, was born Jan. 10 in Pointe Coupée parish, La. He was graduated from Louisiana State university, 1884, and from Annapolis naval academy, 1888. He was commissioned as lieutenant of the marine corps in 1890, saw active service off Cuban shores in the War of 1898, and commanded a marine battalion in the Panama revolt, 1903–04. He was colonel during the Mexican crisis in 1914 and led a marine brigade that battled its way into Veracruz. During World War I he was made a major general, July 1918; in the same month he led the 2nd division, composed of marine and regular troops in offensive operations in St. Mihiel, Champagne, the Meuse-Argonne, and crossed the Meuse on the eve of the Armistice. He was given command of the marine corps in 1920 and supervised the operations in the Nicaraguan campaign, 1928. Gen. Lejeune retired in Nov. 1929 and was superintendent of the Virginia Military institute, leaving that post in 1937. He was decorated several times for valour and was promoted to rank of lieutenant general in April 1942. He died in Baltimore, Nov. 20.

Leland Stanford Junior University: *see* STANFORD UNIVERSITY.

Lemons and Limes.

The United States lemon production is entirely in California, where the 1942 crop was 13,650,000 boxes of about 76 lb. net, as estimated by the department of agriculture Dec. 1, 1942. Production in 1941 was 11,753,000 boxes. In 1940 it was 17,236,000 boxes, and the ten-year (1930–39) average was 8,815,000 boxes.

Limes are produced, in the United States, only in Florida. The 1942 crop was estimated at 175,000 boxes, compared to 150,000 boxes in 1941 and a ten-year average of 37,000 boxes.

(S. O. R.)

"Lend-Lease" Act: *see* LEND-LEASE ADMINISTRATION, OFFICE OF.

Lend-Lease Administration, Office of.

The lend-lease act, passed by the U.S. congress after almost two months of continuous hearings, was approved by President Roosevelt March 11, 1941. The act empowered the President to provide goods and services to those countries whose defense he deemed vital to the defense of the United States. Lend-lease goods began to move immediately after passage of the act, even though the first lend-lease appropriation act was not passed until March 27, 1941.

The Office of Lend-Lease Administration, as a central administrative and policy-making organization, does no actual purchasing. Procurement is handled through the agencies which purchase for the U.S. government and armed services, so that competition between lend-lease procurement and other procurement is reduced to a minimum. These procurement agencies are the war department and navy department for military and naval items, the maritime commission for merchant ships and ocean transportation, the department of agriculture for foodstuffs and other agricultural products, and the procurement division of the treasury department for industrial raw materials and other items.

The lend-lease act provides that the president shall report to congress every 90 days as to the status of operations under the act. The seventh such report was issued as of Dec. 11, 1942. Up to Dec. 1942, a total of $18,410,000,000 had been appropriated to the president and, in addition, the transfer had been author
of goods and services to a total of $35,970,000,000 from ap
priations to the war and navy departments and maritime c
mission, not including the value of ships which may be leased

After Pearl Harbor, the lend-lease program was integrated w
the nation's over-all war effort. Combined agencies were est
lished in Jan. 1942 to co-ordinate strategy and map the proc
tion of munitions and raw materials. The needs of U.S. allies w
balanced with the needs of the growing forces of the Un
States. For example, the percentage of U.S. tank produc
allocated to a given theatre of war is determined by the imp
tance the combined chiefs of staff place upon that theatre.
plementing such decisions, lend-lease aid was being provided
in 1942 at a rate amounting to approximately 15% of total U
war production.

The value of lend-lease goods transferred and services rende
from the beginning of the program to the end of Jan. 1
amounted to $8,935,000,000. Goods transferred comprised 8
of this amount and services rendered 20%. Goods transfer
consisted of (a) military items such as planes, tanks, guns
ammunition; (b) industrial materials such as steel, petrole
products and machine tools; and (c) agricultural commodit
including principally foodstuffs. For the year 1942, military it
comprised about 61% of total transfers, industrial materials 2
and foodstuffs 16%.

Services rendered in 1942 included principally the repair
ships of the United Nations, the provision of the necessary s
ping to carry goods to lend-lease countries, new factory and s
yard facilities built in the United States for the production
lend-lease goods, supply services performed in the base a
throughout the world, and the training of United Nations
forces.

In 1942, roughly one-third of lend-lease exports were going
the United Kingdom, one-third to the U.S.S.R. and one-third
the middle and far east, Australia and other areas.

Following are the nations to which lend-lease aid could
provided at the end of 1942: Argentina, Belgium, Bolivia, Bra
the British empire, Chile, China, Colombia, Costa Rica, Cu
Czechoslovakia, Dominican Republic, Ecuador, Egypt, El Sa
dor, Ethiopia, France (Fighting French), Greece, Guatem
Haiti, Honduras, Iceland, Iran, Iraq, Liberia, Mexico, the Net
lands, Nicaragua, Norway, Panama, Paraguay, Peru, Poland, T
key, U.S.S.R., Uruguay, Venezuela and Yugoslavia.

In 1942 the program of reciprocal lend-lease became a mate
aspect of the U.S. supply problem. Large numbers of Ameri
troops overseas were being provided, under reciprocal lend-le
with services and materials ranging from repair facilities, tra
portation and housing to food, uniforms and ordnance. This
formal pooling of resources was made formal on Sept. 3, 1942
the signing of agreements with the United Kingdom, Austra
New Zealand and Fighting France. (*See* also AGRICULTU
BUSINESS REVIEW; TARIFFS.)

(E. R. Ss.

Lepidolite: *see* LITHIUM MINERALS.

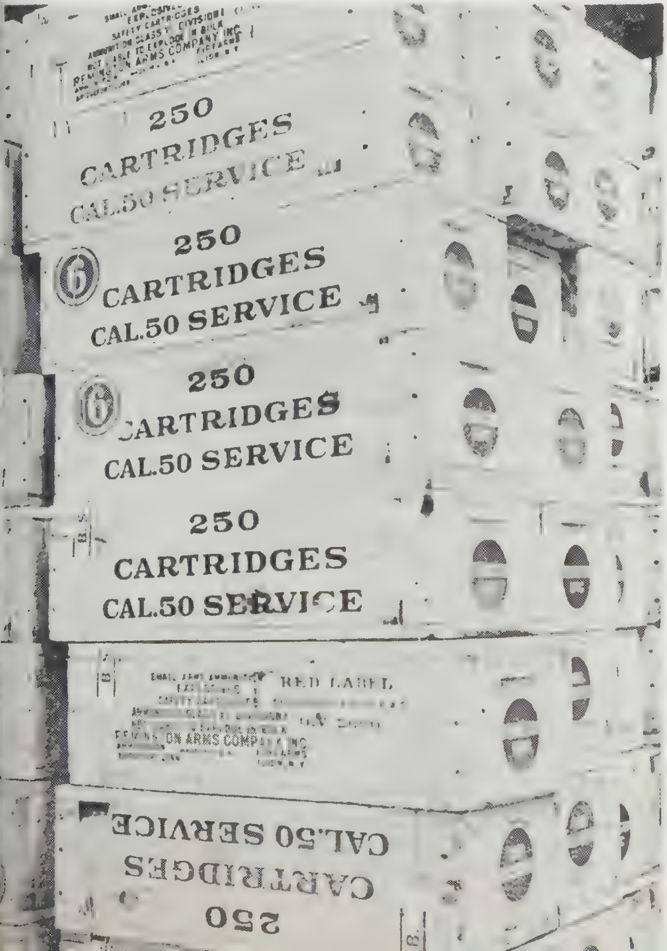
Leprosy.

The war in the Pacific brought under Japan
control the leprosy hospitals and asylums in
conquered countries. The fate of lepers and the progress
leprosy in these regions would not be known until the end
the war. The literature from the other parts of the world
which leprosy is endemic revealed little progress.

The diphtheria antitoxin and toxoid treatment of leprosy
favourably reported from Thailand in 1940 was not found be
ficial by leprologists in other countries. A number of caref
controlled clinical trials were made but practically all invest

. TRUCKS LOADED WITH LEND-LEASE SUPPLIES for the U.S.S.R., on a
d in Iran in 1942

MUNITION FOR U.S.-BUILT PLANES of the royal air force awaiting ship-
nt at an Atlantic port in 1942



TRUCK CABS and drums of aviation gasoline awaiting lend-lease shipment from an Atlantic port to the middle east in 1942

A BOMBER TIRE and crate of aircraft parts at a U.S. port ready for shipment to the U.S.S.R. in 1942 under lend-lease agreements

tors observed the treatment to be of no value. Reports were made from India, China, South Africa, Philippines, South America and the United States.

After 1916, leprologists used an intracutaneous skin test (lepromin or Mitsuda test) which was useful in separating cutaneous from neural leprosy. A crude suspension of heat-treated macerated leprous nodules was originally employed. Disadvantages of the test were the impossibility of standardizing the dosage and the interval of several weeks required for a nodule to develop in patients giving positive reactions. In attempting to correct these drawbacks an investigator, by means of chloroform extraction, obtained from leprosy nodules a practically pure harvest of leprosy bacilli. Relatively pure protein fractions of the bacilli were then prepared. Using this purified inoculum for intracutaneous tests a standard dosage was possible and the "reactors" responded within two or three days with a tuberculinlike skin reaction.

In areas where leprosy is relatively rare, cases frequently are far advanced before the true diagnosis is obtained. Of 425 lepers at the Leprosorium, Carville, La., 154 (36%) were diagnosed as and treated for syphilis by the physician who first saw them. Positive Wassermann or Kahn reactions were reported in 238 (56%) of these patients.

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Lettuce. Production of lettuce in the United States in 1942 was 23,858,000 crates, compared with 23,042,000 crates in 1941 and a ten-year (1931–40) average of 19,979,000 crates. The planting in 1942 was 156,490 ac., compared with 156,980 ac. in 1941 and a ten-year average of 156,010 ac. The acreage of early lettuce in 1942 was 38,300 ac. compared with 36,500 ac. in 1941. The department of agriculture in announcing vegetable goals for 1943 asked that planting of early lettuce be reduced 34,850 ac.

U.S. Seasonal Production of Lettuce and Farm Prices per Crate, 1942 and 1941

	1942	1942	1941	1941
	crates	Farm price per crate	crates	Farm price per crate
Early	5,690,000	$2.18	5,261,000	$1.40
Second early	6,904,000	1.88	6,541,000	1.94
Intermediate	836,000	1.76	925,000	1.35
Late (1)	5,209,000	3.23	5,512,000	1.78
Late (2)	5,219,000	3.28	4,803,000	1.55

(S O. R.)

Levi-Civita, Tullio (1873–1942), Italian mathematician, was born March 29 in Padua, Italy, and was educated at Padua university. He was professor of rational mechanics at the University of Rome, 1919–38, and was one of the two European mathematicians invited to lecture at the Chicago World's fair in 1932. Prof. Levi-Civita, regarded as one of Italy's greatest mathematicians, was a disciple of Albert Einstein and had made important contributions in the fields of hydrodynamics, theoretical dynamics and pure geometry. In 1938, when Mussolini decided to follow Hitler's anti-Semitic policies and "cleanse" Italy of Jewish elements, Prof. Levi-Civita was disbarred from the Real Accademia dei Lincei in Rome, on "racial grounds." The Vatican, however, showed its disapproval of the new racial laws by inviting the "outcast" mathematician to the scientific congress called by the Pontifical Academy of Sciences in 1940. Prof. Levi-Civita was the author of *The Absolute Differ tial Calculus* (1927) and *Three Lectures on Mathematical S jects* (1938). His death was reported in an official broad from Vatican city, Jan. 1.

Libel: *see* LAW.

Liberal Party. The Liberal Party Organization—so-cal to distinguish it from the Liberal Nation ists who adhere to the coalition government—scrupulously served the electoral truce. This was an arrangement by which other parties did not contest the candidature, at a by-election a member of the party which last held the seat. The truce p vented by-elections from being, as they normally are, indicati of the movement of political opinion in the period between g eral elections, and some dissatisfaction was expressed with results. On balance, however, the advantages of maintaining pact for the duration were accepted, and partisan propaga was thus virtually at a standstill. At the party's annual assem in September, however, an extensive program of internatio policy and domestic reform was discussed and agreed.

Among these the most outstanding was the future of the r tions between state and industry. It was recognized that m of the controls now exercised by government over industry social life would have to be retained after the war, if only order to prevent inflation and ease the transition to peace co tions. But it was apprehended that in certain areas of the ind trial field state control or supervision would become a pern nency; and the case for this change, and its limitations, w being investigated on the basis of the inquiry conducted by Temporary National Economic committee in the United States America.

A question of importance to this small party was electoral form. The number of seats which it occupied in the house commons was entirely disproportionate to the strength of its lowers in the country; and there was a growing agitation for a system of voting which would ensure a more equitable r resentation and (b) the abolition of certain electoral practi which unduly favour wealthier candidates. (Me.

Liberia, the only completely Negro country in the wo is situated on the west coast of Africa, bounded Sierra Leone on the northwest, by French West Africa along hinterland and east sides. Area, *c.* 46,000 sq.mi. Pop. (es 2,000,000. Capital city, Monrovia (est. pop., 10,000). Presid in 1942, Edwin J. Barclay. Language: official, English; tri tongues in hinterland. Religion: Christian (Protestant).

History.—The year 1942 saw this small Negro republic c to the fore as a place of strategic importance in the war. T important United States air bases and several smaller ones w established and became vital links in the ferry service delivering war planes from Brazil to Africa, the near e U.S.S.R., India and China. Whole villages sprang up arou these bases in 1942, with offices, repair shops for planes, barra for passengers and crew, and hospitals staffed with U.S. wh doctors and nurses.

On June 17, 1942, an American expeditionary force of consid able size landed in Liberia, in accordance with an agreem between the Liberian government and the United States gove ment. Many of these troops and technicians were Negro. T United States thus assumed a virtual military protectorate o Liberia for the duration of World War II. Roads were b between strategic points, and air service was established fr county to county. German traders and the consular staff w asked to leave the country. A U.S. military adviser was put mmand of the small Liberian militia, and medical experts m the United States tackled the problem of eliminating larial mosquitoes and tsetse-flies.

Education.—In 1942 there were about 100 schools, mostly ele- ntary. Leading institutions are the College of West Africa and beria college, both in Monrovia.

Banking and Finance.—Revenues in 1941 were $1,166,694. e foreign funded debt on Sept. 30, 1942, was $1,303,000; the ernal floating debt $161,516. Public debt, about $1,500,000. rrency: the Liberian dollar equal to the U.S. dollar in value, h exchange rate fixed at $4.80=£1 sterling. Chief bank: Bank Monrovia, controlled by the Firestone company.

Trade.—Overseas trade was largely limited in 1942 to the ited States and was greatly reduced because of shipping re- ictions. Imports in 1941 were valued at $3,291,967 and exports $4,987,763. Chief exports (1942): rubber (88%) from Fire- ne Plantations company at Marshall (75,000 ac. under culti- ion in 1942), gold (10%), piassava (1%), all others 1%. nsiderable gold was mined in 1942, surpassing all previous rs. The financial adviser to the government is appointed by president of the United States according to a loan agreement. viser in 1942: John Dunaway.

Communications.—There is a government-owned radio sta- n in Monrovia. Motor roads in 1942 totalled about 250 mi. ere were no railroads in 1942. Air service between counties was ablished in 1942. There were no harbours in the country.

(J. H. Fy.)

berty Ships: *see* Shipbuilding; Shipping, Merchant rine; United States.

braries. Perhaps the most serious problem in 1942 was the increasing difficulty of filling library staff vacan- s. Men, from trained specialist to janitor, were serving in the ned forces, and both men and women, particularly in the cleri- grades, left library positions for work in industry or in the ernment service.

The 1941–42 report of the board of education for librarianship .L.A.) listed 32 accredited schools of various types as meeting standards; all were connected with teaching institutions. The al enrolment March 1, 1942, was 1,677, including 152 advanced 210 special or nonmatriculated students. This was a decrease 250 as compared with 1941. A further decrease is anticipated 1942–43.

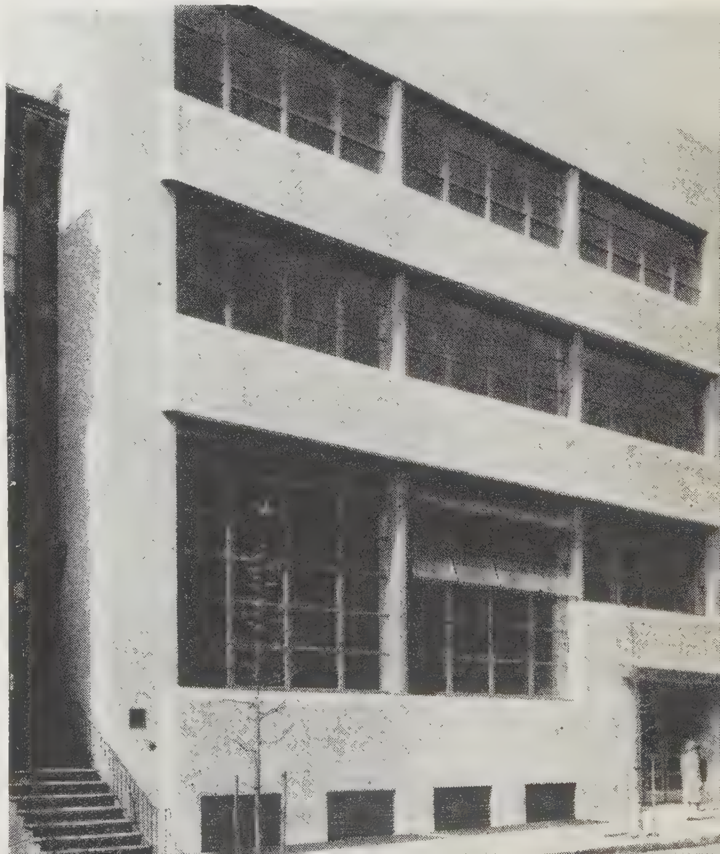
Some libraries reported decreased use, largely owing to less employment throughout the U.S. and to the withdrawal of ny men from civilian life, but increased demands were made many libraries in industrial areas, especially for scientific and hnical books. The effect of the war on college libraries could be foreseen. That libraries are essential in total global war mitted of little argument. War information centres were estab- hed. The resources of university and research libraries in many ds were utilized. Good books that would help in understanding problems of war and peace were wanted. The value of read- for recreation was not overlooked. American librarians were ing their best to meet these needs.

Between Jan. 12 and March 12 the "Victory Book Campaign" lected 6,408,804 volumes to supplement the collections pro- led by the army and navy. Of these only 3,845,283 were suited the needs of the armed forces.

In view of possible bombing many libraries removed valuable oks and records to places of comparative safety. The micro- ming of important card catalogues was considered. The National Resources Planning board issued a manual, *Protection of Cultural Resources against the Hazards of War.* The publication of the *Guide to the Reference Collections of The New York Public Library,* the studies undertaken by the A.L.A. Resources board, the discussion of plans for more effective specialization and co-operation, directed attention to the part that American research libraries would be called upon to play in postwar reconstruction, and to the place that they would occupy in the world of scholarship when peace was again established. The Association of Research Libraries successfully initiated plans for the reprinting in book form by photo offset process of the author catalogue of the Library of Congress. The advantages of having the printed cards in book form were many and the savings to libraries maintaining depository catalogues were considerable. The Biblioteca Benjamin Franklin established in Mexico City as a centre of information about American institutions was dedicated on April 13. The Rockefeller foundation and the Carnegie corporation continued their generous support of library activities in many fields. The Carnegie grant ($55,800) for the development of libraries in technological colleges, the second Rockefeller gift ($60,000) for the purchase of scholarly American periodicals for libraries in war areas in Europe and Asia, and a Rockefeller grant for the microfilming of Canadian newspapers and other historical documents, were worthy of special mention.

No important library building was completed in the period under review, but the dedication in Dec. 1941, of the Joint University library in Nashville marked a significant development in library co-operation. The new library, jointly owned and directed, served the George Peabody College for Teachers, Scarritt college and Vanderbilt university.

Size of Collections or Statistics of Libraries.—Nineteen libraries in 1941 contained more than 1,000,000 volumes each: the Library of Congress, 6,102,259 volumes (June 30, 1940); the New York Public library, 4,351,136 volumes (comprising reference department 2,831,334 volumes; circulation department, 1,421,004 volumes; and Municipal Reference library, 98,798 volumes) (Dec. 31, 1941); Harvard university, 4,265,729 volumes (June 30,



DITION to the 135th street branch of the New York public library, opened y 28, 1942. This is the Negro branch of the library

VICTORY BOOK rallies were held daily on the steps of the New York public library Jan. 19 to 31, 1942. About 600,000 books were donated to the U.S. armed services during this two-week period

1941); Yale university, 3,074,817 volumes (June 30, 1941); Cleveland (Ohio) Public library, 2,112,129 volumes (Dec. 31, 1940); Chicago (Ill.) Public library, 1,892,016 volumes (Dec. 31, 1940); Columbia university (New York city), 1,844,611 volumes (June 30, 1941); Boston (Mass.) Public library, 1,704,729 volumes (Dec. 31, 1939); Los Angeles (Calif.) Public library, 1,641,195 volumes (June 30, 1940); University of California, 1,501,473 volumes (comprising 1,124,858 volumes at Berkeley and 376,615 volumes at Los Angeles) (June 30, 1941); University of Chicago 1,330,152 volumes (June 30, 1941); Carnegie Library of Pittsburgh (Pa.), 1,319,610 volumes (Dec. 31, 1940); Cincinnati (Ohio) Public library, 1,292,472 volumes (Dec. 31, 1940); University of Illinois, 1,262,046 volumes (June 30, 1941); Brooklyn (N.Y.) Public library, 1,170,280 volumes (June 30, 1940); University of Michigan, 1,134,052 volumes (June 30, 1941); Cornell university (Ithaca, N.Y.), 1,094,117 volumes (June 30, 1941); University of Minnesota, 1,061,965 volumes (1940); Detroit (Mich.) Public library, 1,012,328 volumes (June 30, 1940). Two university libraries, Princeton and Pennsylvania, and two public libraries, Milwaukee and St. Louis, have more than 900,000 volumes each.

These figures were very uncertain standards of comparison because of differences in methods of counting and because public libraries with many branches contained many copies of new and standard books.

Librarians.—Louis R. Wilson, dean of the graduate library school of the University of Chicago since 1932, retired Sept. 1, and was succeeded by Carleton B. Joeckel, professor of library science in the university. M. Llewellyn Raney, director of the University of Chicago libraries since 1927, and formerly librarian of the Johns Hopkins university, retired Oct. 1, and was succeeded by Ralph A. Beals, assistant librarian of the Washington, D.C., Public library. George B. Utley, librarian of the Newberry library (Chicago) for 22 years, and sometime secretary of the American Library association, retired on Sept. 1. Stanley M. Pargellis, assistant professor of history at Yale university, was appointed to the librarianship. Judson T. Jennings, librarian of the Seattle Public library from 1907, retired on June 1. His successor was John S. Richards, formerly associate librarian of the University of Washington. Wilson, Utley and Jennings were ex-presidents of the American Library association.

Beatrice Winser, a member of the staff of the Newark (N.J.) Free Public library for 53 years, and librarian since 1929 (in succession to the late John Cotton Dana), retired on Aug. 31. Frank Weitenkampf, first chief of the prints division of the New York
Public library, retired on June 30 after a service of over 60 yea
to one institution. The growth of the print room since its esta
lishment, the notable series of exhibitions arranged during
long curatorship, and his numerous writings in the field of t
graphic arts were a distinct contribution to New York's artis
life. Ernestine Rose, widely known for her work with Negroes
the 135th st. branch of the New York Public library, retired
June 1, after 22 years as branch librarian.

Arthur E. Bostwick, librarian of the St. Louis Public libra
from 1909 to 1938, then associate librarian, died on Feb.
Frederick W. Ashley, who retired in 1936 as chief assistant
brarian of congress, died on June 14. A member of the staff
the Library of Congress since 1900 he had served as superint
dent of the reading rooms from 1915 to 1927. Peyton Hunt,
brarian of Williams college, died on Jan. 23 after a long illne
Sarah B. Askew, secretary and librarian of the New Jersey Pub
library commission since 1905, died on Oct. 20.

Herman H. Henkle, director of the school of library science
Simmons college, Boston, was appointed director of the proce
ing department of the Library of Congress. Robert A. Mil
was appointed director of libraries at the University of India
(Bloomington) March 1. Harold F. Brigham, librarian of
Louisville (Ky.) Public library since 1931, became director
the Indiana state library Sept. 1. Walter T. Brahm was ma
state librarian of Ohio in succession to Paul A. T. Noon, resign
June 15. (*See* also AMERICAN LIBRARY ASSOCIATION; CATHO
LIBRARY ASSOCIATION; SPECIAL LIBRARIES ASSOCIATION.)

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Radio, and Film in a Democracy (1942) (C F McC.

Great Britain.—Happily, 1942 saw little increase in the da
age caused by the air raids of 1940–41, although it must
recorded that the fine City library at Exeter was almost co
pletely destroyed. This freedom from air attack on a large sc
in 1942 provided an opportunity for repairing the damage
many places and not only was it found possible to reopen a nu
ber of buildings, but many new service points were establish
This development of the library services was remarkable becau
owing to the call-up for military service of both men and wom
staffing problems became much more acute, and, in addition,
shortage of new books and binding materials, consequent up
the wholesale destruction of publishers' stocks through ene

ction and the limitation of supplies, increased the anxieties of ll who were endeavouring to maintain an efficient service to meet he needs of an ever-widening circle of readers. "Busier than ver before" was the common report from libraries throughout he country. Remarkable, too, was the fact that two towns, windon and Barnes, in which previously there had been no pubc library service, took steps to establish one. An outstanding eature of the year was the publication, in the autumn, of a reort by Lionel Roy McColvin, F.L.A., city librarian of Westninster, entitled *The Public Library System of Great Britain: a eport on its Present Condition with Proposals for Post-war Rerganization.* This report, published by the Library association, ritically surveyed the existing position and also contained a plan f reconstruction. (D. C. H. J.)

ibya: *see* Italian Colonial Empire; World War II.
.idice: *see* Bohemia and Moravia.

iechtenstein, an independent, tiny European state, northeast of Switzerland, to which it is united by customs union. Area, 65 sq.mi.; pop. (census Dec. 1941) 11,-02. Chief town, Vaduz (capital, pop. 2,020). Ruler: Prince ranz Joseph II, b. 1906, was given ruling authority by his 84-ear old uncle, Prince Franz I, on March 30, 1938 and after the atter's death was crowned prince on May 29, 1939. Language, erman; religion, mainly Roman Catholic; products: corn, wine, ruit, wood and marble; revenue (est. 1942) 2,243,000 Swiss rancs (nearly $500,000); expenditure 2,239,000 francs. There s no army. Posts and telegraphs are administered by Switzerland. (S. B. F.)

.ife Insurance: *see* Insurance.
.ife Span: *see* Birth Statistics; Death Statistics; Infant Mortality; Suicide Statistics.
.ighting: *see* Electrical Industries; Motion Pictures.
.ignin: *see* Chemistry.

Lillie, Gordon W. ("Pawnee Bill") (1860–1942), U.S. frontiersman and showman, was born eb. 14 in Bloomington, Ill., the son of a miller. In his youth, he oined an outfit of trappers and hunted buffalo in the western rairies. In 1882, he entered the government's Indian service at Pawnee, Okla., and in 1888, he campaigned to open the Oklahoma erritory to the small farmers. The following year he organized he "Oklahoma Boomers" and led them in the land rush of 1889. A contemporary of Buffalo Bill Cody, Wild Bill Hickok and Bat Masterson, "Pawnee Bill," as Lillie was known in the frontier terriory, entered the show business with Buffalo Bill and made a comfortable fortune in the early 1900s. Lillie died in Pawnee, Feb. 3.

Lime. Production of lime in the United States in 1941 increased 24% over 1940, to 6,078,416 short tons, another new record high. Of the total, 74% was quicklime and 26% hydrated lime; agricultural uses took 6%, building 18%, metallurgical uses 22%, chemical uses 36% and refractory uses 18%.

Canadian production totalled 860,885 short tons in 1941, an increase of 20% over 1940; 84% of the total was quicklime and 16% hydrated lime; 87% of the output was used in the chemical industry. (G. A. Ro.)

Limes: *see* Lemons and Limes.
Limestone: *see* Stone.

Linen and Flax. By the close of 1942, the United States was producing about half the flax fibre needed for coarse linen goods and none of the quality required for fine goods. Coarse goods include fish nets, cordage and bottom rugs. There was marked progress in the campaign to encourage flax production in the United States and the Textile Foundation and National Bureau of Standards, in Washington, announced a survey on the structure and composition of the flax fibre and the mechanism of present methods of preparation to make possible certain technical improvements in the spinning of domestic flax that would encourage further production and use. In Providence, R.I., a new processing company installed machinery brought from Ireland for spinning the domestic product.

Canada also took an active part in building up flax processing. Five flax factories were established in Quebec during 1942, and a flax fibre administrator was named, Nelson Young, to direct the processing of flax production in the dominion and to allocate flax and tow requirements of Canada and the United States from Canadian sources as far as possible. Regulations of grading were established by the Plant Products division, of the department of agriculture at Ottawa.

Ireland's 1942 flax cultivation embraced an area of between 20,000 and 21,000 acres, compared with only 16,000 in 1941 and 10,000 in 1940. Farmers were being urged to make their 1943 acreage 100,000. Prices were fixed by agreement with the British, who were to pay not less than 1942 prices for duration of the war and one year thereafter. Prices ranged from *21s. 6d.* to *26s. 6d.* per stone (14 pounds) of retted scutched flax, according to grade. A new type of binder twine from flax was the product of a Kildare factory established in 1942, to spin the flax grown on about 1,000 acres specially planted for the purpose in counties Carlow, Kildare, North Wexford and Wicklow.

Switzerland was a new source of flax interest in 1942. The total area under cultivation was reported as 150 hectares in 1942, as compared with 77 hectares in 1941 and 15 hectares in 1940.

Other production on the continent was reported from Denmark and France. Efforts made by the government to increase acreage in Denmark from 6,000 hectares to 8,000 in 1942 were unsuccessful. Extensive improvements in machinery during the winter of 1942 increased the capacity of flax processing factories so as to require the yield of at least 8,000 hectares. In France, the area in 1942 under cultivation was reported to be from 40% to 50% higher than 1941. This would indicate a 1942 crop from 80,000 to 85,000 acres. Germany also claimed to have developed a process for manufacturing cellulose and staple fibre from flax scraps. The woody parts of flax stems, waste after retting, were treated by an alkali sulphate process. About 150,000 tons of waste were reported available annually.

Australia was well satisfied with the 1941–42 yield of 12,000 tons of flax straw from 8,000 acres. Four new scutch mills in South Australia began operations early in 1942 on the country's first large-scale flax crop. More than 1,300 tons of fibre and tow were produced in New Zealand and all except 100 tons were exported. About 100 women and 800 men were employed in 17 flax factories. (I. L. Bl.)

Lions Clubs, International Association of. The International Association of Lions Clubs was formed in Chicago, Ill., on June 7, 1917, and founded by Melvin Jones. It is an association of service clubs whose membership is made up of business and professional men. In 1942 there were approximately 4,300 Lions clubs in 11 countries: Canada, China, Colombia, Costa Rica, Cuba, El Salvador, Guatemala, Honduras, Mexico, Panama and the United States. The total membership was 150,000. The 1942 annual international convention was held in Toronto, Can.

Lions clubs are nonpolitical, nonsectarian. Their purpose is to

THE LAST FLOW OF WHISKY from a large distillery in Louisville, Ky. By order of the War Production board, 80 U.S. plants stopped all manufacture of whisky Oct. 8, 1942, to make alcohol for war uses

recognize community needs, meet those needs by independent effort or through co-operation with other agencies, and to do everything possible to help the United Nations win the war. Their activities have eight classifications: Boys and girls; citizenship and patriotism; civic improvements; community betterments; education; health and welfare; safety; sight conservation and blind. Each classification of activities is supervised by a club committee. From May 1, 1941 to April 30, 1942, 64,995 separate activities were reported by Lions clubs to their international office. The *Lion Magazine,* the official publication of the association, is issued monthly. Edward H. Paine of Michigan City, Indiana, was international president for the 1942–43 fiscal year. Headquarters which were in 1942 at 332 South Michigan avenue, Chicago, Ill., were directed by Melvin Jones, secretary-general.

(M. Jo.)

Liquor Control.

In the United States there were in 1942 approximately 280 distilleries, 600 breweries, 1,100 wineries, 250 rectifiers, 14,000 wholesalers and 309,000 retailers. An estimated $3,000,000,000 was spent annually by the liquor industry, $1,000,000,000 for taxes and licences, $1,000,000,000 for wages and salaries and $1,000,000,000 for raw materials and operating expenses. In 1942, total government revenues derived from the liquor industry approximated $1,800,000,000.

Federal, state and local government agencies all played a part in liquor control in 1942. Revenues were derived from taxes, licences and import duties. Liquor, as generally defined, includes spirits, wine, beer and alcohol. Federal control in 1942 consisted of levying excise taxes on liquor, duties upon imports of alcoholic liquor, the setting up of standards of identity for various types and kinds of liquor, and the regulation of liquor advertising and labelling of containers. In addition, the federal government issued basic permits to distillers, manufacturers (although not to brewers), and to distributors of liquor. No fee was required for the issuance of a basic permit.

Plans for distilleries, rectifying plants, etc. had to be submitted and approved. The government also issued permits to properly qualified warehouses, in which the bottling is done under government supervision. When whisky is 100 proof (50% alcohol), has aged for at least four years, and is bottled under government supervision, affixation of a stamp is required, which declares that the whisky has been "bottled in bond," a term considerable sales potency in the liquor market.

The provisions of the Food and Drug act, passed in 19 were held by the courts to include liquor. The quality of the gredients of all alcoholic liquors was required to undergo spection; statement on the label of alcoholic content was requi Regulations concerning advertising and labelling (and this app to spirits, wine and malt beverages) were set out in great det Statement of age, except in the case of beer and wine, was a required.

The commissioner of internal revenue also issued deta regulations. Whisky could not be sold in bulk to a retailer. O a rectifier, distiller, or holder of a government warehouse per could bottle whisky. Every wholesaler and every retailer had purchase a federal occupational tax stamp. This was for reve purposes only, and no inquiry was made as to the qualificati of the purchaser, or the possession of state or local licen

Finally, the federal government levied heavy taxes on all fo of alcoholic liquor, not only at the time of manufacture, also, when there was a change in rate, upon the stock on h of all concerned in the manufacture, distribution and sale (fl tax).

The income from federal taxes on alcoholic liquor rose stea after 1933. In 1941 it was as follows: From excise ta $927,000,000; from special and occupational taxes $30,000,0 and from import duties $11,000,000. The liquor industry first as a producer of revenue. Increase in revenue came fr increase in rates, and not from increase in volume sales. Howe increase in rates seemed to have little effect upon per ca consumption.

The administration of the federal liquor laws in 1942 was the hands of the Federal Alcohol Tax Unit, a branch of United States treasury. The country was divided into distr and offices were maintained in the principal cities. These off had been highly effective in running down bootleggers, il stills, moonshine joints and other offenders against the fed liquor laws. The number of illegal stills and the number arrests for violations was quite low in 1942. Wartime restrict upon the sale of sugar made it exceedingly difficult in 1942 get this necessary commodity for illegal stills.

State Administration of Control.—The 21st (repeal) ame ment left large powers in the hands of the states. This pow as interpreted by the courts, left the states free to ignore e process and commerce clauses of the constitution. As a result, ates set up trade barriers against each other, limiting the imrtation of alcoholic liquors. This was done in a variety of ways. t-of-state shippers were required to take out licences; wholeers who distributed alcoholic liquors produced outside of the te were required to pay higher licence fees; the licence fee of e manufacturer who used in his product home-grown grapes was ver than that of the manufacturer using imported grapes; taxes re higher on imported beverages than on those produced domesally; five states in 1942 required that beer contain at least 66⅔% rley, thus subsidizing the barley farmer; nearly two-thirds of e states exempted exports from excise taxes; many other disminatory measures had been adopted. However, there was o a strong countermovement to abolish these restrictive asures, which were passed either to encourage home industry agriculture, or in retaliation for discriminatory action by other tes.

State control of liquor presented a highly confusing picture 1942. Of the 48 states, none was completely dry. (Kansas, lahoma and Mississippi permitted sale of low alcoholic content r only.) Seventeen states[1] had a monopoly of the liquor ffic within their borders, with the important exception of beer l wine. These were in all cases left outside the monopoly. Wyoming, the state monopoly controlled only the wholesale siness.) In the remainder of the wet states (28), licences were ued to private operators.

Total revenue in 1941[2] from the states was $438,000,000, of ich the licence states supplied $265,000,000 and the monopoly tes, $173,000,000. Total monopoly state sales in 1941 varied m $15,000 in Alabama to $98,000,000 in Pennsylvania. Monopstates sales in 1941, in Ohio, were $70,000,000; in Michigan, ,000,000; in Washington, $19,000,000; in Iowa, $16,000,000; Virginia, $16,000,000. The income from state licence fees in 1 ranged from $11,000 in Wyoming to $18,000,000 in New rk. Ohio and Pennsylvania collected in licence fees $6,000,000 h; California, $5,000,000; Illinois, $1,280,000. The cost of te administration in 1941 varied from $9,000 in Nevada to 375,000 in Pennsylvania. It was $1,310,000 in California; 150,000 in New York; $832,000 in Texas; $545,000 in Alana. The cost of alcoholic liquor sold in 1941 in the monopoly tes varied from $3,064,000 in Idaho to $69,663,000 in Pennvania. In Ohio, alcoholic liquors were sold which cost ,960,000; in Minnesota, $41,544,000; in Washington, $16,,000. Receipts from state taxes in 1941 varied from $222,000 Nevada to $39,000,000 in New York. Wisconsin receipts from e taxes were $6,500,000; Texas, $8,000,000; Ohio, $12,000,; California, $12,000,000; Illinois, $18,000,000; Pennsylvania, ,000,000. Local revenues in 1941 varied from $213,000 in vada to $9,000,000 in Illinois. Local revenue collected in Mashusetts was $43,000,000; New Jersey, $4,400,000; Wyoming, 300,000; North Carolina, $1,800,000; South Dakota, $1,050,; Minnesota, $1,000,000; Missouri, $1,000,000; Oregon, 0,000.

n the monopoly states there were, in 1942, 16 liquor control mmissions or liquor control boards and one liquor control mmissioner. In the licence states, control was vested in liquor trol commissions, liquor control boards, commissioner of enue, board of equalization, state licensing authority, state erage department, state revenue commission, supervisor of lic accounts, state comptroller, state tax commission, etc. se differences in title in the licence states did not reflect portant variations. A genuine distinction was that between those control authorities which dealt solely with liquor control and those with which liquor control was only a part of their duties.

These governing bodies generally had 3 to 5 members, field inspectors ranging from 35 to 225 and an adequate office force. Where control of liquor was given to agencies having other duties, the administration of the liquor laws got only partial attention; in fact the new tasks might be quite unwelcome. The requirements of liquor control were so great and so complicated that a separate administrative agency was believed to be necessary to operate at top efficiency. In California the board of equalization asked to be relieved of the task of liquor control.

Salaries for liquor control authorities in 1942 varied from $10 per diem in Alabama, Idaho, Texas, Montana, Oregon and Vermont to $16,500 per annum in New Jersey. In New York the chairman got $12,000, the four other members, $7,500. In Massachusetts the chairman got $7,500, the other members, $7,000. In Iowa, Ohio, Utah, Minnesota and Missouri the salary was $4,500. In Illinois the chairman got $5,000, the two others, $4,800. In Indiana and West Virginia the salary was $6,000.

In a few states like New Jersey, there was a single person in control, but in 16 other states the liquor commission or similar body selected an administrative officer who was in charge of the work. Very few states had civil service systems for employees in 1942. Illinois had such a system. Maine, Alabama, Pennsylvania, New York, Michigan and Wisconsin had partial civil service systems, with important exemptions. In five licence states, Connecticut, Illinois, Massachusetts, New Jersey and New York, the finance department or state department of taxation collected liquor excise taxes, but left all other factors in control to specially created liquor control bodies. Of the 45 wet states, 35 had the power to suspend as well as revoke; 38 states regulated closing hours, 36 states made distinction between sale for on- and off-premise consumption; 35 states regulated advertising; 29 provided for the fixing of quality standards and 20 provided for proper labelling; 35 states provided for local option elections. Of the ten states which did not allow local option, four were monopoly states and 6 licence states.

The following states had exclusive state administration in 1942: monopoly states—Alabama, Idaho, Iowa, Michigan, Montana, New Hampshire, North Carolina (state supervision; county-operated liquor stores in counties voting therefor); Ohio, Oregon, Pennsylvania, Utah, Vermont, Virginia, Washington, West Virginia, Wyoming (monopoly of wholesale business only; retailer licensing by counties and municipalities). The licence states—California, Connecticut, Delaware, South Carolina. In the following licence states there was state, county and municipal participation: Arizona, Arkansas, Colorado, Florida (state and county only); Georgia, Illinois, Indiana (state and county only); Kansas, Kentucky, Louisiana (parish and municipal only); Maryland, Massachusetts (state and municipal only); Minnesota (state and local only); Mississippi, Missouri, Nebraska (state and municipal only); Nevada, New Jersey, New Mexico, New York (local authorities recommend); North Dakota, Oklahoma (state and county only); Rhode Island (state and municipal only); South Dakota (state and municipal only); Tennessee, Texas, Wisconsin (state and municipal only). Maine, alone of the monopoly states, had state and municipal participation.

Among cities, in Los Angeles, San Francisco, Pittsburgh and New York local authorities had no power to issue retail liquor licences. (Local authorities recommended in New York city.) In Detroit and Denver, the state governing authorities issued retail local liquor licences subject to local approval. In Boston, Minneapolis and New Orleans, local retail liquor licences were granted by local authorities subject to approval by state authori-

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labama, Idaho, Iowa, Maine, Michigan, Montana, New Hampshire, North Carolina, , Oregon, Pennsylvania, Utah, Vermont, Virginia, Washington, West Virginia and ming.

atest figures available in 1942.

ties. Cities with full retail liquor licence issuing power in 1942 included Chicago, St. Louis and Milwaukee.

Monopoly states which allowed sale of spirituous liquor by the drink allowed it only in clubs, hotels and restaurants. In most states, the governing body was given discretion in the granting of licences. Sixteen had limitation on number, such as not more than one to each 1,000 inhabitants, although limitation in number was frequently by city ordinance. In some cases transfer of licence from one person to another was prohibited. All imposed severe penalties for selling to minors or intoxicated persons. Licence fees were usually graduated. Retailers, distillers and wholesalers paid different fees. The fee for manufacturer's (distiller's) licence was highest. A difference was made in licence fees for sales for on- and off-premise consumption. There was an ascending scale of fees for retailers, depending upon the size of the community in which they were located. The fee for retail licence ranged from $25 to $1,200 in 1942. Where power to revoke was given to the states, proceedings were set up for hearings prior to revocation, for rehearings and for appeal to the courts. As a rule, a retailer, revocation of whose licence was sought, could remain open until there was final adjudication. State governing bodies sometimes acted as appeal bodies to which decisions made by local bodies might be referred.

Powers of the inspectors and agents of the governing bodies varied widely. In some states they had police powers, in some they had power only to inspect licences. The state authorities also regulated the activities of distilleries, breweries, rectifiers, boats, railroads and the manufacture of alcohol for nonbeverage purposes. They prohibited the giving or lending of money or merchandise by brewer, manufacturer or distributor to a retailer. Practically all the states went further and forbade subsidization of any kind, with minor exceptions for advertising signs and literature. Credit to retailers beyond that usual to ordinary trade practice (specifically defined) was forbidden. The retailer (except in the case of hotels and clubs) was forbidden to extend credit to a customer.

States, and in some instances, municipalities required that coils be cleaned regularly, and some prescribed the manner of cleaning. In Pittsburgh, premises had to meet requirements of the plumbing code.

Thirty-five states permitted local option in 1942. This allowed a specific area, sometimes a municipality or village, sometimes a county, sometimes a precinct or group of precincts in large cities (there were many variations), to decide whether or not alcoholic liquor might be sold. The question presented at the local option election might be in different forms. It might be the prohibition of the sale of all alcoholic liquor. It might be all liquor except for off-premise consumption; it might be all liquor except beer, with the alcoholic content specifically defined, or it might be all liquor except beer for off-premise consumption. In a precinct election in Chicago the two questions were submitted at the same time. Sale for off-premise consumption meant, of course, the sale of liquor in packages (bottles). There were limitations also upon the length of time between local option elections.

Antisaloon authorities estimated that after repeal there were approximately 10,000 local option elections up to the end of 1942, in which the drys were victorious in about 7,000. It was estimated that about one-sixth of the population of the United States lived in dry or moist (beer and wine only or beer only) areas in 1942. Six states—Delaware, Indiana, Louisiana, Michigan, Missouri and Montana—had no dry areas.

Administrative cost of control systems in 1942 ranged from 1 cent in North Carolina and 2½ cents per capita in Illinois to 16 cents in New Jersey. Arkansas cost was 3 cents, Wisconsin 9 cents, Minnesota 8 cents, Indiana 11 cents, Massachusetts 4 cents, Missouri 5 cents, Texas 16 cents.

Statistics on per capita consumption of alcoholic liquors sented no proof in 1942 that consumption was less in mono states. States having the same type of control showed gre differences than that between the two systems. Presence o large agricultural element, nationalistic groups in large numb and economic differences accounted more accurately for the v ations noted.

It was too early in 1942 to say whether or not the s monopoly control of the sale of alcoholic liquor was or was n success. The state monopoly systems entailed, of course, a m larger pay roll, responsibility for the efficient operation of l numbers of state stores, and all the machinery incident to a h business venture. If a corrupt or venal political machine wa control, there was a great opportunity for corruption and voritism.

Private agencies were active in 1942 in supplementing off regulation. These were of two types: organizations of citizens are interested in law-enforcement and organizations within liquor industry itself which are interested in preserving eth standards, and in self-policing. Of the first type were the J nile Protective association, Child Protection league, Vigila association, Moderation league and many others. Practic every city of more than 10,000 had some organization of sort in 1942 even if it was only a committee of a women's or city club. These organizations had prestige, and they di fluence official action, often by bringing forcibly to public at tion some long-standing abuse or outrageous situation. Man them worked with local authorities, and sent the results of vestigation as well as complaints directly to them.

The other type also had many variations. Tavern keepers well organized, package stores likewise. The Distillers Insti and Allied Liquors were national in scope. They included tillers, bottlers, wholesalers, warehousers; they opposed impr methods and conduct in the liquor industry and sought to operate with state and federal governments. In the Nebr plan, the brewers refused to sell retail outlets suspected of lating the laws or engaged in antisocial practices. Suspected fenders were reported to the authorities. Each state was div into districts and a field representative placed in each one. Ohio plan provided for the reporting of violations by the representative of the Distillers Institute, which investigated reported to the authorities. This plan was proposed by the ex tive director of the Distilled Spirits Institute.

Canada and Europe.—Most of the provinces in Canada a system of government control in 1942. Some required a pe from the individual, a practice also followed in some of monopoly states. In Manitoba the permit fee was $1 a year Norway, prior to German occupancy, a private monopoly, Vinmonopolet, controlled the entire industry. The managing rector, however, was appointed by the King. The framin general policies was by a council of 15 named by the sto (parliament). Sweden adopted a similar system. In 1942, liquor control board appointed by the king supervised a pri corporation which had control of manufacture, distribution import. The government was represented on the board. R sales were controlled by 121 private systems. Certificates issued to private purchasers. England had a licensing sys Licences were issued by justices appointed for life by the chancellor. Purchases on premises had to be by glass or bo Distilleries and breweries were also licensed; no private purc permit was required.

Holland had a licensing system. In the U.S.S.R. the S Alcohol Monopoly exercised exclusive control in 1942. No was allowed for consumption on premises except in hotels staurants. Government stores sold liquor for off-premise con- mption. (*See* also BREWING AND BEER; INTOXICATION, ALCO- LIC; LIQUORS, ALCOHOLIC; WINES.)

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quors, Alcoholic. The most important alcoholic liquors are whisky (or whiskey), gin, rum, andy and liqueurs. Whisky is distilled from a fermented mash grains. In American whiskies either corn or rye grain pre- minates. Scotch whisky is made from barley malt which has quired during its preparation the "smoky" aroma which is aracteristic of it.

Gin or geneva had its origin in Holland. English gin—which s at first a copy of the Dutch product, but produced under a dified method—dominated not only the British, but also the neral world market. London dry gin is by far the most popular riety. However, the production of gin in the United States normal times is much greater than in England.

Brandy, or more specifically "grape" brandy, was recognized a long time as almost an exclusive product of France. In par- ular, the product originating from the Charente district, and ich alone is entitled to the designation "cognac," was con- ered as a standard for this type of beverage. A quite fine qual- of grape brandy was being produced in California.

The United States was for many years the country of greatest duction and consumption of potable spirits. Because of exist- political conditions, production in practically all foreign coun- es was considerably curtailed, in most instances (as in Scot- d) entirely suspended. Consumption in these countries also s materially reduced. Accurate records for late years were obtainable.

n the United States many whisky distilleries began to use ne of their available facilities for the production of industrial ohol (grain spirits at 190°) toward the end of the year 1941. ring the year 1942 most of the existing beverage distilleries verted their equipment to make industrial spirits. Production whisky was entirely discontinued under government orders as Oct. 1942, and practically all grain spirits distilleries were nmandeered by the government for alcohol production. The duct was being used in the manufacture of munitions and thetic rubber. Production of brandy and rum continued, but a limited scale under allotment of the raw materials. Con- erable stocks of whisky were in the warehouses, and were ex- ted to last under a conservative withdrawal policy for about r years.

Whisky was in 1942 by far the predominant alcoholic beverage the United States. In the fiscal year ending June 30, 1942, .307,000 American proof gallons (or tax gallons) were pro- ed, as against 121,852,000 gal. in the preceding year. The duction of brandy was 29,271,000 gal. (an increase of about 00,000 gal. over the previous year); rum 3,106,000 gal.; gin 45,000 gal.; and diverse other spirits 20,000,000 gal.

Almost the entire whisky production was concentrated in five tes: Kentucky accounting for 63,670,000 gal.: Illinois 20,020,- gal.; Indiana 14,630,000 gal.; Pennsylvania 8,760,000 gal.; ryland 7,340,000 gal.; and all other states 5,840,000 gal.

The apparent consumption of all alcoholic liquors amounted to ,208,000 gal. at various proofs ranging predominantly from proof to 100 proof. These consumption figures are expressed American "wine gallons," which means the volume of liquid as bottled at the respective alcoholic strengths. The various types of liquors making up this total consumption were: American (domestic) whisky 132,395,000 gal.; imported whiskies 11,930,000 gal.; gin 15,160,000 gal.; rum 1,202,000 gal.; brandy 1,908,000 gal.; cordials and liqueurs 4,614,000 gal.

The gin in 1942 was practically all of domestic origin. A large percentage of the rum came from Puerto Rico. (*See* also BREWING AND BEER; WINES.)

The United States had been producing for years most of the whisky, with Scotland next, followed by Canada and Ireland. Australia also used to turn out considerable quantities. War conditions changed the situation completely. Production in Scotland ceased sometime in 1942, but was reputedly continued in Ireland, although on a greatly reduced scale. Exports from Scotland and Ireland were materially reduced as against previous years. Exports from the U.S. increased; however, shipments to some countries had to be discontinued. (*See* also LIQUOR CONTROL.)

(A. J. LI.)

List, Siegmund W. W. (1880–), German army officer, was born in Oberkirchberg, Bavaria. He attended the military academy in Munich, graduating in 1898, and was commissioned a lieutenant in the Bavarian army in 1900. In 1914 he became a captain on the Bavarian general staff and saw service in World War I. In 1930 he was made commander of the infantry school at Dresden. In 1934 Adolf Hitler appointed him commander of the fourth army district of Dresden. After the Austrian anschluss in 1938, he was put in charge of the Austrian army. He was general commanding the armies of occupation of Czechoslovakia in Oct. 1938 and was governor of Moravia in 1939. He played an important part in the conquest of Poland in Sept. 1939 and was made a field marshal by Hitler after the campaign in France, during which he was commander of the 12th army. Marshal von List was in command of German armies on the Moscow front during the Russo-German campaign of 1941. In early battles his forces pressed beyond Mozhaisk in the drive on the soviet capital, but powerful Russian counterdrives compelled him to retreat in the winter of 1941. In May 1942 List reportedly asked Premier Antonescu for new Rumanian levies for the Russian campaign. In September List succeeded Von Bock as commander of German armies in the central sector; in December he was believed to have been succeeded in turn by Field Marshal Von Mannstein at this post.

Literary Prizes. The literary prizes for the year 1942 were as follows:

International.—NOBEL PRIZE FOR LITERATURE not awarded since 1939.

United States.—AMERICAN ACADEMY OF ARTS AND LETTERS AND THE NATIONAL INSTITUTE OF ARTS AND LETTERS, AWARDS IN LITERATURE, $1,000 each to Norman Corwin, Edgar Lee Masters, Muriel Rukeyser and Hermann Broch for creative work in literature.

JOHN ANISFIELD AWARDS (*Saturday Review of Literature*) to Leopold Infeld for his autobiography, *Quest* (Doubleday), the best book concerned with racial problems in the field of creative literature; to James G. Leyburn for *The Haitian People* (Yale), scholarly research in the racial field, $1,000 to each.

ATLANTIC MONTHLY PRESS $10,000 NOVEL CONTEST, no award made.

CHICAGO FOUNDATION FOR LITERATURE AWARDS to Vincent Starrett for his *Books Alive* (Random House); to Dr. Preston Bradley "for distinguished service to literature"; to Rachel Albright for poetry.

COMMONWEALTH CLUB OF CALIFORNIA.—GOLD MEDAL FOR GENERAL LITERATURE to Joseph Henry Jackson for *Anybody's Gold* (Appleton); GOLD MEDAL FOR SCHOLARSHIP AND RESEARCH to Lesley Byrd Simpson for *Many Mexicos* (Putnam); SILVER MEDALS to Richard T. LePiere for *When the Living Strive* (Harper); to John W. Dodds for *Thackeray* (Oxford); and to Frank J. Kleinberg for *The Morning of America* (Appleton).

DIAL PRESS AWARD for an outstanding novel on the problems of adjustment facing young people in America today, $1,000 and royalties to Gladys Schmitt for *The Gates of Aulis*.

DODD, MEAD PRIZES.—$10,000 DODD, MEAD—REDBOOK MAGAZINE FICTION PRIZE to Ellen Proctor for *Turning Leaves;* RED BADGE DETECTIVE STORY PRIZE to James Wellard for *The Snake in the Grass;* INTERCOLLEGIATE FELLOWSHIP AWARD, $1,200 to Barbara Bentley for her novel, *A Hedge Against the Sun*.

FRIENDS OF AMERICA WRITERS' AWARD to promote high standards and ideals in American writing, $1,000 to Paul Engle for his volume of poems, *West of Midnight* (Random House).

Guggenheim Fellowships, 82 awards amounting to about $2,500 each. Among the winners were two poets, George Zabrishie and Wystan Hugh Auden; three women fiction writers, Carson McCullers, Eudora Welty and Dorothy Baker. John Dos Passos received an award to complete his biography of Thomas Jefferson; Gustavus Myers, his book on bigotry in the U.S.; Dixon Wecter, a history of the Roosevelt family; Mark Schorer, a book about William Blake; Justin O'Brien, a study of André Gide; Gordon Norton Ray, a definitive edition of the letters and private papers of William Makepeace Thackeray. Remaining awards made in fields other than literature.

Guggenheim Fellowships to Latin American Scholars, 20 awards in various fields. Winners in the arts and humanities were: Gabriel Fernández Ledesma, for a book on folk arts of Mexico; Professor Arturo Arnaiz y Freg, a history of Mexican thought; Professor Antonio Hernández Travieso, Cuban biography; and Wigberto Jiménez Moreno, pre-Hispanic culture. About $2,000 each.

Harper 125th Anniversary Award of $12,500. Prize divided between Julian Green for *Memories of Happy Days* and John Andrew Rice for *I Came Out of the Eighteenth Century.*

O. Henry Memorial Award Prize Stories of 1942 (Doubleday); first prize of $300 to Eudora Welty for "The Wide Net" (*Harpers Magazine*); second prize of $200 to Wallace Stegner for "Two Rivers" (*Atlantic Monthly*); third prize of $100 to William L. Schramm for "Windwagon Smith" (*Atlantic Monthly*); a special prize of $100 for the first published short story, to Jeanne E. Wylie for "A Long Way to Go" (*Atlantic Monthly*).

Avery and Jule Hopwood Awards (University of Michigan), $750 fiction prize divided among three students: Raymond Early for an historical novel, *Mightier Than the Sword;* Rosemary Obermeyer for a fantasy, *Golden Apples of the Sun;* and Jay McCormick for a novel of the Great Lakes, *November Storm;* $500 poetry prize to Robert E. Hayden for *The Black Spear;* drama prize to Jack Mitchell for *Brita;* essay award to Laia Hanau, Lois Helene Van der Meulen, Celia Hwaguen Chao and G. Nelson Bentley.

Houghton Mifflin Life-In-America Series Awards, $2,500 each to Sam Byrd for *Small Town South;* and to Dr. Frederick Carpenter Irving of Boston Lying-In hospital for *Safe Deliverance.*

Houghton Mifflin Literary Fellowship, $1,500 to Donald MacRae for a projected novel on the American scene and the competitive ruthlessness of individual democracy in the 20th century.

Alfred A. Knopf Literary Fellowships, $1,200 each to Robert Faucett Gibbons for fiction; Dr. Angie Debo for history; and Russel Blaine Nye for biography of George Bancroft.

Laetare Medal (University of Notre Dame) to Helen Constance White, author and teacher.

J. B. Lippincott Prize, $1,000 to a University of Alabama student, Arthur Phillips, for his novel, *Victory In The Dust* (Lippincott).

Russell Loines Memorial Fund Poetry Award, $1,000 to Horace Gregory, "not as a prize but as recognition of value"; his most recent volume is *Poems: 1930–1940* (Harcourt).

National Book Award (American Booksellers Association) to George Sessions Perry for *Hold Autumn In Your Hand* (Viking), "the Booksellers' Discovery."

New Directions Press (*Direction Magazine*) Service Men's Writing Contest, $100 to Herbert Avedon for "Michael," a story of an army mule; $50 to Martin Savela for "Man In Uniform."

New York University, Society for the Libraries Of, Annual Gold Medal to Conrad Richter, author of *The Sea of Grass* and *The Trees* (Knopf).

Ohioana Library Award (State Office Building, Columbus, O.), a medal and war bond to James B. Reston for *Prelude To Victory* (Knopf).

Pacific Northwest Library Association, Children's Section, to Laura Ingalls Wilder for *By the Shores of Silver Lake* (Harper).

Parents' Magazine Award to Anna W. M. Wolf for *The Parents' Manual* (Simon).

Poor Richard Club of Philadelphia to Pearl Buck a citation for distinguished services in the field of literature.

Poetry Magazine, five prizes of $100 each: Levinson Prize to Karl Jay Shapiro; Guarantors' Prize to St. Jean Perse; Harriet Monroe Lyric Prize to John Frederick Nims; Blumenthal Prize to E. L. Mayo; Davis Prize to Katinka Loeser.

Pulitzer Prizes.—Novel, to Ellen Glasgow for *In This Our Life* (Harcourt); history, to Margaret Leech for *Reveille In Washington* (Harper); biography, to Forrest Wilson for *Crusader in Crinoline,* a life of Harriet Beecher Stowe, (Lippincott); poetry, to William Rose Benét for *The Dust Which Is God* (Dodd). (*See* also Pulitzer Prizes.)

Roosevelt Distinguished Service Medals for services in fields associated with the career of Theodore Roosevelt, to Booth Tarkington; Dr. Rufus Matthew Jones, founder of the American Friends Service committee and author of numerous books on Quaker history and philosophy; to Henry Lewis Stimson, secretary of war.

Constance Lindsay Skinner Medal (Women's National Book-association) to Irita Van Doren, editor of the *N.Y. Herald Tribune Books,* for her work "in dramatizing books for the masses."

Southern Women's National Democratic Committee Award, $100 for the most distinguished book by a southern writer, to Ellen Glasgow for *In This Our Life* (Harcourt).

Yale Series of Younger Poets publication won by Margaret Walker, a negro poet, for her manuscript, *For My People.*

Great Britain.—James Tait Black Memorial Prizes to Joyce Cary for his novel, *A House of Children;* to John Francis Gore for his biography, *King George V* (Scribner), £250 and medal to each.

Rose Mary Crawshay Prize for historical or critical work on any subject connected with English literature by a woman, to Sybil Rosenfeld for *Strolling Players and Drama in the Provinces, 1660–1765* (Macmillan).

Hawthornden Novel Prize, £100 awarded posthumously to Llewellyn Rhys, killed in service in the R.A.F., for his *England I Village* (Reynal).

Children's Books.—Caldecott Medal for a Picture Book to R McCloskey for *Make Way For Ducklings* (Viking).

Carnegie Medal (British) to Mary Treadgold for *Left Till Calle* (Doubleday).

Julia Ellsworth Ford Foundation Award, $2,000 to Isabel M nan McMeekin for *Journey Cake* (Messner).

Herald Tribune Children's Spring Book Festival Competi three awards of $200 each, to Peter Wells for *Mr. Tootwhistle's Inve* (Winston), the best book for younger children; to Commander Ec Ellsberg for *I Have Just Begun To Fight: The Story of John Paul* (Dodd), the best book for middle-aged children; to Rosamund Van de Marshall for *None But the Brave* (Houghton), the best book for children.

John Newbery Medal (American Library association) to W Dumaux Edmonds for *The Matchlock Gun* (Dodd).

(*See* also Canadian Literature.) (B. G

Literature: *see* American Literature; Canadian Lit ture; English Literature; French Literature; Ger Literature; Italian Literature; Literary Prizes; Po guese Literature; Publishing (Book); Russian Literat Spanish Literature; Spanish-American Literature.

Lithium Minerals. Lepidolite, spodumene and amblyg are produced mainly in South Da with some smaller output in North Carolina, and lithium-so phosphate is recovered from the brines of Searles Lake, C The combination of the output of minerals with a comparat low lithium content with the much richer salt gives a figure w does not have a great deal of significance. The total shipmen minerals and salts in 1941 was 3,832 short tons ($115,718 compared with 2,011 tons ($80,679) in 1940. The increase of in weight as against only 43% in value would indicate a l proportion of minerals in the 1941 total. (G. A. R

Lithuania. A Baltic country of northeastern Europe, N Poland; in 1942 it was a part of Germany's " land." Area, 22,959 sq.mi. (1940); pop. (Jan. 1, 1940) 2,879

Chief cities of Lithuania are: Vilnius (Vilna, capital, 207, Kaunas (actual seat of administration, 152,365). Religion, dominantly Roman Catholic (80.5%). Ruler in 1942 was missioner General Adrian von Rintelen, who was made respon to Reichscommissar Heinrich Lohse of the Ostland.

History.—The kaleidoscopic changes of Lithuanian po history were epitomized in 1940–1942: Under the control o U.S.S.R. from June 15, 1940, to June 23, 1941, the Lithua then staged a revolution and declared independence; the Ge armies reached Kaunas on June 24, 1941, but allowed th dependent Lithuanian government to function for only seven weeks; on Aug. 5 this government resigned and the control was complete.

It was in Kaunas that the new Reichscommissar for the land (*q.v.*), Heinrich Lohse, announced on July 27, 194 program of "replacing chaos by European order, and in subs ing construction and civilization for destruction." He late scribed his chief task as that of establishing a "supervised omy—the personal initiative of businessmen," and the integ of Baltic economy into that of Europe. The latter mea course the subordination of Lithuanian economy to German for foodstuffs and raw materials. Property rights in handic small industry and trade were restored to some extent a Germans reorganized the sovietized country, but land and movable property were returned to the farmers only "for agement." Schools were to be restored, and some respec guaranteed to local traditions and customs, yet it was openly that German was to be made the universal lang Cities were to be restored after the war destruction in such as to give the region as much as possible the aspect it had the influence of the Teutonic knights and the Hanseatic L

liminary work was done under the famous Todt organization
1942.

'he special concern of Germany with Lithuania may be illus-
ed by the estimate of Lithuanian products going to Germany
1941–42 (Prof. K. Pakstas): 150,000 tons of grain; 250,000
s of potatoes; 70,000 tons of meat; 70,000 tons of hard fod-
; 10,000 tons of straw; 14,000 tons of butter; plus eggs, wood,
, etc. in large quantities. It was because of the rich poten-
ties of the land that the Germans were willing to aid agricul-
with fertilizers, but there was a shortage of both fertilizers
machinery in 1942. Farm controls were rigid, and prices low.
"Netherlands East company," with a capital of 2,500,000
ders, was founded to help develop the "Ostland"—and to
te Dutch interest in the "new order." (The Danes were slow
espond to a similar appeal.) In Aug. 1942 some 300 Nether-
ls colonists moved to Lithuania, which appeared to be the
f centre of activity for this consolidated investment and
nizing company. German companies monopolized the oil,
rt trade, and other phases of Lithuanian economy.

ducation.—In 1938–39 there were 2,335 private schools with
429 scholars, and 83 secondary schools and gymnasia with
39 scholars. Part of the university at Kaunas was moved
to Vilna Jan. 15, 1940.

nance.—The monetary unit is the lita (=16.1 U.S. cents at
established in 1922 as one-tenth the U.S. gold dollar). At the
of 1939 the foreign debt was 68,915,300 litas, and the do-
tic debt of the government was 65,231,200 litas. In 1939
budget estimate of the government balanced at 341,785,274
.

ade and Communication.—In 1938 imports amounted to
686,000 litas, and exports to 233,200,000 litas. Chief articles
nport were cotton yarn and thread, woollen yarn and thread,
on fabrics, woollen fabrics, coal and fertilizers. Chief articles
xport were meat, butter, flax fibre, pigs and eggs. Almost
of the exports went to Great Britain, 27% to Germany,
% to the U.S.S.R. Imports came 31% from Britain, 24.5%
Germany, 6.7% from the U.S.S.R. In 1938 telephones
bered 26,591; radio sets 53,667; broadcasting stations 2.

griculture.—Almost 77% of the population is engaged in
culture, and 49% of the land is arable. Chief products in
and their output in short tons were as follows: rye 726,636;
at 282,850; barley 282,740; oats 450,841; potatoes 2,290,469;
fibre 31,416; butter 21,890. The 1939 estimate of livestock
horses 521,000; cattle 1,004,000; sheep 1,224,000; pigs
4,000; poultry 5,130,920.

lanufacturing.—In 1938 some 1,441 industrial establishments
loyed 40,818 people. Meat and fish products were valued at
19,000 litas; manufactured timber 12,532,000 litas; tissues
yarns 28,131,000 litas; machines, etc. 13,215,000 litas;
ner goods 14,374,000 litas. Lithuania increased industrial pro-
ion from an index of 100 in 1929 to 354 in 1939. Total in-
rial production of 1939 was 405,749,000 litas. (F. D. S.)

inov, Maxim Maximovich

(1876–), Russian politician, was born July 17
ialystok, Russia. He joined the Social-Democratic party in
and supported Lenin and the bolsheviks in the factional
of 1904. After the revolution (1917) he was the party's
ipotentiary in London, where he was imprisoned as a hostage.
ook part in conferences at Genoa and the Hague, led soviet
gations at the 1927, 1928 and 1929 sessions of the preliminary
mament commissions of the League of Nations and in 1928
d the Kellogg pact for the U.S.S.R. He was made commis-
or foreign affairs in 1930 and championed collective security
eague of Nations sessions. He was suddenly dropped from his foreign office post May 3, 1939, in the midst of negotiations with Britain and France for a general mutual assistance pact; the mystery of his ouster was solved in Aug. 1939 when Germany concluded a nonaggression pact with the U.S.S.R. He was expelled from the communist party Feb. 21, 1941, but returned to favour after the nazis attacked the U.S.S.R., June 22, 1941, and was appointed soviet ambassador to the U.S. Nov. 6, 1941. In this post he made several pleas for the opening of a second front against Germany, notably in a speech at New York city June 22, 1942, the first anniversary of Russia's entrance into World War II.

Livestock.

Production of meat animals in 1942 throughout the Americas, Australasia and South Africa generally increased and in some countries, notably the United States and Canada, reached all-time peak numbers. Numbers of draft animals in most countries declined. In Europe there was a still further decline in 1942 in all types of livestock, particularly in northwest Europe, which was dependent on feed imports to maintain normal herds and droves. The peak in livestock production in Europe was in 1939 when, excepting the U.S.S.R., there were 112,000,000 cattle and 134,000,000 sheep. Hogs were at peak numbers in practically all countries except Spain, where droves had been decimated by the civil war of 1936–39. The total for hogs was 82,000,000, which was 2,000,000 short of the previous high because of the losses in Spain. The wartime reduction of livestock in Europe, however, was apparently not as heavy as generally believed. The number of cattle in 1942 was 16% less than in 1939, the number of hogs 27% less and the number of sheep 6% less (estimates by the office of foreign agricultural relations of the United States department of agriculture).

Table I.—*Numbers of Livestock on U.S. Farms, 1942, 1941 and 10-Year Average*

	1942 (Jan.)	1941 (Jan.)	1931–40 av.
Horses	9,856,000	10,214,000	11,704,000
Mules	3,811,000	3,922,000	4,677,000
Cattle	74,607,000	71,461,000	67,575,000
Sheep	55,979,000	54,283,000	52,281,000
Chickens	473,933,000	422,909,000	422,885,000
Turkeys	7,710,000	7,252,000	6,317,000

Canada showed an increase in the production of all meat animals in 1942, the larger gains being in the prairie provinces. Canadian livestock numbers for 1942 and 1941 are shown in Table II.

Table II.—*Numbers of Livestock on Canadian Farms, 1942 and 1941*

	1942	1941
Cattle	8,945,000	8,511,000
Hogs	7,133,000	6,093,000
Sheep	2,816,000	2,789,000

The United States on Dec. 23, 1942, signed a trade agreement with Mexico reducing the tariff on Mexican cattle imported into the United States. Reductions had previously been granted on Canadian exports to the U.S. (*See* also AGRICULTURE; CATTLE; HOGS; HORSES; MEAT; POULTRY; SHEEP.) (S. O. R.)

Livestock Shows: *see* SHOWS.

Lombard, Carole

(1908–1942), U.S. movie star and wife of Clark Gable, was born Carol Jane Peters, Oct. 6, in Fort Wayne, Ind. She attended school in Los Angeles and, after some success in amateur theatricals, tried to "crash" the movies. She was engaged for minor roles and played in Mack Sennett comedies, but remained an obscure actress until 1934, when she was co-starred with many of Hollywood's leading men, including George Raft, Gary Cooper, John Barrymore, Bing

A MEMORIAL TO LENIN, in front of the London house where he lived in 1902-03, was erected by the London County council and unveiled by Russian ambassador Maisky March 15, 1942. In 1941 the house was destroyed in a German air raid

Crosby and William Powell. She later established a reputation as a comedienne in a series of madcap comedies and was an outstanding favourite with U.S. movie-going audiences. Among her better-known films were *Nothing Sacred, Swing High, Swing Low, In Name Only, True Confession* and *They Knew What They Wanted.* After the U.S. entry into World War II, Miss Lombard appeared at many rallies to stimulate the sale of war bonds. It was on her return from such a rally in Indianapolis that she met her death in a plane crash near Las Vegas, Nev., Jan. 16. Her last picture, *To Be Or Not To Be,* was released after her death.

London. In 1942 the great metropolis of London with its vast population presented an extraordinary challenge to its enemies and was a source of amazing inspiration to its friends. The worst of the "blitz" of enemy bombers had come and gone, and Londoners, recovering from fatigue and nerve strain, slept peacefully in their beds and rose each day more refreshed and with feelings more normal. Some old people and a few others were still frequenting the shelters of the underground "Tube" stations, and in the large shelters of the East End families, in large numbers, continued to spend their nights under cover. Educational and social work was undertaken in these shelters.

Theatres reopened in practically all intact premises. Motion pictures extended their opening hours. Restaurants, in spite of food rationing, were generally filled to capacity. Shops, large and small, carried on, with window displays which were remarkably attractive in view of the limitations. Pedestrian traffic in Oxford St., Regent St., High St., Kensington and Westbourne Grove, the great shopping centres with large stores, was enormously increased in comparison with the winter of 1940–41, but motor traffic was very noticeably less, owing to the conservation of gasoline. Although civilians were still in the majority, service men and women abounded. Noticeable additions to the uniforms seen were those of the imperial forces and of the United Nations, the most conspicuous being Canadians, Americans, Polish and Norwegians.

The presence of dominion and United Nations troops in London presented some problems, partly due to the higher pay of the visitors and partly because they had no social and domestic ties in the vast metropolis. That they were welcome and treated acc
ingly was very evident, and time was to adjust temperaments
cited with experiences new both for the visitors and the h
Londoners as a whole were seeking in many and varied way
meet their visitors more than half way by providing social
other facilities.

Civil Defenses in 1942.—The fear and risk of fire loc
largest in the minds of the inhabitants and in their plans.
fire brigade during the year was transferred from the Lon
county council to the National Fire service and, from a peace
service of 3,000 officers and men, housed in 60 fire stations,
expanded to 25,000 men and women using 400 premises,
pumps of varying capacities with 2,400 towing units, 500 m
cars and 860 motorcycles. There were also river craft to
fires on and adjacent to rivers and canals. In addition, a
compulsory fire watching service for business premises and
dences was being organized out of civilian residents and bus
men and women.

The civil defenses manned by civilians, excepting the Fire
ice, were organized as a whole under a scheme which plac
commissioner responsible to the home secretary in charge
region, of which greater London was one. The London region
subdivided into nine groups; five of these groups each cov
from five to eight metropolitan borough council areas and
remainder were outside London. This subdivision insured
bility and mutual aid, but the commissioner could concen
assistance from a wide area to where the need was greatest. A
administration was left to the appropriate local authority.

The London county council was responsible for auxiliary
bulances; evacuation; hospitals; rescue; debris disposal; Lon
ers' meals; rest centres. The metropolitan borough councils u
took decontamination; first-aid posts; fire watching; report
control centres; stretcher parties; air-raid wardens; rehousing
billeting; shelter provision.

The peacetime ambulance service, consisting of 400 officers
men with 180 vehicles based on 20 stations, was extended to
personnel, 100 stations and 1,600 vehicles. The rescue servi
extricate victims from bombed buildings consisted of 10,000
organized into 500 parties equipped at 100 places. The d
service (23,700 men) undertook clearance of roads and buil
and demolished unsafe structures. The rest centre service, w

ended because of delayed action bombs temporarily displacing ple, dealt with bombed-out families, and comprised 150 first- e centres accommodating 200 persons or more each, and 50 sec- l- and third-line centres providing accommodation for 10,000 sons. The Londoners' meals service, necessitated because of the akdown of domestic gas and water services, enabled victims of nbing to secure meals at a reasonable cost. It was at first on a sh and carry" system but this was replaced by a restaurant vice providing 200,000 meals a week. The evacuation scheme uded school children, mothers with children below school age, gnant mothers, blind persons, and the aged and infirm. At one e five-sixths of London's children were evacuated but the vast ority of these children had returned.

During 1942 it became possible to reveal, in general terms, the nt of bomb damage already sustained. If all the damage done he rest of England were totalled, London's damage would still n excess of this total. More than 40,000 houses were demol- d or damaged beyond repair, and in addition more than 500,- were damaged but were capable of repair. The rest centres already accommodated 130,000 people, 10,000 at one time. repair squads had had to deal with 400 cases of damage to ers and 100 of damage to the Thames embankment.

inances.—Although national taxation had leaped out of all vious recognition, local rates for London services remained y static and were in some cases reduced. This was due partly he contraction of municipal services and partly to the great ease in government grant-aided or wholly-paid services.

he London county council budget for the year 1942–43 on cap- account showed a reduction to less than 1/12 of that in 1938. new developments were taking place during 1942, except for defense purposes.

he gross expenditure for the year was more than £55,000,000, greatest amount the council had ever been called upon to ad- ster, nearly £19,000,000 of which was chargeable to rates, h for 1942–43 were 6/6½*d* in the £, a reduction of 3½*d* on previous period, a total reduction in the rate in the £ since commencement of the war of 1*s*.

(R. St.)

don University. The number of internal students in 1942 increased from 8,916 to 9,162, ly in engineering. The number of external students also rose. medical schools and the School of Slavonic Studies returned ondon. An important development was the government me for scholarships in oriental languages to meet the needs of services and other government departments. On account of shortage of medical practitioners, the medical course was re- d by six months. Regulations came into force relative to en students coming under the national service acts. Much able work was done by the extramural department in connec- with education among the armed forces. Most of the chairs nt through death or retirement remained unfilled. Sir Henry rd (Rector, Imperial college) was appointed president, Mag- n college, Oxford. (S. J. W.)

Angeles. Fifth largest U.S. city, Los Angeles, county seat of Los Angeles county, Calif., had a pop- on of 1,504,277 in 1940 and an estimated population of 1,800,- in 1942. War and an influx of workers brought a boom in the rate.

e 400th anniversary of California's discovery by Cabrillo commemorated in October.

e aircraft industry expansion continued. Los Angeles munici- irport became the most important commercially in the entire , and was to be directly connected with Asia and Australia.

The huge aluminum industry served one of the world's largest markets, because of the concentration of the aviation industry. Henry J. Kaiser's $83,000,000 Fontana steel plant neared completion during the year; actual production was to begin in Feb. 1943.

The Colorado river aqueduct doubled the water supply for the Southern California coastal plain, from its source (245,000 sq.mi.) in the Rocky mountain water shed. Electrical energy in the industries of Los Angeles exceeded 9,350,000 man power in 1942.

There was an approved project sponsored by the State Railroad commission for storing quantities of natural gas underground, as a safety measure, to serve metropolitan Los Angeles.

Pan-American unity and hemispheric solidarity were symbolized Columbus Day at Civic Center by an impressive flag raising, representing 21 American republics and the Dominion of Canada. Evacuation of Japanese and persons of Japanese ancestry from the war zone was the greatest in U.S. history, conducted in an orderly manner by Lieutenant-General John L. De Witt. Difficult problems, especially a shortage of agricultural and horticultural labour, resulted.

Los Angeles county again led the nation in farm production, totalling $113,000,000 for 1941. Half-day sessions made 40,000 high-school pupils available for business, industry and agriculture. School Superintendent Vierling Kersey outlined a seven-point program of war-aid effort, giving each person a duty in volunteer activity.

The War Transportation Council in November established a program of staggered hours for business and industrial organizations, affecting the lives of most residents, to conserve rubber and to ameliorate the congestion in street car and bus transportation induced by gasoline rationing, which went into effect Dec. 1. Unusual problems arose from the long distances travelled and the general dependence upon automobiles in Los Angeles, which led the nation in surrendered tires.

Despite wartime restrictions, the symphony concerts continued in Hollywood Bowl; but audiences were limited to 10,000 persons. Los Angeles also enjoyed a grand opera season. On the whole, the city was thoroughly geared to the war effort. (R. D. Hu.)

Louisiana. One of the west south central states of the United States of America, admitted to the union in 1812 as the 18th state, Louisiana is popularly known as the "Pelican state," "Creole state" or "Bayou state." Area 48,523 sq.mi., of which 45,177 sq.mi. are land; population (1940) 2,363,880, of which 1,383,441 or 58.5% were rural and 980,439 or 41.5% urban; 64% native whites, 34.3% Negroes and 1.7% foreign born. Capital, Baton Rouge, 34,719. Other important cities: New Orleans, 494,537; Shreveport, 98,167; Monroe, 28,309; Alexandria, 27,066.

History.—The legislature met in regular 60-day biennial session on May 11, 1942. War conditions having reduced anticipated revenues far below budget requests, Gov. Jones urged economy and recommended either drastic reductions in appropriations or new tax measures to raise additional funds. A factional fight developed over an administration-sponsored emergency sales tax bill, chief opposition coming from the New Orleans members. The bill was defeated, and the legislature adjourned after passing a general appropriation bill calling for expenditures greatly in excess of anticipated revenues, without enacting any new tax measures. The governor thereupon vetoed enough items to balance the budget, most of which vetoed items affected New Orleans in particular, whose legislators had defeated the sales tax proposal. After much political bickering between state administration forces and the New Orleans faction, an extra session was convened (Aug. 20–29) to provide additional revenues to meet the state's most pressing financial needs, and a 1% "War Emergency Sales Tax" was passed. The most important act passed during the regular session was the new Louisiana criminal code.

The national defense program caused increased industrial activity in 1942. Plants engaged in war production were greatly enlarged, and several new defense industries were established. Access roads were built in the vicinities of the new army camps and airfields, and housing facilities near these military installations and the industrial centres were greatly expanded. Elaborate military manoeuvres were held in the state.

State officers in 1942 were Sam Houston Jones, governor; Mark M. Mouton, lieutenant governor; James A. Gremillion, secretary of state; A. P. Tugwell, treasurer; L. B. Baynard, auditor; Eugene Stanley, attorney general.

Education.—In 1942 public elementary schools enrolled 199,792 white and 24,845 Negro pupils; public high schools had 82,360 white and 16,234 Negro students; there were 10,496 white and 1,189 Negro teachers in the public schools. State expenditure for elementary and secondary education exceeded $25,000,000 annually.

Table I.—*Leading Agricultural Products of Louisiana, 1942 and 1941*

Crop	Yield		Value	
	1942	1941	1942	1941
Cotton, bales	598,000	313,000	$67,000,000	$33,300,000
Corn, bu.	25,000,000	22,260,000	24,000,000	16,585,000
Rice, bu.	25,758,000	19,906,000	40,000,000	24,882,000
Sugar cane, tons	4,734,000	3,947,000	23,000,000	14,599,000
Truck crops	.	.	10,000,000	8,000,000
Sweet potatoes	.	.	5,500,000	4,500,000
Irish potatoes	.	.	2,750,000	2,000,000
Soybeans	.	.	2,500,000	1,500,000
Hay	.	.	5,000,000	4,000,000
Sugar cane syrup	.	.	3,500,000	3,000,000

Annual state expenditure for higher education exceeded $7,000,000. War conditions caused substantial decreases in enrolment in Louisiana colleges in 1942.

Public Welfare, Charities, Correction.—In 1941 old-age pensions were paid to 36,000 persons; 40,000 dependent children in 16,000 families were aided; 1,260 blind persons were assisted; and 12,000 needy cases were granted general relief in Louisiana, at a total cost of $35,000,000 to state and nation.

The state maintained the following institutions in 1942: charity hospitals at New Orleans, Shreveport, Lafayette, Pineville, Independence and Monroe; insane hospitals at Jackson and Pineville; a tuberculosis hospital at Greenwell Springs; schools for the blind and deaf at Baton Rouge; training school for feeble minded at Alexandria; soldiers' home at New Orleans. There were also numerous private and endowed hospitals and orphanages. The state in 1942 maintained two prison farms for its 3,000 adult offenders and separate training institutes for 300 male and female juvenile delinquents.

Communication.—Louisiana in 1942 had 18,200 mi. of public highways, 14,410 of which were state-maintained, 10,098 being gravelled and 4,268 paved; the expenditure on highways exceeded $33,000,000. There were 4,400 mi. of railways and 4,800 mi. of navigable waterways. New Orleans, Baton Rouge and Lake Charles are ports for ocean-going commerce, with combined tonnage of 7,515,000 foreign and 11,556,000 coastwise in 1940. There were 26 airports for land planes and 11 seaplane bases and anchorages in 1942. There were 250,000 telephones in the state.

Banking and Finance.—Louisiana had 29 national banks in 1942, with assets of $475,000,000, deposits of $450,000,000, and capital, surplus and reserves of $34,000,000; and 117 state banks, with assets of $203,000,000, deposits of $185,000,000, and capital, surplus and reserves of $22,500,000. There were 67 savings and loan associations, with total assets of $75,000,000. Postal savings totalled $9,000,000. The state budget for the fiscal year

Table II.—*Principal Mineral Products of Louisiana, 1942 and 1941*

Mineral	1942	194
Petroleum (bbl.)	122,432,000	118,27
Natural gas (M. cu.ft.)	475,000,000	450,00
Natural gasoline (gal.)	210,000,000	200,00
Sulphur (long tons)	600,000	53.
Salt (short tons)	700,000	80

1941–42 was $100,000,000, with receipts and expenditures anced. Gross state debt, $135,000,000; net debt, $130,00

Agriculture.—War conditions stimulated agricultural pr tion in 1942, and the weather was generally favourable for Total value of agricultural production in 1942 was $190,00 compared with $122,000,000 in 1941; total acreage harv was 4,124,000, compared with 4,032,000 in 1941. Cash in from crops and livestock was $225,000,000, compared with $ 000,000 in 1941; from government payments, $13,200,000, pared with $17,000,000 in 1941. Crop yields in 1942 wer unusual, but prices for crops and livestock were much h than in 1941.

Manufacturing.—The production of chemicals, refined leum, lumber and cottonseed derivatives was greatly incr by the demand for war supplies, and most other types of m factures also showed a smaller increase in volume during the Nearly 2,000 industrial establishments, employing 125,000 wo and paying $150,000,000 in wages, produced finished pro worth $990,000,000 in 1942, as compared with $750,000,0 1941.

Mineral Production.—War activities stimulated the de for petroleum, natural gas and sulphur in Louisiana, and the value of mineral production was $250,000,000 in 1942 as pared with $200,000,000 in 1941. (W. F

Love, Nancy Harkness (1914–), U.S. comman the Women's Auxiliary Fe Squadron (WAFS), was born Feb. 14 in Houghton, Mich learned to fly when she was 16 years old and while a stud Vassar, 1931–34, qualified for a commercial pilot's licence was air marking pilot for the U.S. bureau of air commerce, 37. Later she became a test pilot, and in 1941 she joine husband's aviation company as sales director. On Sept. 11, Sec'y. of War Stimson announced plans to establish a u women fliers to ferry army planes from factories to air thus relieving male pilots for other duties. The unit, kno the Women's Auxiliary Ferrying Squadron (WAFS), was p der command of Mrs. Love. The WAFS, at first composed women—40 fliers and 10 administrative aides—piloted on smaller type of aircraft. Mrs. Love estimated that 600 w in the U.S. would qualify for the job under the civil servi quirements.

Luce, Clare Boothe (1903–), U.S. playwright and ber of congress, was born in New city April 10. Graduated in 1917 from St. Mary's sch Garden City, Long Island, N.Y., and in 1919 from Miss M Castle school at Tarrytown-on-the-Hudson, she later receiv honorary degree from Colby college. She was associate edi *Vogue* in 1930, and associate editor and managing edit *Vanity Fair* from 1930 to 1934. In 1935 she married Her Luce, magazine publisher. Mrs. Luce had one daughter Clare, from a previous marriage in 1923 to George Broka Republican nominee for congress from the 4th district of necticut (Greenwich) in 1942, she conducted a colourful paign, and was elected Nov. 3. She was the author of S *Shirts* (1933) and *Europe in the Spring* (1940), and such as *The Women* (1937), *Kiss the Boys Goodbye* (1938 *Margin for Error* (1939).

umber. It is estimated that the total production in the U.S. in 1942 was about 34,000,000,000 bd.ft. The estiated requirements were for 31,500,000,000 bd.ft. of softwoods nd 6,500,000,000 bd.ft. of hardwoods.

Because of the urgent demand for steel and other metals, the ar Production board ordered that 800 items, formerly made of etals, be made from lumber, plywood, plastics and other mateials. Many commonly used items, from coat hangers to refrigerors, including metal desks, filing cabinets, furniture, etc., were ing constructed almost entirely of lumber. Furthermore, in ne 1942, the government order required that all truck and ailer bodies be constructed of lumber. One order issued in one y for 800,000 trucks was estimated to save 42,000 tons of steel 1942 and 850,000 tons in 1943. These trucks require an avere of about 1,000 bd.ft. each. The production of motor truck dies and trailers was estimated at 1,000 per day, and by the st of the year 1943, production was at the rate of 1,500 per y. This meant that 1,000,000 bd.ft. of lumber were used for ucks each day.

The principal species produced in 1942 were, in order of imrtance, southern pine, Douglas fir, ponderosa pine, oak, white ne and hemlock.

An increasing number of small mills produced lumber for the ipbuilding program, for the packaging and shipment of munins and war materials, the construction of buildings in connecn with new or enlarged airports, bomber bases, training centres, pyards and increased facilities at army posts and training ntres. The demand for lumber for boxes, crates and other forms packages increased enormously. The normal demand for boxes d crates constituted about 12% to 15% of the total lumber oduction. It is estimated that in 1942 this proportion was ineased to about 25%.

The Office of Production Management set price ceilings for actically all forms of lumber. These were based upon F.O.B. ints of origin at the sawmills. Generally, the prices set were ose prevailing in March, 1942.

The lumber industry was further hampered by a lack of perienced woods and sawmill labour caused by the drafting of ny experienced men and the attraction to higher wages paid defense and war industry projects. With ceiling prices set for mber, added costs of labour and difficulty of securing sufficient ucks, machinery and other important materials for production, gging, sawing, seasoning and shipment of lumber became difficult some regions, particularly where small and new mills had been ganized to produce special war orders. The normal export movent of lumber was practically non-existent. Most of the export lumber was for special construction projects associated with the r effort in foreign countries.

The large increase in the use of plywood, estimated at 1,600,0,000 sq.ft., meant the diversion of the largest and most symtrical logs, particularly in the Douglas fir and some hardwood gions, from the manufacture of lumber into the manufacture of ary veneers for processing into plywood. (N. C. B.)

British Empire.—The spread of the war into new areas in 1942 vitably greatly affected the timber industry. Great Britain, largest timber importing country, deprived as it was from the ginning of hostilities of supplies from the producing countries Europe, found other sources of supply cut off when Japanese ces overran Malaya and Burma. Moreover, the United States oved on to a war footing, and her demands for lumber quickly sumed colossal dimensions. Canada's war production activities, o, were on an ever-rising scale. The drift of labour from Canan logging camps and the lumber industry to munitions and er industries created a serious position and in the second half the year Canada faced the gravest timber shortage in her history. The government took steps to stop the labour drift and tightened up timber control. Elsewhere in the Empire—Great Britain, Australia, New Zealand and South Africa—timber control measures became more stringent, and there was increasing dependence in these countries on locally grown woods.

Great Britain continued to draw supplies from Canada and the United States, and there were limited imports also from Russia in ships which, in convoy, had taken war supplies to that country. In the earlier war years Britain's ability to import was largely governed by shipping facilities available. Now, with the increased timber needs of the United States and Canada, it was more necessary to view the timber supply situation from the angle of the needs of the United Nations as a whole.

More and more urgency was therefore placed on production from the forests and woodlands of Great Britain. Production from home woods was approximately 600,000 tons greater than in the previous year, and in the autumn of 1942 a call was made for a further increase of 400,000 tons. Especially was impetus sought in the production of round timber for use in coal mines.

The home grown timber industry felt the effect of the withdrawal of men for service in the armed forces. The production facilities of the trade itself were greatly augmented by the ministry of supply's departmental mills and the operations of the Canadian, Australian, New Zealand and Newfoundland forestry companies working in Britain; some use was made of Italian prisoners-of-war in woodland work; and—a new development during the year—a Women's Forestry Corps of the Women's Land Army was formed.

Britain's timber supplies during the year were adequate to meet vitally essential needs; only 3% of the timber in Britain was being used for civilian or domestic use. (*See* also FORESTS.)

(N. F.)

Lutherans. The year 1942 was a year of great tensity in the Lutheran church, throughout the world. Significant communications and co-operative work, on a world scale, were impossible or were severely restricted. The large Lutheran populations in European countries were subjected to increasing trials of faith, courage and patience under the conflict between paganism and Christianity.

The courageous record of the Lutheran bishops, clergymen and laymen in Norway, in steadfast refusal to submit to the impositions of the dictated government, under German dominance, was notable.

War with Japan in 1941 led to the withdrawal, by exchange of citizens, of all American missionaries of the Lutheran church from Japan, and as many as could be arranged for from occupied China. Great problems arose also in the large Lutheran missions in India and New Guinea, and in missions cut off from the support of European churches.

Several large Lutheran bodies in America held regular official conventions in 1942 at which great progress was made toward Lutheran unity. Authorized altar and pulpit fellowship only awaited official proclamation for two-thirds of the Lutherans in America.

Contributions for regular and emergency services showed a marked increase from month to month in the American Lutheran churches during 1942, and an increased interest was manifested by church attendance, and by topics and discussions in important conferences. After making special contributions to war emergencies in 1942, amounting to more than $1,000,000, an appeal, to be made in 1943 for a 50% increase for that service, was authorized in the 1942 conventions.

Problems which emerged in 1942 to challenge the wisdom, faith, loyalty and generosity of the churches in 1943 were: Care of the multitudes of unchurched people in new industrial centres; Recruiting of men for the ministry to take the places of hundreds serving the country as chaplains, and for new work in industrial centres; Maintenance of colleges, in the face of great losses in enrolment; The service of the church in the establishment of peace, and in provision for relief and reconstruction after the war. (W. H. G.)

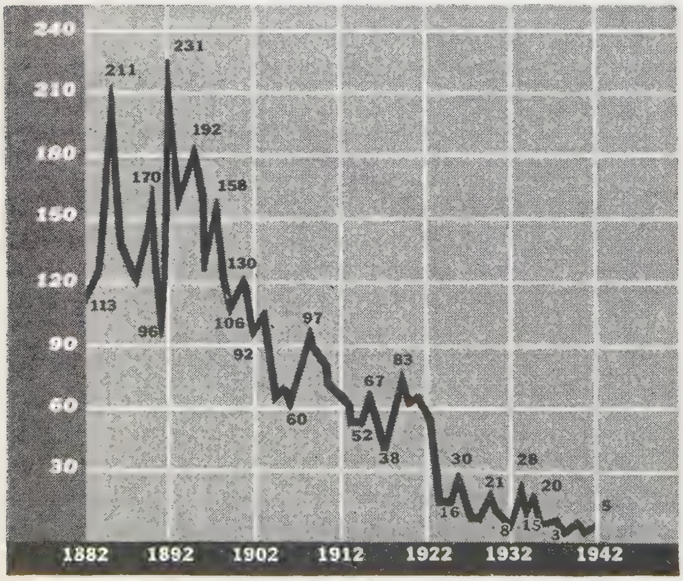
Luxembourg. A grand duchy situated between France, Germany and Belgium. Area, 999 sq.mi.; pop. (est. 1942) 301,000; chief city, Luxembourg (cap. 59,000); language, Luxembourgian (idiomatic) and (officially) French and German; religion, 98% Roman Catholic. Ruler in 1942 (since 1919): Grand Duchess Charlotte.

The grand duchess was forced to flee on May 10, 1940, as German troops swept into the country and placed it under martial law. This was replaced three months later by an even more oppressive civil administration under Dr. Gustav Simon, nazi gauleiter of the Trèves-Cologne district. In the plebiscite which he held on Oct. 10, 1941, asking the people to vote to become German citizens, 98% refused. The loyal Luxembourgers still adhered to the sentiment of their patriotic national song, "We want to remain what we are."

On Aug. 30, 1942, Luxembourg was incorporated by decree into the German reich, and a mobilization order summoned its citizens to military service in the German army. This action was vigorously protested by the Luxembourg prime minister, Pierre Dupong, and by the workers who called a general strike. As a result, orders were given that strikers were to be sentenced to death, and many were deported into Germany. (S. B. F.)

Lynchings. Coincident with a general increase of interracial tension during 1942, the lynching record as reported by Tuskegee institute also showed a slight increase, from four in 1941 to five in 1942. Three states were involved—Mississippi with three victims, Texas with one, Missouri with one. All the victims were Negroes. Though local officials were supposed to have investigated every case, and though the Federal Bureau of Investigation also went into some of them, none of the lynchers was apprehended and no indictments were returned. Briefly, the several incidents were as follows:

Sikeston, Mo., Jan. 25: Cleo Wright, exconvict, was accused of entering the home of a white woman and slashing her severely with a knife. Put under arrest, he stabbed the arresting officer and was shot in return. A few hours later, desperately wounded, he was taken from the jail by a mob several hundred, and was dragged through the streets and burned.



LYNCHINGS in the U.S. from 1882 to 1942, based on figures of the department of records and research, Tuskegee institute

Texarkana, Tex., July 13: Willie Vinson, aged 31, accused of attemp criminal assault, but not positively identified by the victim, was seve wounded while resisting arrest and was sent to the hospital. There he promptly abducted by three men, was dragged to the edge of town behin car, and was hanged by a mob numbering about 20.

Shubuta, Miss., Oct. 12: Charles Lang and Ernest Green, 14-year- boys, charged with attempt to rape a 13-year-old white school girl, w taken from the jail and hanged. Said Governor Paul Johnson, in order investigation of this case: "Every man who helped lynch those Negroe guilty of murder. I want the public to know that the governor of Mississ condemns the act and will exert every reasonable effort to see that the lated laws of Mississippi are vindicated." The FBI assisted in the inve gation, but no arrests were made.

Laurel, Miss., Oct. 17: Howard Wash, sentenced to life imprisonment the murder of his employer, was taken from jail and hanged by a mob 100. The state militia was ordered out to apprehend the lynchers, but w out result.

Begun by the *Chicago Tribune* in 1882 and for many ye kept up by Tuskegee institute, the lynching record down to 1 shows a total of 4,705 victims, an average of 77 per year. For four states have figured in the record, a few with one or t lynchings each, some with several hundred. The only excepti are the four states of Massachusetts, Rhode Island, New Ham shire and Vermont. (*See* also NEGROES [AMERICAN]). (R. B. E.)

McAfee, Mildred H. (1900–), commander of the U women's naval reserve unit (WAVE was born on May 12 in Parkville, Mo., and was graduated fr Vassar in 1920. She was acting professor of economics a sociology at Tusculum college, Greeneville, Tenn., 1923–26, a received her master's degree at the University of Chicago 1928. She was dean of women at Centre college, Danville, K 1927–32, and at Oberlin college, 1934–36, and was appoin president of Wellesley college in 1936. After the outbreak World War II, she was named a member of the education visory committee for the navy training program, working w naval personnel on plans for a women's reserve. When Pr Roosevelt signed the bill creating a women's naval reserve July 30, 1942, Miss McAfee was chosen to head the WAV (Women Accepted for Volunteer Emergency Service, *q.v.*) a she was sworn in Aug. 3, 1942, with the rank of lieutenant co mander. Expected to number 1,000 officers and 11,000 enlis women, the WAVES took over naval administrative and techni jobs in continental U.S., thus releasing many men for active du

Macao: *see* PORTUGUESE COLONIAL EMPIRE.

MacArthur, Douglas (1880–), U.S. army officer, w born Jan. 26 in Little Rock b racks, Ark., the son of Lt. Gen. Arthur MacArthur. Gradua from West Point in 1903, he was commissioned in the engin corps. He rose to brigadier general in World War I, and w subsequently made division commander. He was gassed a wounded in action. When promoted to a major general in J 1925, he was youngest of that rank in the U.S. army. Ma chief of staff with rank of full general on Nov. 21, 1930, reorganized and strengthened U.S. defenses. President Roosev retained MacArthur as chief of staff beyond his regular term that he could complete army reorganization. In Oct. 1935, at request of President Manuel Quezon of the Philippines, he linquished his post as chief of staff, became military adviser the Philippine government and overhauled the commonwealt defense system. He retired Dec. 31, 1937, but Quezon kept h on as head of all Filipino military and constabulary forces. Roo velt formally nominated MacArthur to be a lieutenant gene in command of U.S. and commonwealth forces in the Philippin after the Philippine army was reincorporated into U.S. for July 26, 1941. Following Japan's attack on the Philippines was renamed a full general by President Roosevelt, Dec. 19, 19 nd led Filipino and American forces in the defense of the islands. Although heavily outnumbered in men, planes and tanks, IacArthur slowed the Japanese advance in early Jan. 1942 and etired in good order to Bataan peninsula. There his small but ell trained army of U.S. and Filipino regulars found cover in the ıountainous terrain; the Japanese made gains—as there was no ay of getting supplies to MacArthur—but at exceedingly heavy ost. He left the Philippines on Roosevelt's orders and reached ustralia March 17, 1942, to assume command of all United ations armies in the southwest Pacific. It was under his comand that U.S. and Australian troops launched, in the fall of 942, the counter-offensive in New Guinea that drove the Japs om Gona and Buna. He set up field headquarters in New uinea in November and personally directed operations. On Oct. 3, MacArthur, answering critics who hinted that he had presintial aspirations, declared that he had no political ambitions hatsoever.

lcClintic, George Warwick

(1866–1942), U.S. federal judge, born Jan. 14 in ocahontas county, W.Va. He received his law degree from the niversity of Virginia in 1886 and for over 30 years practised in harleston. He won national prominence in the prohibition ears when he sentenced more than 7,000 people to jail for viotion of the liquor law and collected nearly $500,000 in fines om offenders in a four-year period (1922–26). Judge McClintic as appointed to the U.S. district court of southern West Virnia in 1921 and retired in 1941. He died in Charleston, W.Va., ept. 25.

lacDonald, Mrs. Ewan: *see* MONTGOMERY, LUCY MAUD.

lachinery, Farm: *see* AGRICULTURE.

lachinery and Machine Tools.

In order to meet the greatly enlarged deand for their products during 1942, manufacturers of machine ols, with few exceptions, concentrated on the production of andard models rather than the development of new units and nprovement of older models. Standard designs were frozen to cilitate increased production. Where increased output of a parcular war product was demanded the solution usually was either e adaptation of an existing machine tool design by special toolg or the development of a special machine.

Some machine tool builders simplified their production probms by discontinuing temporarily the manufacture of one or ore sizes of machines. This permitted them to concentrate on aking larger quantities of fewer models. Also, there were inances when the War Production board approved arrangements etween companies for the manufacture by one concern of mahine tool models temporarily discontinued by another.

Conversion to war production stimulated tremendously the delopment and widespread adoption of new and improved methds. Processes such as welding, heat-treating, metal cutting, and etal cleaning and finishing, were improved in many instances suit the requirements of the materials being processed. Application of jigs and fixtures was stimulated, new principals of plant yout were developed and better means of handling parts meanically between production operations were worked out.

Because of the same factors which led to a materially increased oduction of machine tools during 1941—including expanded falities, longer working hours, subcontracting of parts manufacture, aining of new employees as machine operators rather than as lly qualified machinists, classes for older employees so they could e upgraded, and the employment and training of women—mahine tool manufacture during 1942 again broke all records. Value of product shipped from plants of machine tool builders during 1942 reached the unprecedented total of about $1,300,000,000.

Conversion of the automobile industry, including those plants making parts and accessories for that industry, to war production during 1942 was an outstanding achievement. Of course, the shift to war production within the automobile industry really started back in 1940 and progressed steadily during 1941. By the time the Japanese attacked Pearl Harbor this industry was producing a substantial volume of war goods. However, orders for an all-out conversion to war production did not come until early in 1942. In 1942 steady streams of tanks, planes, guns and other means for waging war were flowing out of plants that were producing pleasure cars during January and February of 1942. (*See* AUTOMOBILE INDUSTRY IN THE WAR.)

This complete change-over of an industry to war work was not easily accomplished. In many instances all production equipment had to be removed from plants and new equipment installed to make a product radically different in every respect from that manufactured in peacetime years. Untold hours were spent in selecting and installing machine tools, developing jigs and fixtures, determining the details of processes to be employed, and in training former automobile production workers to handle tools, materials and processes with which they were not familiar. Then, as more and more men were withdrawn from industry for service in the armed forces, additional problems in tooling and training were brought into the foreground by the employment of women workers to replace the men.

Shortages of certain critical materials led to a number of substitutions of materials, both in the construction of machine tools and in the war products being manufactured in large quantities. Often, these substitutions necessitated major design changes so that full advantage could be taken of the properties of the new materials. For example, one prominent manufacturer of turret lathes early in 1942 placed on the market two new saddle-type turret lathes in which high-strength cast iron spindles were substituted for the alloy steel spindles normally used. While equivalent in most physical specifications to previously made units, these two lathes were designed to be made with readily available machine tools from materials obtainable in large quantities.

The problem of salvaging and putting back into use every possible pound of critical materials was attacked from every angle. A new series of National Emergency steels was developed for use wherever possible in place of the more strategic high-alloy steels, plants making products requiring the more strategic alloys put into effect extensive scrap collecting and segregating systems. (*See* also SALVAGE DRIVES, U.S.)

Among the novel machine tools made available to the metal-working industry during 1942 was a unit which combined the functions of a horizontal boring machine and a jig borer. It was claimed that this unit had the production capacity of a milling machine, the spacing accuracy of a jig borer, and the flexibility of a horizontal mill. It had wide application in small plants and in tool rooms where there was need for both a horizontal mill and a jig borer, but where neither machine would be in use all of the time. By combining the features of both machines, the manufacturer of this unit made available a machine that would do both jobs but required only one operator and took up half of the normally required floor space.

Another new machine bores, faces and taps both ends of an aircraft bomb in one chucking. The bed of this unit supports a centre drive chuck and a turret carriage at each side of the chuck. The left-hand turret is equipped with a motor-driven drill unit, a boring bar with facing tools, an undercutting tool and, when necessary, a collapsible tap. The right-hand turret holds a boring bar with facing tools at one of the two stations and a

THE OXYACETYLENE TORCH, only tool that can cut metal apart and weld it together again, was widely used in the shipbuilding industry in 1942 to speed production. Here a battery of torches is cutting eight steel shipbuilding wedges simultaneously

collapsible tap at the other. This machine had special equipment to move the work rapidly in and out of the chucking position.

Many of the gears required for war products must be finished with more precision than most of those made in peacetime. As a result a number of new machines were developed for finishing gears with high precision. One of these units made available three methods for finishing gears by shaving. Another was a precision grinder for finishing generated curved-tooth bevel gears. In grinding a gear with this machine, the wheel is alternately fed into the work during the up-roll of the cradle and withdrawn during the down-roll. The work, in the meantime, rotates continuously so that the wheel when starting on the next up-roll engages a following tooth. The cycle is repeated until all teeth are ground. Control of tooth bearing is obtained by dressing the wheel to a modified shape and by modifying the generating roll. The wheel dressers are hydraulically operated and dressing is entirely automatic. Dressers may be adjusted for feed, pressure angle, radius and wheel diameter.

Equipment for sharpen tool forms and angles ac rately is particularly necessa as precision-ground tools s valuable metal-cutting ma rials and improve the quality the product. In fact, in ma instances it would not be p sible to make some parts if tools were not precision grou One machine developed dur 1942 for this type of work adaptable to sharpening t tipped with either tungst carbide or high-speed steel. T unit is a full-universal t grinder fitted with a par graph-controlled optical che ing instrument. Tools can ground and then inspected w out removing them from t machine. Profile gauges, ter lets and other irregular for also can be ground to size a shape in this machine.

A recital of the developme in metal working during 19 would not be complete with mention of the contributi made during the year by t aircraft industry. Considera ingenuity was used by men this industry in developing d and other tools for form sheet metal parts. One popu method was the use of s metal that could be cast shape—and so avoided spe ing many hours in the tool ro making steel dies for the sa purpose. Plastics were used such tools. Some of the p tic materials were cut to required shapes on woodw ing machines while others were cast to shape in plaster mou These materials also were employed with considerable success making jigs and fixtures. (B. C. B.

Mackenzie King, William Lyon: *see* King, William Ly Mackenzie.

McNamee, Graham (1888–1942), U.S. radio announ was born July 10 in Washington, D Possessor of a pleasing baritone, he trained to be a singer left the concert stage in 1923 to work as announcer and singer a New York radio station. Later that year he was assigned cover a prize fight for radio audiences; his extemporaneous "bl by-blow" description of the bout set him on the road to nati wide fame as a "sportscaster." He developed the running-st technique of radio reporting to a fine art, and his dramatic, f moving accounts set the pace for later announcers. He cove major sports events and later widened his field of action to clude political conventions and big news happenings. McNan who was also a newsreel commentator, died in New York c May 9.

cNaughton, Andrew George Latta (1887–), Canadian army cer, was born at Moosomin (Sask.) Feb. 25, the son of Robert ncan and Christina Mary Anne (Armour); he was educated Moosomin public school, Bishop's college school, Lennoxville, ., and at McGill university (1906–10), B.Sc., 1910, M.Sc. 12, Senior demonstrator in electrical engineering (1912–14). neral McNaughton served conspicuously in World War I, dur- which he commanded in succession the 4th battery, 2nd bri- le, Canadian field artillery; the 21st howitzer battery; the 11th gade C.F.A.; and next was appointed counter-battery staff cer of the Canadian corps. Wounded at the second battle of res (April 1915) and again at Soissons (Feb. 1918), he was ee times mentioned in dispatches, awarded the Distinguished vice Order (1917) and made a Companion of the Order of St. chael and St. George (1919).

Upon returning to Canada in May 1919, General McNaughton s appointed member of the committee for the reorganization of itary forces of Canada, and in 1922 he was promoted to deputy ef of the Canadian general staff. In 1929 General McNaughton s again promoted, this time to chief of the general staff, a posi- which he held until asked to be president of the Canadian tional Research council (1935).

He served in this capacity until Oct. 6, 1939, when he was pointed commander of the Canadian active service forces.

In Feb. 1942 he paid an official visit to Canada and also con- red with Pres. Roosevelt. He returned to England in April and k command of the newly-formed Canadian army in Great tain. Gen. McNaughton was instrumental in training the nadian troops who took part in the Allied raid at Dieppe Aug. 1942. (J. T. C.)

cNutt, Paul Vories (1891–), U.S. politician and government official, was born July in Franklin, Ind. Educated at Indiana university (A.B., 3) and at Harvard (LL.B., 1916), he served on the faculty Indiana university law school, 1917–25, and was dean of the school, 1925–33. He was elected governor of Indiana in 2 and assumed office in 1933. McNutt was also elected na- nal commander of the American Legion, 1928. He was U.S. h commissioner to the Philippines, 1937–39, and was named t administrator of the Federal Security Administration in 1939. April 18, 1942, President Roosevelt made McNutt head of War Manpower commission (*q.v.*), a new agency to assure ft mobilization and distribution of the nation's manpower in industries. McNutt's efforts to solve the acute shortage of ustrial manpower in early 1942 were hampered by his lack of quate authority. On Nov. 16, he admitted charges that the ernment was wasting federal manpower and that some federal ncies were "pirating" or "hoarding" workers. But Pres. Roose- t acted on Dec. 5, 1942, to remedy the situation by vesting McNutt full power to hire and distribute workers for civilian industries and implemented his authority with full control of Selective Service system.

acSwiney, Mary (? –1942), Irish Republican leader, a teacher by profession, became identified h the Irish Republican movement in 1913. After the Irish olution, she was a member of the Dáil Eireann, 1921–25, but ke with her comrades, including Eamon de Valera, on the issue complete separation of Ireland from Great Britain. Miss Mac- iney maintained that the Irish republic established before the glo-Irish treaty of 1921—which gave Ireland dominion status was the only legitimate government and would not recognize the e government. In 1929, she made an attempt to set up a parliament of "true representatives" of Ireland. She was the sister of Terence MacSwiney, lord mayor of Cork, and a revolutionary, who died after a 74-day hunger strike in a London prison in 1920. Miss MacSwiney was arrested two years later for her militant opposition to the provisional government but was released after a 24-day hunger strike. She died in Cork, March 7.

Madagascar: *see* French Colonial Empire.

Magazines and Periodicals: *see* Newspapers and Magazines.

Magnesite The mine production of magnesite in the United States in 1941 increased 12% over 1940, to 374,799 short tons; sales during the year included 4,536 tons of crude, 30,225 tons of caustic calcined and 135,956 tons of dead-burned magnesite; sales of refractory magnesia obtained from sea water, bitterns and dolomite amounted to 65,525 tons. Imports of dead-burned magnesite in the first nine months of 1941 were 36,574 short tons, of caustic calcined 527 tons and of crude magnesite none, the total being well ahead of that for the full year 1940. Even discounting any imports that might have been received in the last quarter of 1941, the available supply of dead-burned and refractory material for the year was 39% greater than in 1940 Production was presumably expanded even more in 1942, as in addition to the increasing demand in the usual uses, by the end of 1942 consumption of magnesia for the production of magnesium metal was expected to be at the rate of 200,000 tons a year.

(G. A. Ro.)

Magnesium. There was no announcement of the output of magnesium in the United States in 1941, but it was thought to be three to four times the 6,261 short tons turned out in 1940. In order to satisfy the demand for metal for aeroplane construction, incendiary bombs, tracer bullets and other uses, a number of new plants were completed and put into operation by the end of 1942, and others were under construction for completion early in 1943. The planned output for the entire construction program was 362,500 short tons, or more than eight times the 44,000 tons which constituted the world output of 1940. Incidentally, the United States consumption of magnesium in 1918 was reported at 142 tons.

(*See* also Metallurgy; War Production, U.S.)

(G. A. Ro.)

Mahin, Frank C. (1887–1942), U.S. army officer, was born May 27 in Clinton, Ia He received his early education in England. After graduating from Harvard in 1909, he joined the U.S. army. He was promoted to major during World War I and fought with the A.E.F. at St. Mihiel and the Meuse-Argonne. A graduate of the Command and General Staff school and of the War college, he was put in command of the 3rd infantry in 1937. In 1941, he was promoted to brigadier general. He became a major general shortly after taking over command of the 33rd division at Camp Forrest in May 1942. Gen. Mahin was killed in the crash of an army observation plane near Waynesboro, Tenn., July 24.

Mail-Order Business: *see* Business Review.

Maine. The extreme northeastern state of the United States, admitted as a state in 1820 and popularly known as the "Pine Tree state." Area 33,215 sq.mi.; pop. (1940) 847,226. Rural dwellers numbered 504,169, while 343,057 were classed as urban. The capital is Augusta (19,360). The largest cities are Portland (73,643); Lewiston (38,598); Bangor (29,822).

History.—The state legislature met Jan. 12, 1942, for a special session which adjourned Jan. 24. A defense measure granted broad emergency powers to the governor and another authorized the issuance of war bonds. State employees receiving less than $30 weekly were given a 10% raise. A jointly contributory retirement system for state employees was set up under a board of trustees and provided with $250,000 as a start toward a pension reserve. Governor Sewall had vetoed a similar bill in 1941 because it was not clear that existing tax laws would provide adequate funds. The permanent legislative investigating committee continued its studies of state agencies and prepared a report for the 1943 legislature. Loss of state employees to federal agencies and war industries caused a critical shortage of workers in the state hospitals for the insane. Numerous pay increases were granted by the state personnel board in order to prevent a breakdown of state services. Republican governor Sumner Sewall of Bath was elected in September for his second term (1943–44). Senator White (Rep.) was re-elected for a full term. Three other Republicans represented Maine in the house: James C. Oliver (1st dist.); Margaret C. Smith (2nd dist.); Frank Fellows (3rd dist.). Fellows and Smith were re-elected; Robert Hale of Portland defeated Oliver in the June primary, and beat former Democratic governor Brann in September. Balloting was the lightest since 1930.

Education.—Colby college was forced to suspend construction on its new campus, although some of the buildings were ready for use, and a number of others partially built. The University of Maine likewise stopped work on its new library. Maine's three colleges and university adopted accelerated programs by adding long summer terms. Special training programs were begun for industry and the armed services. The state normal school at Castine became the Maine Maritime academy, directed by a retired naval officer and financed with state and federal money.

Finance.—State receipts, expenditures and bonded debt, 1940–42, were as follows (fiscal year begins July 1):

Table I.—*Receipts, Expenditures and Bonded Debt of Maine*

	Fiscal year 1940–41	Fiscal year 1941–42
Total available	$39,194,096	$44,427,661
Total authorized	36,792,907	38,294,509
Net gain from operations	2,401,189	6,133,152
Bonded debt	28,108,500	26,169,500

State liquor store income reached a new high; a new tax on cigarettes brought in more than had been expected, while gasoline revenues declined somewhat.

Agriculture.—Weather conditions in Maine during the 1942 crop season varied widely, with heavy spring rains in some areas and generally dry weather during August. On the whole there was more rainfall than in 1941, bringing lakes, streams and wells to more nearly normal levels at year's end. Fish and vegetable canneries put up a record pack, destined in large part for the U.S. armed forces. The acreage of crops harvested in 1942 was 1,231,190, slightly larger than the 1,211,100 for 1941, the increase being largely in hay and potatoes. Based on prevailing prices through December, the value of Maine's farm products in 1942 totalled $56,009,000, or 13% larger than the previous year. I
duction figures in the important poultry and dairy industries w
not available; milk production was about the same as 1941, w
poultry production was up; prices in both fields were gener
higher than at any time since World War I.

Table II.—*Leading Agricultural Products of Maine, 1942 and 1941*

Crop	1942 (estimate)	1941
Corn, bu.	672,000	656,000
Wheat, bu.	40,000	36,000
Oats, bu.	4,017,000	3,996,000
Barley, bu.	112,000	135,000
Buckwheat, bu.	119,000	105,000
Hay, tons	901,000	692,000
Potatoes, bu.	42,120,000	43,035,000
Apples, bu.*	730,000	581,000
Beans, tons (dry)	4,150	5,150

*Figures include only the so-called "commercial" apple counties.

Table III.—*Principal Industries of Maine, 1939 and 1937*

Industry	1939	1937
Boot and shoe	$46,162,403	$42,568,005
Cotton mill	28,342,860	28,937,439
Woollen mill	36,118,681	28,409,949
Pulp and paper	25,370,932	28,890,516

Manufacturing.—The total value of manufactures (1
census) was $345,368,595. Total employment was 81,995,
wages paid $82,026,503.

Maine shipyards ran at full production during 1942, turning
submarines, destroyers, cargo ships, barges and a variety of sm
craft. Transportation and housing problems were critical, e
cially in Portland and Bath. Air and naval bases became of stra
gic value, with blackout and dimout regulations in force o
large sectors. In regions not having much defense work there
a small surplus of labour, mostly unskilled, with serious short
of skilled defense workers and some shortage of farm lab
Many small businesses closed or declined because of shortage
goods or help. The tourist trade was hard hit by wartime tr
restraints. War demands brought an increase in lumbering
woodworking, as well as in the textile and shoe industries.

Mineral Production.—The total value of minerals produ
in Maine in 1939 was $3,769,671, as compared with $3,548
in 1938. Stone, sand and gravel production declined in 1942
curtailed road building, while feldspar production increased. I
production, a relatively new industry, was given impetus by
lack of European peat. (E. F. D

Table IV.—*Mineral Products of Maine, 1939 and 1938*

Mineral	Value, 1939	Value, 1938
Stone	$1,228,930	$1,161,535
Sand and gravel	888,646	968,766
Clay	371,629	210,814

Maize: *see* CORN.

Malaya, British: *see* FEDERATED MALAY STATES; STRAITS S
TLEMENTS; UNFEDERATED MALAY STATES; WORLD WAR II.

Malinowski, Bronislaw (1884–1942), British anthrop
gist, was born April 7 in Cra
Poland, the son of a well known philologist and university pro
sor. He received his Ph.D. from the University of Cracow, 1
and later studied at the University of Leipzig and the Lon
School of Economics. The published reports of his expediti
the first in 1914, to New Guinea and northwest Melanesia,
world-wide recognition and were translated into many langua
Prof. Malinowski also visited South and East Africa, where
did research among the Bantu tribes. His studies of the ethno
and ethnography of Indian tribes in Mexico emphasized the
tural effect on primitive tribes of their contact with more
vanced peoples. Recognized as one of the world's leading
thropologists, Prof. Malinowski aimed at studying anthropolog
data not as isolated phenomena but within the framework of
man culture as a whole. Among his publications are: *The Fa
Among the Australian Aborigines* (1913), *Argonauts of the W
ern Pacific* (1922), *Crime and Custom in Savage Society, Sex
Repression in Savage Society, Myth in Primitive Psycho*
(1926), *The Sexual Life of Savages in Northwest Melanesia* (19
Coral Gardens and Their Magic (1935) and *The Foundation*

uth and Morals (1936). He was a member of the University London faculty, 1924–39, and from 1939 until his death was rofessor of anthropology at Yale. He died at New Haven, Conn., ay 16.

lalta: *see* MEDITERRANEAN, BRITISH POSSESSIONS IN THE.

anchuria

(“MANCHOUKUO”). An empire, practically a Japanese dependency, located in northeastern Asia, ounded N. and E. by soviet Siberia, W. by Siberia, Outer Monlia and China, S.E. by Chosen. Area, 548,000 sq.mi.; pop. 939), 39,454,026. The territory was renamed “Manchoukuo” by e Japanese in 1932 after they had occupied it. Capital, Hsinking he former Changchun). The largest cities are Mukden (863,5), Harbin (517,127), Hsinking (415,264), Antung (220,587). ter estimates reckoned a population of more than 1,000,000 for ukden and about 650,000 for Harbin. The former is the centre Manchuria's heavy industries, the latter of its light industries, ch as flour milling and food processing. The principal religions of anchuria, in the order of numbers of adherents, are Buddhism, oism, Lamaism, Mohammedanism and Christianity. There are out 130,000 Roman Catholics and 125,000 followers of other ristian denominations. The emperor is Kang Teh; the premier, 1942, was General Chang Ching-hui. (Late in Dec. 1942 there s a report from Chinese sources in Chungking, later denied by pan, that the premier had committed suicide.)

History.—The state of “Manchoukuo,” the legitimacy of which s never been recognized by China, the United States, Great itain and a number of other powers (as a general rule the tes associated with the axis have accorded recognition to “Manoukuo”), came into existence as a sequel to the action of the panese army in seizing Mukden, former seat of the Manchurian ministration, on Sept. 18, 1931. The occupation was subseently extended to the whole country. A committee of Manurians who were willing to accept Japanese domination proimed an independent state Feb. 18, 1932. Henry Pu Yi, a on of the Chinese Manchu dynasty, was inaugurated as chief ecutive of the new government on March 9, 1932; he was oclaimed emperor, under the name of Kang Teh on March 1934.

There are no representative institutions in Manchuria; and the gime there was essentially a creation of the Japanese army, ich, in the early '30s, used it as a testing ground for theories militarist collectivism which were later applied to Japan. The mmander-in-chief of the Kwantung army, the Japanese force occupation, is also *ex officio* Japanese ambassador to Hsinking. e chief executive organ is the state council, which is in charge all administrative affairs. There is also a privy council as a ief consultative body for the emperor; but its function is pririly honorary. The Concordia association, which claimed a embership of 1,137,883 in 1939, was set up as an agency of te propaganda; one of its avowed purposes is to “establish eparable relations between Japan and Manchoukuo.” While st of the ministers in the cabinet are natives of the country, l power is in the hands of the Japanese vice-ministers; and panese influence is predominant in the powerful general affairs ard.

Education.—Manchuria in 1939 possessed 15,877 primary hools with 1,589,169 pupils. There were 238 middle schools, th 54,768 students; 40 normal schools, with about 8,000 stunts; and 13 institutions for higher education, with 3,820 idents. Government expenditure on education in 1939 was ,967,000 yuan.

Defense.—The army was first recruited on a volunteer basis, th a strength estimated at 80,000-100,000 men. The number of Japanese troops was estimated at 500,000. The character of the native army was changed when an imperial ordinance of April 15, 1940, established conscription and prescribed a three-year term of military service. Between 1934 and 1939, five military schools were opened for training Manchurian officers, two in Hsinking, one each in Mukden, Harbin and Wangyehmiao, in the Hsingan province.

Finance and Banking.—The yuan, unit of exchange, is equivalent in value to the Japanese yen, pegged at 23.48 cents U.S. in Dec. 1941. The budget for 1940 was 573,550,000 yuan, as against 403,377,000 yuan in 1939. Japanese rule at first brought currency stability; but inflationary symptoms in prices were becoming evident by the end of the '30s.

Trade and Communication.—The latest official figures available in 1942 for the trade of Manchuria were for the first nine months of 1940 and showed exports of 544,629,000 yuan, imports of 1,397,715,000 yuan. There were about 11,000 km. of railways in 1940 and about 30,000 mi. of highways, of which 13,000 mi. were suitable for motor traffic.

Agriculture, Resources, Manufacturing.—Manchuria's staple crop is the soybean, production of which varies from 130,000,000 bu. to 210,000,000 bu. annually. Kaoliang, millet and corn are other cereal crops. There were 1,683,000 cattle, 2,000,000 sheep, 1,250,000 goats, 5,500,000 hogs and 2,000,000 horses in 1937. The country produced 685,000 tons of rice and 74,667 bales of cotton in 1940. The forest resources are considerable in the northern provinces. Coal and low-grade iron are the principal mineral resources; the output of coal in 1939 was 19,000,000 tons.

(W. H. CH.)

Mandated Pacific Islands: *see* PACIFIC ISLANDS, MANDATED.

Mandates.

The mandates section of the secretariat of the League of Nations spared no pains to keep all available official and unofficial documentary material up to date throughout 1942. There was no break in continuity. Though unable to meet, owing to the war, the mandates commission received the mandatory powers' annual reports.

The moral and practical value of this international experiment

PORT MORESBY, NEW GUINEA, was bombed frequently but with no decisive military effect by the Japanese in 1942

Mandated Territories

Territory	Area	Date of Mandate	Mandatory Power	Former Title	Former Ad ministratio
South West Africa, including Caprivi Zipfel, formerly part of Bechuanaland Protectorate	323,000 sq.mi.	Dec. 17, 1920	Union of South Africa	German South-west Africa	German Empire
Togo, comprising: (1) Togoland, i.e. western section, excluding the seaboard (2) Togo, i.e. eastern section and seaboard	 13,040 sq.mi. 20,000 sq.mi.	July 20, 1922	 Great Britain France	Togo	German Empire
Cameroons, comprising: (1) Cameroons adjoining Nigeria (2) Cameroons adjoining French Equatorial Africa	 34,081 sq.mi. 166,200 sq.mi.	July 20, 1922	 Great Britain France	Kamerun	German Empire
Tanganyika *Ruanda-Urundi*	374,000 sq.mi. 21,200 sq.mi.	July 20, 1922	Great Britain Belgium	German East Africa	German Empire
Palestine *Trans-Jordan* **Syria and Lebanon*	10,100 sq.mi. 34,000 sq.mi. 77,700 sq.mi.	Sept. 29, 1923	Great Britain Great Britain France	Palestine Part of the Wilayat of Syria Syria	Ottoman Empire
New Guinea, Territory of, comprising: (1) Northeastern New Guinea (i.e. the northern section of southeast New Guinea) (2) Bismarck Archipelago (New Britain, New Ireland, the Admiralty Isles, etc.) (3) Certain of the Solomon Islands (Bougainville, Buka, etc.)	93,000 sq.mi.	Dec. 17, 1920	Commonwealth of Australia	Kaiser Wilhelm's Land Bismarck Archipelago German Solomon Islands	German Empire
Western Samoa, comprising Savaii, Upolu, etc.	1,133 sq.mi.	Dec. 17, 1920	New Zealand	German Samoan Islands	German Empire
Nauru	8 sq.mi.	Dec. 17, 1920	British Empire—Great Britain, New Zealand, and Australia, the present administrator	Nauru	German Empire
Pacific Islands North of the Equator, comprising: (1) Marianne or Ladrone Islands (except Guam) (2) Caroline Islands, comprising the Eastern Carolines and Western Carolines, together with Yap Island and Pelew (3) Marshall Islands	811 sq.mi.	Dec. 17, 1920	Japan	No change	German Empire

*Syria and Lebanon were recognized by Great Britain and the Fighting French as independent republics in Sept. and Nov. 1941 (*see* LEBANON; SYRIA).

is undoubted. For the principles on which the mandatory system is based cannot be ignored in the future study of colonial problems. These principles may be briefly listed as consideration of the social, moral and political welfare of natives as the primary object of administration; custodianship of peoples not yet able to stand by themselves, with the ultimate aim of self-government; collective supervision (with possibilities of wide extension) by an international body; application of economic equality to mandated territories. (M. FE.)

Manganese. The limited information available on world manganese production is condensed into the table in the next column.

World steel output even under war demand requires only about 3,600,000 tons of manganese ore annually, and the annual surplus outputs have been going into stock piles. However, it is doubtful if the output of manganese in 1942 was any more than sufficient to meet the demand, and its distribution to the centres of consumption was seriously handicapped by transportation difficulties. Russian shipments were entirely cut off, as were also the less important sources of the Philippines and Netherlands East Indies, the latter having fallen into the hands of the Japanese. Gold Coast shipments were largely diverted from the United States to Great Britain, and those from India were forced to take the lo route around the Cape of Good Hope. It seemed that fairly quate supplies were maintained for the United Nations.

Although numerous projects were under way for enlarging United States output, progress was slow, and the 1941 ou was only about 76,000 long tons of high-grade ores, though in mediate grades increased 43% to 459,000 tons. Imports, w were 1,294,300 tons in 1940, remained at about the same lev 1941, with receipts of 853,200 tons in the first nine months considerable surplus of South African ore went into stocks, a smaller amount of Brazilian and Indian ores, but Gold C

World Production of Manganese Ore
(In thousands of metric tons)

	1937	1938	1939	1940	194
Brazil	253	222	193	226	4
Cuba	131	124	102	120	2
Egypt	186	153	120	?	
Gold Coast	536	329	342	?	
India	1,068	983	858	?	
South Africa	631	552	420	412	4
U.S.S.R.	2,752	2,273	?	?	
Others	565	580	450?	?	
Totals	6,120	5,200	4,600?	?	

ipments were small, and those from U.S.S.R. ceased entirely. o later information was available. (*See* also METALLURGY.)

(G. A. Ro.)

anitoba.

A central province of Canada; area 246,512 sq.mi. (26,789 sq.mi. water); pop. (1941 final census ures) 729,744; urban 44%; Canadian-born 73%. Capital, Win- peg; pop. 217,994. St. Boniface and Brandon are the next two rgest cities, with populations of 18,157 and 17,383 respectively.

History.—In Dec. 1942 John Bracken accepted the leadership the Progressive Conservative party of Canada and thus ended premiership of more than 20 years. His successor as Premier is S. S. Garson. The Co-operative Commonwealth federation thdrew its support from the coalition government of Liberal- ogressives, Conservative and Social Credit members. The lieu- ant-governor in 1942 was R. F. McWilliams.

Education.—Public, elementary and secondary schools are intained by general taxation. Pupils in public elementary ades in 1941 numbered 109,477 and in secondary grades 22,085; private schools in 1940 the enrolment was 4,632. Public school chers numbered 4,491.

Agriculture.—Fulfilment of war needs was the predominating ctor in agriculture, and livestock again increased considerably. reals, with a record production and enhanced prices, were re- onsible for a large increase in the (gross) estimated crop value $177,000,000 for 1942.

Manufacturing, Minerals, Fisheries, Furs.—Manufactures 940) were valued at $167,919,165; minerals (1940) $17,823,- 2; fisheries (1941) $3,274,887; furs (1941–1942), wild catch 735,895; farms $422,452; processed in Winnipeg, $717,778; ocessed in and exported from Manitoba, $5,623,410.

Communication.—In 1942 the total railway mileage was 53, including the Hudson's Bay railway. Highways: surfaced, luding trans-Canada, 8,446 mi. (gravelled, 7,910; bituminous, 9; concrete, 37). The government-owned telephone system d 84,057 telephones, 129 exchanges and a total wire mileage 328,095; it operated two radio stations, one of 15,000 watts at innipeg and one of 1,000 watts at Brandon. (J. L. J.)

anpower, War: *see* WAR MANPOWER COMMISSION.

anufacturers, National Association of: *see* NATIONAL SOCIATION OF MANUFACTURERS.

aple Products.

Production of maple syrup and sugar, and the number of trees tapped in the United States in 1942, in 1941 and the ten-year average (1930–39) were reported by the department of agriculture as shown in the accompanying table.

Maple Syrup and Sugar Production and Trees Tapped, by States

State	Syrup gal.			Sugar, lb.		
	1942	1941	1930–39	1942	1941	1930–39
Vermont	1,310,000	759,000	1,030,000	320,000	190,000	700,000
New York	933,000	604,000	733,000	177,000	99,000	349,000
Pennsylvania	128,000	112,000	178,000	40,000	36,000	88,000
Ohio	177,000	254,000	341,000	5,000	4,000	27,000
Michigan	102,000	96,000	107,000	19,000	12,000	28,000
Wisconsin	80,000	34,000	67,000	2,000	1,000	9,000
New Hampshire	65,000	49,000	70,000	39,000	16,000	73,000
Massachusetts	64,000	58,000	57,000	33,000	21,000	69,000
Maine	25,000	18,000	34,000	11,000	4,000	15,000
Maryland	18,000	13,000	24,000	11,000	4,000	19,000

Number of trees tapped

State	1942	1941	1930–39
Vermont	4,000,000	4,040,000	5,299,000
New York	3,111,000	3,082,000	3,199,000
Ohio	854,000	854,000	1,199,000
Michigan	488,000	474,000	441,000
Pennsylvania	441,000	450,000	622,450
Wisconsin	298,000	261,000	286,000
New Hampshire	254,000	247,000	371,000
Massachusetts	202,000	202,000	237,000
Maine	128,000	135,000	262,000
Maryland	38,000	42,000	58,000

(S.O.R.)

Marble: *see* STONE.

Margueritte, Victor

(1866–1942), French novelist, was born Dec. 1 at Blida, Algeria. He collaborated with his brother Paul in many novels and histories, and both achieved distinction for their attacks on the marriage and divorce laws of France. After Paul's death in 1918, Victor wrote a number of novels, the most famous of which was *La Garçonne,* published in 1922. Many French critics attacked the work as a "slander against the decency of French womanhood"; others upheld it as a ruthlessly candid portrayal of social decadence in the post-war France of the 1920s.

Among Margueritte's other works were *La terre natale* (1917); *Le Compagnon* (1923); *Le chant du berger* (1930); *Non!* (1931); *Nos Égales* (1933); and *Babel* (1934). He also wrote a number of plays.

Margueritte died at Monestier, near Vichy, on March 23. (See *Encyclopædia Britannica.*)

RURAL SCHOOL CHILDREN OF VERMONT were given a week's vacation in the spring of 1942 to help in the annual maple syrup harvest, as many of the regular adult harvesters were in the armed forces or working in war plants

Marine Biology.

Repercussions of the events at Pearl Harbor disrupted marine programs as well as cancelled the forecasted expeditions of practically all countries of the western hemisphere. Progress in the study of marine biology found itself almost at a standstill in 1942, with personnel shifted where talents of the worker might fit more directly into the war effort.

Nature[1] cites some facts and figures concerning the extent to which certain seaweeds can be used in the dietary of livestock (cattle, sheep, pigs and poultry) as well as to supplement and validate their use by man himself. After processing, including dehydration, 8-9 tons of the seaweed *Laminaria flexicaulis* gathered off the Brittany coast yielded one ton of fine seaweed meal—three pounds of which furnished the nutritive equivalent of four pounds of oats in feeding experiments. In a trial dietary at the Overbrook dairy (U.S.A.), addition of seaweed meal to a balanced ration gave evidence of increased stamina among the herd as well as a stronger resistance to disease. On the California coast, the meal from processing the giant kelp *Macrocystis pyrifera* was being extensively used in a similar way as a dietary supplement for domestic animals. Researches in light penetration and its effects on sea life continued to engage the attention of workers at certain U.S. stations. Working at Bingham laboratory of Yale university,[2] one worker estimated that the sun's rays reach their most effective biological equilibrium at depths between 5 m. and 30 m., depending upon the turbidity of the water.

In an attempt to answer the question as to whether or not plankton-rich muds of the sea floor contain greater amounts of radium than do those muds where few plankton are found, two workers on bottom sediments from off the Canadian Pacific coast favoured the conclusion that radium carrying by plankton to the bottom-muds is negligible. This in spite of the fact that in the open waters plankton may be 1,000 times richer in radium than those found on the sea floor.

An interesting and timely bulletin from the U.S. National museum,[3] the sixth volume of the Henry W. Fowler's studies of the fishes collected by "Albatross," deals mostly with the primitive fishes of the Philippine islands. While this volume of some 900 pages will be useful to the systematist, the layman will find useful notes on the breeding and food habits of these colourful forms.

Nature[4] cites a series of reports concerning the marine fauna of the Bristol channel, which were initiated in 1937. This survey covers the intertidal fauna, involving the amphipods, porifera, coelenterates and other invertebrates as well as many kinds of fishes. These data furnish a means of comparison between the faunal surveys of the Isle of Man, Lancashire, Cheshire, the North Wales and other coastal areas already made by the University of Liverpool biologists.

As a sidelight on sea warfare, the *Audubon Magazine*, as reported in *Science*,[5] brings a distressing picture of the fatal suffering of many of the sea birds caused by contact with floating oil. It is well known that mineral oils of whatever sorts, break the natural "film" of bird's feathers, and thus render them useless to the bird, either as a cover, or as an instrumentality of flight. Thus "oil slicks" on the water are really death traps to such forms as ducks, gulls and all other sea birds which use the surface of the sea at rest intervals. It seemed probable from reports originating in the North Atlantic (off Nova Scotia) that death of birds from U-boat sinkings over the surface of the oceans must be appalling.

Progress in Swedish oceanographic research for 1941 was ported in abstract form in *Science*.[6] Biologists will be intere in the vitamin D studies of phytoplankton in the Baltic sea is suggested that there is a positive correlation between "quality" of the phytoplankton as well as its "quantity," in tion to the survival of certain fish-larvae during the critical w of their existence when their percentage of survival is lar determined.

Since shark liver oil[7] is as valuable and as sorely neede rubber and tin, shark fishing off the Florida coasts was turned a vital and profitable industry. Since the western margin of gulf stream furnishes a rich feeding ground for great number well as great varieties of these cold-eyed scavengers of the sea including the nurse, hammerhead, tiger, leopard, lemon mack and the great white sharks—Salirno, on the St. Lucie river is centre of this flourishing industry. While the liver oil is the substance sought because of its vitamin A and D content; whole animal is as thoroughly processed as any pig in the st yards. (*See* also OCEANOGRAPHY; ZOOLOGY.)

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(F. M. H

Marine Corps.

By an act of the Continental congress N 10, 1775, it was established as a par the U.S. navy for duty afloat and ashore. The strength is kep about 20% of the naval personnel, 200,000 total officers enlisted men (Dec. 15, 1942).

The marine corps is assigned four distinct missions with navy: maintenance of an amphibious striking force as par the fleet; maintenance of marine detachments aboard ba ships, cruisers and aircraft carriers as parts of the regular cre provision of garrisons at all shore stations of the navy both wi and outside continental limits; and provision of landing forces the navy.

The organization and training of the corps is specially desi to meet the requirements of the missions, including infa

HOISTING THE U.S. FLAG on Midway Island at the height of the battle 4-6, 1942

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[1] *Nature*, 149:3776 (1942).

[2] *Journal of Marine Research*, 4:2 (1941). Sears Foundation for Marine Research, Bingham Oceanographic Laboratory, Yale University.

[3] Bulletin 13:193, U.S. National Museum, Washington, D.C. (1941).

[4] *Nature*, 150:3806 (1942).

[5] *Science*, 86:2486 (1942), Science News.

[6] *Science*, 96:2485 (1942).

[7] See *Science Supplement*, 96:2485 (1942).

MPLE GRAVES OF U.S. MARINES killed in action during the first attack on adalcanal in Aug. 1942. Palm fronds cover the mounds, marked by wooden sses

illery, aviation, paratroops and tanks.

The fleet marine forces under the orders of the admirals of the ets are made up of heavily armed and armoured triangular visions composed of the several arms and specially outfitted d trained for overseas operations with the fleet and its task ces with attached aviation units to meet the requirements of campaigns.

Special transports were provided to meet the requirements of forces and landing boats and amphibious tanks designed for cient landing operations under heavy enemy opposition were ried with the forces.

During 1942 marine organizations were active in battle in the ilippines with the armies under General MacArthur and the et under Admiral Hart, and in the defense of Midway island inst heavy attack of the enemy by sea and air.

Divisions of marines supported by naval ships and aircraft ded in the Solomon islands under heavy opposition of the emy and established a base there which they held in spite continued enemy attack from land, sea and air. This force was mmanded by Major General A. A. Vandegrift and it was sistently extending its holdings against strong enemy defense.

Recruit training stations are at Parris Island, S.C., and San ego, Calif., and large bases for the training of divisions are at antico, Va., New River, N.C., and San Diego, Calif. During 2 all enlisted men were obtained by voluntary enlistment but the future were to be taken from selective service enrolments.

Officers are commissioned from graduates of the U.S. Naval demy and distinguished military colleges, from qualified en- ed men and from selected civilians for special duties.

Aviation training with naval aviation afloat and ashore is ried out and aviation units are attached to the divisions and risons as required.

The ranks of officers and enlisted men correspond to those of navy but the titles are those of the army from private to lieu- ant general.

The statutes provide that any portion of the marine corps may transferred to the army for temporary duty during war.

The commandant of the marine corps in 1942 was Lieutenant neral Thomas Holcomb who with an operative and administra- e staff was stationed at the navy department, Washington, D.C.

Marine Insurance: *see* INSURANCE.

Market Gardening.

The crop of vegetables for the fresh market in the United States in 1942 was officially estimated at 7,100,000 tons from 1,687,000 ac. The 1941 planting was 13,000 ac. larger but the crop was smaller—6,560,000 tons. The 1942 production of five major truck crops, asparagus, cantaloupes, green peas and watermelons, was smaller than in 1941. Prices averaged higher for all major crops except onions and cabbage. A 22% increase in the onion crop was accompanied by a season-average price of only $1.77 per 100 lb., compared to $2.26 in 1941. Cabbage production for the fresh market increased 35% in 1942 over 1941. This, together with a sharp reduction in tin allotments for packing kraut, compelled growers of cabbage for processing to seek an outlet in the fresh market, with prices of $16.47 in 1942 comparing to $20.87 per ton in 1941. The department of agriculture asked for approximately the same acreage in market gardening in 1943, but with reductions in some crops and increases in others. Increases of 10 to 30% were asked in the 1943 acreage of carrots, snap beans,

Table I.—*Acreage of Truck Crops for Market in 1942, as Indicated for 1943, and the 10-year (1932-41) Average Acreage*

Commodity	1942 acres	Indicated 1943 acres	10-yr. average 1932–41 acres
Artichokes, California	9,600	8,800	8,970
Asparagus			
Early	82,340	81,060	84,770
Late	49,055	51,530	31,270
Beans, snap, fall	19,300	15,200	18,020
Beets, early	7,100	7,600	6,630
Cabbage			
Early	65,080	56,100	43,680
Second early	19,300	18,300	20,650
Fall	3,050	3,450	2,270
Carrots			
Early	14,750	18,000	11,020
Fall	8,680	8,750	7,470
Cauliflower, fall & winter	9,990	8,050	9,480
Celery			
Fall & Winter	9,500	8,550	8,780
Early	8,230	7,300	6,230
Cucumbers, fall	2,000	1,900	1,690
Eggplant, fall	2,000	1,300	1,350
Escarole, Florida	1,200	1,250	870
Kale, Virginia	1,800	1,600	1,410
Lettuce, early	38,300	34,850	38,050
Onions, early	42,500	34,300	50,230
Peppers, green, fall	4,600	3,000	3,320
Shallots, Louisiana, fall	2,800	2,700	2,720
Spinach			
Early	47,000	45,050	42,230
Fall	1,300	2,100	2,480
Tomatoes, fall	17,300	10,500	8,360

lima beans, onions, sweet corn and kale. The department announced it would work out price supports for fresh vegetable production as might be necessary. It was estimated that, with a favourable season, the 1943 goal would provide for a civilian per capita consumption about 7 to 10% under the five-year (1935–39) average, after military and other government requirements had been met. (*See* also TRUCK FARMING.)

Table II.—*U.S. Production of Truck Crops for Fresh Market, 1942 and 1941*

Commodity	1942	1941
Artichokes, California	864,000 boxes	700,000 boxes
Asparagus	9,039,000 crates	9,219,000 crates
Beans, lima	1,568,000 bu.	1,530,000 bu.
Beans, snap	15,657,000 bu.	13,234,000 bu.
Beets	2,128,000 bu.	2,108,000 bu.
Cabbage	1,289,600 tons	956,900 tons
Cantaloupes	11,460,000 crates	13,812,000 crates
Carrots	20,227,000 bu.	18,034,000 bu.
Cauliflower	9,525,000 crates	8,524,000 crates
Celery	13,247,000 crates	13,085,000 crates
Corn, sweet*	273,900,000 ears	297,200,000 ears
Cucumbers	4,705,000 bu.	4,811,000 bu.
Eggplant	1,104,000 bu.	882,000 bu.
Garlic	219,000 sacks	155,000 sacks
Kale, Virginia	440,000 bu.	884,000 bu.
Lettuce	23,858,000 crates	23,042,000 crates
Peppermint	1,365,000 lb. of oil	958,000 lb. of oil
Spearmint	335,000 lb. of oil	239,000 lb. of oil
Onions	17,949,900 sacks	15,207,000 sacks
Peas, green	6,227,000 bu.	7,911,000 bu.
Peppers, green	4,986,000 bu.	4,726,000 bu.
Shallots, Louisiana	682,000 bu.	495,000 bu.
Spinach	14,821,000 bu.	13,186,000 bu.
Tomatoes	20,425,000 bu.	24,075,000 bu.
Watermelons	57,220,000 melons	64,486,000 melons

*New Jersey, New York and Pennsylvania.

(*See* also LETTUCE; POTATOES; TOMATOES.) (S. O. R.)

Marriage and Divorce.

Neither preparation for war nor the carrying on of war is normal in the American tradition and the necessity of accepting both and adjusting to them in 1942 disturbed domestic life in the U.S. just as it did other aspects of social life. A multitude of husbands had longer hours of labour, assignments to new kinds of work, frequently removal from one locality to another, and many of them had new financial burdens while others during 1942 felt unusually prosperous. The wives, in addition to their sharing these wartime problems of their husbands, also had additional responsibilities as mothers and housekeepers and had to adjust previous household routine to the new conditions, frequently limiting in character, that the transition to a war economy brought to them.

The movement of the vast number of young men and women from their homes to the army or to industry tremendously affected family life. This exodus of young men was especially disturbing in rural sections since often their departure placed excessive burdens on the elderly parents at a time when an increase of food production was imperative. The mother employed in war industry often found it difficult to obtain adequate care for her children during her absence from home. One of the consequences of this was the beginning of an increase in juvenile delinquency among older children. Chiefly this registered the general social upheaval and instability but in part it also revealed the inadequate functioning of homes. From the experiences of other countries there was reason to expect that this trend, already apparent, would be accelerated in the United States during 1943.

The marriage rate increased. This immediately followed passage of the Selective Service act. It was explained by various types of marriages: the hastening of a marriage already contemplated which otherwise would have been longer delayed; marriages that were entered upon with the hope of avoiding the draft (doubtless this purpose also played its part in the increase of the birth rate); marriages that came about because soldiers at camp were lonely and therefore moved rapidly through acquaintance and courtship into marriage with some young woman with whom they came in
contact. A special and highly hazardous example of this la
type was the marriage of American soldiers with women in
eign lands. There were finally those marriages which deserv
be called reckless, irresponsible marriages. The explanation
these ranges from intoxication to a fatalistic mood which sh
off thought of future consequences. Unions of this sort w
expected to become, after the war, a prolific source of divorce

Judging from World War I, even though it was of short d
tion, the marriage rate was expected to fall rapidly after W
War II. The chief reason for this would be the effects of
deaths and incapacities that must be expected in the armies o
seas. A great proportion of those who postponed marriage u
the end of the conflict would never marry. Unless the Un
States were seriously invaded the death rate of young men du
the war would be so much greater than that of young women
when war ends there would remain a disproportion of males
compared with females of marrying age: the greater the len
of the war, the larger this difference.

Divorces decreased during World War I and the same tr
must be expected in World War II. Many wives who would s
divorce were held back by their feeling that they had better k
the security of the compulsory allowances to dependents f
their husbands in service. Other women became reconciled
result of the emotional crisis resulting from the husband's en
ing or being drafted. Still others, both husbands and wives, g
up their desire for divorce because the separation when one en
the armed forces removed the tension that was leading them
the courts. The difficulty of the wife getting a divorce from
husband while he is in some branch of the military forces
courages attempting what cannot be accomplished unless the
band consents.

The increase in marriages brought a corresponding increas
the birth rate. Part of this increase came from the decision
couples who were childless by choice seeking parenthood beca
of their interpretation of the Selective Service act. However
desire for parenthood also was stimulated by the hazards faced
those from homes where husbands voluntarily accepted some
of military service. The change in mood brought by the wa
many husbands and wives chiefly explained the reversal of t
former policy and the acceptance of parenthood. Reaction
their feeling of insecurity awoke their desire for children.
birth rate, which was 17.9 per 1,000 during prewar 1940, the h
est since 1931, reached 18.9 in 1941 and seemed certain to
still higher in 1942. Then it was expected to decline, the amo
of change depending upon the length of the conflict.

Although there was general domestic disturbance, a consi
able feeling of insecurity due to the war, there was also gre
awareness of this and more constructive efforts to meet it t
was true during World War I. Many young people sought co
sel in the effort to meet their problems wisely and unemotion
Fortunately on account of the development of domestic coun
ling and the recognition by ministers, social workers and other
their responsibility for such services, there were greater resou
for help than during World War I. This asking of guida
appeared even among high school boys and girls who felt
pressure of war conditions. There was an increase in inte
also in sex education and a more general appreciation of the n
of this as a preparation for adult experience. War again a
time past brought stimulation of sex, the pathological expres
of which is seen in the increase in rape during the first six mo
of 1942 as compared with the same period of 1941, amountin
9.9 per 1,000 for cities over 25,000 in population, the lar
increase during the period in the various types of crime.

World War II noticeably extended the opportunities for wo
in industry. It added momentum to the American trend tov

uality of the sexes. The meaning of what was happening, the anges it would demand in American domestic traditions, would t appear until the war crisis ends.

As 1942 closed, there were two pressing problems that con- ned the American home. One was the difficulty of the hospi- s in caring for the ever increasing number of pregnant women l the inability of overdriven doctors in rural and village com- nities to give adequate maternal care. The other was lack of ficient and properly staffed resources to take care of young ldren whose mothers were working in war industry. Both blems were recognized and efforts were being made to meet m.

n the states that require a waiting period between applica- n for issuing of the licence and the issuing, this provision was ived for men in service on leave or the law is such as to per- one of the couple to fulfill the requirement. Judges in the owing states can waive the requirement: Connecticut, Georgia, ine, Massachusetts, Michigan, Minnesota, New Hampshire, io and Wisconsin, all of which have five-day waiting periods; gon, Pennsylvania, Tennessee, Washington and West Vir- ia, where the law requires a three-day lapse between applica- n and issue of the licence.

Legal Age of Marriage and Waiting Period Requirement in Each State as of 1942

State	Age				Waiting Period	
	With Consent		Without Consent		Between Application and Licence	Between Licence and Ceremony
	Male	Female	Male	Female		
bama	17	14	21	18	..	..
zona	18	16	21	18	..	..
ansas	17	14	21	18	..	..
ifornia	18	16	21	18	3 days	..
orado	18	18	21	18	..	..
necticut	16	16	21	18	5 days	..
aware	18	16	21	18	..	24 hours—96 hours if non-resident
t. of Columbia	18	16	21	18	3 days	..
rida	18	16	21	21	..	..
rgia	17	14	21	18	if applicants are under 21, 5 days	..
ho	14*	12*	18	18	..	..
nois	18	16	21	18	..	..
iana	18	16	21	18	..	..
a	16	14	21	18	..	..
nsas	18	16	21	18	..	..
	15†	12†	..	..	..	..
tucky	16	14	21	21	..	..
isiana	18	16	21	21	..	..
ine	16	16	21	18	5 days	..
	14†	12†	..	..	..	..
ryland	18	16	21	18	48 hours	..
ssachusetts	18	16	21	18	5 days	..
	14†	12†	..	..	..	..
higan	18	16	18	18	5 days	..
nesota	18	16	21	18	5 days	..
		15†	..	..	..	..
sissippi	14	12	21	18	5 days	..
souri	15	15	21	18	..	..
ntana	18	16	21	18	..	..
raska	18	16	21	21	..	..
ada	18	16	21	18	..	..
v Hampshire	14†	13†	20	18	5 days	..
v Jersey	18	18	21	18	3 days	24 hours
	14†	12†	..	..	..	..
v Mexico	18	16	21	18	..	..
v York	16	16	21	18	72 hours	24 hours
		14†	..	..	..	..
th Carolina	16	14	18	18	..	..
th Dakota	18	15	21	18	..	..
o	18	16	21	21	5 days	..
ahoma	18	16	21	18	..	..
gon	18	15	21	18	3 days	..
nsylvania	16	16	21	21	3 days	..
de Island	18	16	21	21	..	5 days if woman is non-resident
th Carolina	18	14	18	18	..	..
th Dakota	18	15	21	18	..	..
nessee	16	16	21	21	3 days	..
as	16	14	21	18	..	..
h	16	14	21	18	..	..
mont	16	16	21	18	..	5 days
inia	18	16	21	21	..	..
shington	14	15	21	18	3 days	..
t Virginia	18	16	21	21	3 days	..
consin	18	15	21	18	5 days	..
ming	18	16	21	21	..	..

statute, so common law rule seems to prevail. †With permission of court.
rces: *Martindale-Hubbell Law Directory*, vol. II; Chester G. Vernier, *American y Laws*, vol. I.

In Maryland either party can obtain the licence and then the wedding can take place immediately.

In New Jersey, where a three-day waiting period is required, one applicant may appear at the beginning of the waiting period and the second party may complete the application twenty-four hours before the wedding is to take place. The California law provides that one of the parties may apply for the licence, beginning the three-day lapse, but both parties must be present to receive the licence.

The five-day waiting period required in Mississippi for minors can be avoided provided the consent of the parents is given in writing. (*See* also CENSUS, 1940; LAW.) (E. R. G.)

Marshall, George Catlett

(1880–), U.S. army officer, was born at Uniontown, Pa., on Dec. 31. Commissioned second lieutenant of infantry Feb. 2, 1901, after completing his studies at Virginia Military institute and the Army Staff college, he advanced through the grades to brigadier general in 1936. In 1902 and 1903 he served in the Philippines, also from 1913 to 1916. He was with the American expeditionary forces in France in 1917, on the general staff of the first division, as chief of operations of the first army and as chief of staff of the eighth army corps. After the war he was aide-de-camp to Gen. John J. Pershing for five years. From 1924 to 1927 he was stationed in China; in 1933 he was appointed commander of the Eighth infantry and in 1936 commanding general of the Fifth brigade. On April 27, 1939, President Roosevelt appointed him chief of staff of the U.S. army with the rank of full general.

In 1941 he endorsed aid to Britain and early in the summer urged congress to extend the training period of conscripts and national guardsmen and to remove the ban on U.S. expeditionary forces outside the western hemisphere. On April 8, 1942, General Marshall and Harry Hopkins arrived in London to discuss United Nations war problems. Marshall shared Stimson's views on the necessity of having a large army, and he endorsed the program for a force of 7,500,000 men by 1943. On Oct. 14, 1942, he appeared before a senate committee pondering the draft of youths 18 and 19 years old and declared that young men made better soldiers than do men over 35. Replying to opponents of his plans for a large army, he appealed on Dec. 4 for confidence in army planning, declaring: "We know what we are doing."

Martinique: *see* FRENCH COLONIAL EMPIRE.

Maryland.

A south Atlantic state, popularly called the "Old Line State," one of the original 13 states. Area 10,577 sq.mi. (land area 9,887 sq.mi.). Pop. (1940) 1,821,244. Total urban population 1,080,351, or 59.3%; rural population 740,893, or 40.7%; white 1,518,481, or 83.4%; nonwhite 302,763 (Negro 16.6%); foreign-born 81,715. Capital, Annapolis (13,069); other cities: Baltimore (859,100), Cumberland (39,483), Hagerstown (32,491), Frederick (15,802).

History.—The governor, re-elected in 1942 for a second term, was Herbert R. O'Conor; William C. Walsh was attorney-general; J. Millard Tawes, comptroller. Their terms expire Jan. 1947. The Maryland legislature did not meet in 1942. Governor O'Conor was re-elected by a narrow margin; the total vote cast was 333,136, as against 486,472 in 1938. Maryland Democrats lost two of the six house of representatives seats.

Seven constitutional amendments were voted on at the November election and four were carried. The most important were: (1) authority for the legislature to standardize fees for clerks of courts and registers of wills; (2) provision that the state roads commission condemn and immediately take property needed for highway purposes subject to subsequent court review; (3) provision for additional compensation for members of general assembly (increased pay from $5 per diem to $1,000 per year). The amendments voted down related to juvenile court jurisdiction, publication of proposed constitutional amendments and establishment of regulations for bequests to churches.

Education.—In 1941 there were 1,029 elementary and occupational schools (349 Negro) with an enrolment of 206,124 (48,968 Negro) and a teaching staff of 5,363 (1,246 Negro). There were 215 secondary and vocational schools (38 Negro) with an enrolment of 92,973 (12,644 Negro). Five teachers' colleges (two Negro) had an enrolment of 1,163 (340 Negro).

Public Welfare, Charities, Correction.—For the first 11 months of 1942 (figures in parentheses indicate number of persons per month and amount spent): general public assistance (6,318, $1,570,146.85), old-age assistance (16,455, $3,462,215.42), aid to needy blind (611, $152,178.59), aid to dependent children (9,097, $1,927,060.87), WPA employment (34,524, $2,640,693). For the 11-month period, 38,365 persons received unemployment compensation totalling $3,708,195.

In 1942 there was a house of correction, a penitentiary, state penal farm and women's prison, with total inmates of 3,000; state expenditures on correctional institutions amounted to $1,041,305.

Communication.—The state roads commission expended, during the fiscal year ending Sept. 30, 1942, a total of $24,306,650. This included financing of new construction, maintenance of state and county highway systems and financing of bonds. New projects completed represented a value of $4,515,000. Projects awarded amounted to $9,985,000. Total mileage maintained by state, 4,315 mi.; county road system, 11,082 mi. The outstanding projects constructed were access highways leading to war production plants southeast of Baltimore. There were 1,367 mi. of railroad in the state as of Dec. 1940; in 1942 there were 26 landing fields, 5 of them for seaplanes. There were 339,223 telephones in Jan. 1942.

Banking and Finance.—In 1942 there were 112 state banks and trust companies with deposits of $434,177,415 and resources of $485,699,616; 11 mutual savings banks with deposits of $225,643,949 and resources of $255,074,592; 63 national banks with deposits of $447,953,000 and resources of $482,211,000; and 422 (some inactive) savings and loan associations with deposits (1941) of $142,962,000. State receipts for the fiscal year ended Sept. 30, 1942, were $78,492,727; expenditures, $54,134,123; bonded indebtedness, $36,359,000; surplus, $10,348,597.

Agriculture.—Most of the state's principal crops, with the exception of wheat, showed increased production in 1942 as compared with the preceding year. Total value of production in 1942 was estimated at $69,448,000, as compared with $56,729,000 in 1941.

Table I.—*Leading Agricultural Products of Maryland, 1942 and 1941*

Crop	1942 (est.)	1941	Crop	1942 (est.)	1941
Corn, bu. . . .	17,290,000	15,164,000	Tame hay, tons .	560,000	472,000
Wheat, bu. . .	6,140,000	7,245,000	Tobacco, lb. . .	31,125,000	30,225,000

Manufacturing.—According to the U.S. biennial census of manufactures in 1939, the total estimated value of products $1,027,354,074; there were 141,643 wage earners, who were a total of $156,782,654. All manufacturing industries show 57.2% increase in combined payrolls and a 20% increas employment between Nov. 1941 and Nov. 1942.

Table II.—*Principal Industries of Maryland, 1939 and 1937*

Industry	Value of Products	
	1939	1937
Bread and baking	$22,245,899	$26,566,579
Canning (fruits, veg., soup)	27,302,603	30,881,579
Men's and boys' clothing	34,507,240	33,252,549
Meat packing	34,767,939	40,611,524
Shipbuilding	....	17,925,710
Tinware	35,836,828	37,040,006

Mineral Production.—In 1941 the principal minerals and production were as follows: coke 1,752,538 tons, coal 1,74 tons (estimated), sand and gravel 5,167,445 short tons, (value) $401,925.

(C. B.

Masonic Order.

Antiquity.—Work in the interesting of Masonic history continued and r appeared in the *A.Q.C. Transactions* vol. LIII, organ of the pi lodge of research, (*Quatuor Coronati* No. 2076, London), publ in two parts during the year. Part I carries a brief review Short History of Freemasonry, to 1730" by Douglas Knoop G. P. Jones, which the reviewer stated, "in less than 150 contains more about the history and development of the cra these (British) islands than any other of the same size tha come in my way." The same issue's leading article, on "Pur tient (archaic spelling) Masonry" is also by Mr. Knoop, wh Masonic scholar of standing, and was read by him befor above mentioned lodge of which he is one of the 40 members. theme was primarily the place of the Royal Arch Degree i early ritual; but in the course of his exhaustive discussi showed how certain regulations "were probably taken bodily a document dating from the third or fourth quarter of the century," how certain features of the ritual resembled the cedure adopted in the Middle Ages by various gilds," ho transition from "operative" to "speculative" Masonry occ earlier in Scotland and how a reference to Trinity college, D in 1688, was "the earliest reference to a Lodge of Freemaso Ireland." The same issue (pp. 147–188) contains another read before the lodge by R. J. Meekren, a Canadian Ma scholar, whose thesis is "that there were two primitive de . . . in the old Scottish lodges" instead of one, as held by preceding writers. His conclusion, which seemed to be shar his associates, was "that in essentials the Masonic ritual indefinite antiquity." Allen C. Austen, in the August *Ne* (505), finds that five foreign grand lodges contributed t foundation of Masonry in the United States, viz. the E Premier and English "Antient," Scottish, French (to Louis and Canadian (Michigan). His article is clarified by a cha which each American state grand lodge is traced to its sourc

Freemasonry and the War.—How the war affected the ish craft was illustrated by the meetings of most London l at "high noon" to avoid the blackout as well as the air despite which regular Masonic activity was maintained, ev those districts where bombing had been most destructive. meeting hour, however, prevented attendance of those in a service, military or civil, and resulted in recalling leader lodge officers who had retired and who, incidentally, brought Masonic jewels and regalia to meet the shortage caused by tations on manufacture.

Membership of the 49 American grand lodges was report 1942 as 2,453,175 apportioned among 15,329 lodges. This does not include the Philippines, from which, as from European countries, Masonic statistics were unobtainable. Canadian lodges, numbering 1376, reported 165,226 membe

Bibliography.—Lobingier, *History of the (Mother) Supreme* C (1931); Lobingier, *The Ancient and Accepted Scottish Rite* (1932); "Why Hitler Hates and Fears Freemasonry," *New Age* (Aug. to 1942).

(C. S.

Massachusetts.

A north Atlantic state of the U.S. mitted to the union Feb. 6, 1788.

93 sq.mi., including 254 sq.mi. of inland water; pop. (1940) 16,721, of which 3,859,476 was urban, 457,245 rural; 4,257,- white, 55,391 Negro. Capital, Boston (770,816). Other prin- al cities: Worcester (193,694); Springfield (149,554); Fall ver (115,428); Cambridge (110,879); New Bedford (110,341); nerville (102,177); and Lowell (101,389).

History.—Governor Leverett Saltonstall was inaugurated Jan. 1943, for his third two-year term following his election two nths previously, in which the Republican party again won most the elective offices of the state. Officers of the state in 1942 luded: lieutenant governor, Horace T. Cahill (Rep.); secretary state, Frederick W. Cook (Rep.); treasurer and receiver gen- l, Francis X. Hurley (Dem.); auditor, Thomas J. Buckley em.); attorney general, Robert T. Bushnell (Rep).

here was no regular legislative session in 1942, an off-year er the biennial plan. In Jan. 1942 Governor Saltonstall pro- med a state of emergency and assumed the full powers pro- ed by law, this action being ratified and continued by a special ion of the legislature called the same month.

he net state assessment on municipalities for 1941–42 was lowest since World War I, with the exception of 1931–32. ing the four years of the Saltonstall administration, this ual state tax was reduced from $12,000,000 to $5,000,000. net direct debt of the state government was cut from about ,700,000 in 1938 to $11,595,278 on Nov. 30, 1942.

Iassachusetts was the first state in the union to begin active lian defense preparations through establishment of a State nmittee on Public Safety. Closely related to the work of this nmittee was the state plan put in operation by Gov. Salton- l for handling any emergency through co-operation of all tary and non-military state agencies.

hrough the Military Information centre in the state house, Disaster Relief commission was on a 24-hour-a-day basis in 2.

ducation.—In 1942, Massachusetts maintained 1,887 ele- tary school buildings, with 367,435 pupils and 13,974 teach- 169 junior high school buildings, with 97,591 pupils and 4 teachers; 271 senior high school buildings, with 115,368 ils and 6,938 teachers. The 10 state teachers colleges had a bined enrolment of 2,203; there were 316 teachers. The state ege is at Amherst.

ublic Welfare, Charities, Correction.—State and municipal are aid, as of Dec. 1, 1942, reached an average of 226,360 s with approximate 12-months expenditure of $64,636,197. es of assistance were: old age, $33,425,468; aid to blind ,807; unemployment compensation, $11,722,785; general re- $8,764,331; aid to dependent children, $8,181,050; child dianship, $2,213,756. The average number of WPA employees 1942 was 24,822, representing a drop from 35,915 in January 3,140 in December.

he five state correctional institutions in 1942 included a state on, state prison colony, reformatory for men, reformatory for nen, and a state farm including accommodations for the ne. Average number of inmates in 1942 was 5,309.

ommunications.—Total mileage of highways in 1942 was 16, of which 17,439 mi. were rural. State highway expendi- s in 1941 totalled $14,316,000, construction, maintenance and inistration absorbing $10,435,000. Railroad mileage in oper- n in 1942 was 3,883. Mileage of regular public air lines in state in 1941 was 330, number of commercial airports, 44. phones in use in Sept. 1942, totalled 1,018,323.

anking and Finance.—There were 911 state banking institu- s in 1942, including 191 savings banks, 181 co-operative banks, rust companies, and 470 credit unions. The number of na- al banks was 124. Total banking deposits were $5,216,255,000; total banking assets, $7,081,059,000. The resources of the 26 federal savings and loan associations were $132,579,325.

In the year ending Nov. 30, 1942, the state government receipts were $132,624,093, including $1,500,000 from the sale of Commonwealth Airport bonds. State government expenditures for this period were $125,411,797, state debt (gross direct) $13,042,363, (net direct) $11,595,278.

Agriculture.—Gross income of agricultural production in 1941 was $100,959,000, of which $42,478,000 was from crops and $58,481,000 from livestock. Cash income from crops in 1941 was $38,661,000, from livestock $54,928,000. Fish landed in Boston in 1942 amounted to 195,550,268 lb. valued at $12,631,975; Gloucester, 161,259,228 lb.; New Bedford, 54,413,973 lb.

Principal Agricultural Products of Massachusetts, 1942 and 1941

Crop	1942 (est.)	1941
Tobacco, lb.	9,065,000	9,781,000
Cranberries, bbl.	525,000	500,000
Apples, commercial, bu.	3,400,000	2,488,000
Potatoes, bu.	2,850,000	2,492,000
Asparagus, crates	158,000	144,000
Onions, bags	338,000	411,000
Hay, all, tons	582,000	470,000
Corn, grain, bu.	308,000	287,000
Corn, silage, tons	308,000	294,000

Mineral Production.—A mica mine was reopened at Chester State Forest, after many years. The production of principal minerals in 1941, in short tons, was: coke and byproducts, 1,161,732; lime, 106,336; stone, 2,602,120; sand and gravel used, 5,351,002. (L. Sl.)

Massachusetts Institute of Technology.

During 1942 all of the effort, planning and policies at the Massachusetts Institute of Technology were shaped and directed by the needs of the war effort. Fifty-five members of the faculty were given leaves to accept war assignments in many different fields, while 160 were engaged in full or part-time war work at the institute.

Under the auspices of the United States office of education, 52 courses extending over periods varying from 4 to 16 weeks were given by the institute to more than 2,000 students. In addition to these courses, other special students from the army, navy, and weather bureau, were given training in other special courses.

The most important of the institute's activities in the war effort was its research program. More than 90 separate contracts for research and development were in force in 1942. Of these contracts more than one-half were with government agencies and the rest with industrial firms. In order to undertake this additional work about 1,800, half scientific and half accessory, personnel were added to the staff, many of whom were on leave from some 70 educational institutions and 40 industrial organizations.

The institute's normal operating budget, excluding the special war program, for the year 1941–42 totalled $3,710,000; gifts received totalled $926,900; educational plant assets stood at $17,054,000, an increase of $330,000; and the book value of endowment funds totalled $37,266,300, an increase of $1,285,000 during the year.

Enrolment for the academic year 1942–43 totalled 3,048, of which 596 were graduate students. Seventy per cent came from outside Massachusetts, 62% from outside the New England states, 32% from outside the North Atlantic states and 6% from outside the United States. (K. T. C.)

Mathematics.

Mathematical research, judged by the number of pages published in the journals, fell in 1942 to one-half of its pre-war volume. The disruption of communications and the suppression of information about the large amount of mathematical research being done on war problems rendered a complete report for 1942 impossible. Nevertheless, new results were known to have been obtained in all fields. For example, it was shown that every sufficiently large integer can be expressed as the sum of not more than 23 fifth powers of integers, and also as the sum of not more than 36 sixth powers of integers. New results in combinatory logic included an important new consistency proof. The Euclidean algorithm for finding the highest common factor of two or more numbers was extended to a similar algorithm for vectors. These were important new developments in the theory of groups whose elements form a lattice. Further progress was made on the problem of Geöcze, which is concerned with the equivalence of two definitions of the area of a surface. The class of functions for which the Fourier-Bessel expansion is known to be valid was considerably enlarged. Other new results were obtained in the study of relaxation oscillations, statistics, the theory of elasticity, hydrodynamics, aerodynamics and the buckling of thin plates.

Professor G. D. Birkhoff of Harvard served as exchange professor with Latin American universities; he lectured in the universities at Mexico City, Lima, Arequipa and Santiago. Professor P. R. Rider of Washington university began a term as exchange professor at the National University of Mexico, lecturing on mathematical statistics. Dean Godofredo García of the National University of San Marcos established the fundamental equality of Sundman for the case of n bodies and extended the celebrated inequality of Sundman to the general case of n bodies and even to a gravitational gas such as a cloud or gaseous nebula. I. M. Vinogradov of Moscow was elected a foreign member of the Royal Society of London. The mathematical world joined in celebrating the tercentenaries of the birth of Isaac Newton (1642–1727), of the invention of the first calculating machine by Blaise Pascal, and of the death of Galileo Galilei (1564–1642). The William Lowell Putnam Mathematical competition, won in 1942 for the third time in five years by the University of Toronto, was not to be held in 1943 because of the war.

Records compiled showed that about 130 mathematicians came to North America from Europe during the years 1933–42, and that 100 doctorates with mathematics or mathematical physics as the major subject were conferred during 1941 in the United States and Canada. War, with new demands for research and for the instruction of those about to enter the armed forces and industry, caused an acute shortage of mathematicians in America. Much energy was directed into the study of applied mathematics; Brown University announced that it would begin publication of *Journal of Applied Mathematics* early in 1943. Graduate work in pure mathematics was rapidly approaching the vanishing point. America merely repeated the experience of England. At Cambridge university the number of lecturers was reduced by about half, the undergraduate population was much smaller, and there were only two or three men research students in residence. The belief was expressed, however, that enough new mathematics appeared to keep alive every branch of the subject.

The November 1942 number of *Mathematical Reviews* contained no reviews of papers published in axis countries in 1942; this fact undoubtedly resulted from the disruption of communications rather than the cessation of mathematical research. New publications included Whyburn's *Analytic Topology,* Lefschetz's *Algebraic Topology,* Jackson's *Fourier Series and Orthogonal Polynomials,* Coxeter's *Non-Euclidean Geometry, Mathematical Monographs* (*Northwestern University Studies in Mathematics and the Physical Sciences,* vol. 1), and *University of California Publications in Mathematics* (Los Angeles, vol. 1).

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Matheson, Samuel Pritchard (1852–1942), Cana clergyman, was Sept. 20 in Manitoba, Canada. He received his B.D. in 188 St. John's college and later served there as headmaster and fessor. He was ordained deacon in 1875, made canon of John's cathedral, 1882, and archbishop of Rupert's Land, 19 31. From 1909 until his retirement in 1931, he was primat the Church of England in Canada. He also served as chairma the advisory board of education for Manitoba and chancello the University of Manitoba. He died in Winnipeg, May 19.

Matter, Structure of: *see* PHYSICS.
Maurice and Laura Falk Foundation, The: *see* F FOUNDATION, THE MAURICE AND LAURA.
Mauritania: *see* FRENCH COLONIAL EMPIRE.
Mauritius: *see* BRITISH EAST AFRICA.

Meat. Although production of meat (beef, pork, mutton veal) in 1942 in the United States broke all rec and reached an astounding figure estimated at 22,000,000,000 rationing through restricted deliveries to retailers was put effect in the autumn, and by mid-winter acute shortages developed in areas on the east and west coasts. The 1942 duction was 29% greater than the five-year (1936–40) ave and 86% of that increase went into lend-lease channels and the military forces. A goal of 25,700,000,000 lb. of red meat set for 1943, 50% more than the average annual productio the 1936–40 period.

Supplies of pork for civilian consumption in 1943, to dietary standards were estimated at slightly under 8,800,000 lb., or 69 lb. per capita for the year, compared to a per ca consumption of 66.6 lb. in 1941 and a five-year average of lb. Military and lend-lease requirements of pork in 1943 w

"MARY HAD A *LITTLE* LAMB." The U.S. meat shortage of 1942 reduc nursery terms by Alexander of the *Philadelphia Evening Bulletin*

Livestock Slaughter in Plants under Federal Inspection, 1942 and 1941

	1942 numbers	1941 numbers
attle	12,347,369	10,945,906
ogs	53,896,881	46,519,757
eep	21,624,689	18,124,531

was estimated, exceed those of 1942 by more than 1,500,000,- lb. Allowances of beef and veal for civilian consumption in 43 were scaled slightly below the consumption of 1941 and out 550,000,000 lb. below the 1942 consumption. Civilian re- rements for lamb and mutton in 1943 were placed at a mini- m of 888,000,000 lb., more than the five-year average, but htly less than consumption in 1941 or 1942.

Cold storage holdings of meat Jan. 1, 1943, were reported as 557,000 lb. compared to 716,597,000 lb. a year previously. k supplies in storage were 488,333,000 lb.; beef 129,019,000 lamb and mutton, 35,058,000 lb. These figures had little nificance for civilian consumers, as most of the holdings were ernment owned or earmarked for lend-lease, army or navy tinations. The OPA quota system, imposed in the autumn of 2, was further applied beginning with 1943, it was announced, packers were required to limit deliveries to civilian consumers he first three months of 1943 to percentages based on deliv- s to civilian consumers in the first quarter of 1941; namely, % of beef, pork and veal; 75% of lamb and mutton. Farmers e not restricted to slaughter of meat animals for their own but had to maintain sales to customers at the same volume as 2. (*See* also Bacon; Cattle; Hogs; Livestock; Poultry; ioning; Sheep.) (S. O. R.)

dical Association, American: *see* American Medical ociation.

dical Research, Committee on: *see* Scientific Re- rch and Development, Office of.

dicine. A nation at war intensifies its research, particularly research in the field of medicine because the lth of both the armed forces and the civilian population is ntial to the winning of the war. During 1942 sickness and h rates in the United States reached the lowest point in his- and birth rates increased.

hemotherapy.—Outstanding among chemotherapeutic in- igations was the development of dicoumarin, a substance de- d from rotted sweet clover, which acts similar to heparin in enting the clotting of blood.

ulphadiazine was established as the most useful of the sulpha s because of its absorbability, effectiveness and lessened tox- . For the dysenteries, sulphaguanidine was proved to be t useful. New drugs under investigation included sulphaceta- e and sulphasuxidine.

echolyl bromide was found to be a drug definitely affecting parasympathetic nervous system of the human body and efore useful in controlling vasospastic conditions.

xperiments continued with penicillin, a mould, and gramicidin tyrothricin as antiseptic substances of tremendous potency, far, however, not available commercially.

uch experimentation was made on a new narcotic called erol, known in Europe as dolantin. Investigation indicated to be a powerful and quick-acting narcotic, although there e still some questions as to its addictive properties; the claim made, but not fully substantiated, that this product is less t-forming than morphine.

utstanding in chemotherapy was the development of the man- ture in the United States of substitutes for quinine, which shut off by the Japanese capture of the Netherlands East Indies. Atabrine was made in quantities in the United States, production reaching 1,000,000,000 tablets per year. The product, tested under controlled conditions in the armed forces, was found to perform successfully, although it is a dye substance and induces a somewhat yellow colour of the skin when used continuously. Totaquina was made official in the U.S. Pharmacopeia. It is a mixture of all of the alkaloids from the cinchona bark. The cinchona bark from South America, particularly Bolivia, is less rich in quinine than that from the Netherlands Indies. Plasmochin, another antimalarial, was also manufactured for the first time in quantities in the United States.

A derivative of nicotinic acid, nikethamide, was found to be useful as a stimulant of the central nervous system.

A portion of the vitamin B complex called para-aminobenzoic acid has the property of opposing the effectiveness of the sulphonamides. Modifications of the sulphonamides were prepared for use directly applied to the sinuses in cases of chronic infection.

The sulpha drugs were shown to be relatively less useful with most virus diseases than with other infections. They seemed to be without specific effect in measles or in atypical virus pneumonia. In meningitis the sulphonamides were found to be more specific and useful than antimeningococcic serum, although in difficult cases both methods are used. Promin, another sulphanilamide product, was tested in tuberculosis and was found useful in experimental infections in animals. Thus far as used in human beings it appears to be too toxic for safety.

A late development was the mixing of 3% sulphadiazine or 3% sulphanilamide with 2.5% methyl cellulose, which is a plastic, 3% triethanolamine and 0.5% sorbitol with 50% alcohol or acetone. This makes a fluid which can be spread on a smooth glass surface and then allowed to dry. The result is a material which looks like wax paper and which can be placed on wounds or serious burns, protecting them and at the same time supplying the effect of the sulphonamide drug against infection. (*See* also Chemotherapy.)

Vitamins.—Tuberculosis, it was shown, places special demands on the body for vitamin A, so that increased amounts of vitamin A are needed by those who have this disease. Altogether, some 28 different vitamins were recognized, of which at least ten are portions of the vitamin B complex.

Isolation of biotin in pure form permitted experimentation which showed the necessity of this portion of the vitamin B complex in nutrition.

Avidin, a concentrate of dried egg white, has the power to destroy biotin in the human body. Since cancer cells require biotin for growth, the suggestion was made that large amounts of avidin would control cancers in human beings. Experimentation with mice of a cancer strain and with human beings failed to reveal any specific effect determinable for avidin used in this way.

Extra vitamin B complex is required by people doing heavy muscular work and by those with excessive action of the thyroid gland. Vitamin B deficiency in such cases is associated with easy fatigue and loss of efficiency in daily work.

New studies showed that riboflavin (vitamin B_2) may be associated with vision and that dimness of vision is related to a shortage.

The germ of undulant fever, called brucella, requires biotin in order to grow satisfactorily.

An investigation of fatigue in the Physiology department of Northwestern University Medical school showed that none of the individual parts of the vitamin B complex as a whole has any immediate influence on recovery from voluntary muscular fatigue in people who are receiving adequate diets.

There is a definite relation between thiamin and the manner in

Above, right: EMERGENCY OPERATION at a station of the British medical corps in the Libyan desert, 1942

Above, left: BRITISH AIR AMBULANCE being loaded with seriously w
troops on the North African front in 1942, for transportation to larg
hospitals in the rear

Centre: LITTERS of wounded men at the receiving ward of the U.S. army
hospitals on Bataan peninsula in 1942

Below, right: MEMBERS of the British army medical corps assisting a w
soldier on the North African front in 1942

Below, left: WOUNDED SURVIVORS of the U.S. aircraft carrier "York
being rushed to waiting ambulances at Honolulu harbour after the ba
Midway, June 4-6, 1942

hich the body uses sugar for muscular activity. A chronic de- ciency of thiamin produced signs of heart failure in pigeons d in pigs due to a decrease in the heart muscle content of gars.

A shortage of vitamin C occasioned by the war caused Great ritain to seek new sources for this vitamin. Blackberries, black rrants and rose hips were found to be especially rich in vita- in C.

Oranges grown in the sun were shown to have more vitamin C an those grown in the shade. Pink grapefruit has more vita- in C than yellow. Grapefruit on the outside branches of the tree s more vitamin C than that on the inside.

Continuing studies indicated that no one of the vitamins is ecific for graying of the hair but that this is a complex process which shortages of various substances may have a relation. *ee* also Vitamins.)

Glands.—Investigators showed that damage to the pituitary and results in loss of weight, and damage to the hypothalamus the brain results in gain of weight. The injection of anterior uitary hormone in large amounts results in a destruction of the ands of Langerhans in the pancreas, these being the structures ich produce insulin. Thus, diabetes may be produced by extra ounts of anterior pituitary hormone.

Extraordinary effects were observed by the use of stilboestrol d follutein, female sex hormones, in enlargement of the pros- e in man. Instances were reported in which large amounts of ese hormones resulted in a stopping of such enlargement. More- er, the use of these glandular materials was found to have a finite effect in controlling the growth of cancer of the prostate nd in man. Investigators also reported that removal of the le testicles of the male sex glands had an effect in stopping pain of cancer of the prostate, and in some instances, in par- l or apparently complete disappearance of such forms of cancer.

Infections and Viruses.—After World War I, new methods re developed for the isolation of viruses capable of carrying ection. Thus far the viruses of special importance were those ated to epidemic keratoconjunctivitis (*see* Eye, Diseases of) d atypical virus pneumonia.

Epidemic keratoconjunctivitis is an inflammation of the eyes used by a virus. This spread apparently from the far east to waii, then to the Pacific coast and then across the United tes. It affected principally workers in industry. The symp- ns include reddening, swelling and congestion of the white por- n of the eye with subsequent scarring. Workers are disabled five or six weeks by inability to stand light and constant flow tears. The condition was not susceptible to treatment with sulphonamide drugs. Most cases were cured completely with passing of time. Dr. Murray Sanders isolated a virus appar- ly responsible for this condition and prepared a vaccine which ld be used as a means of prevention and treatment. This us, as many others, was grown on the foetal chick embryo.

With the coming of cold weather, troops in many camps and ilians as well began to become ill with an unusual form of eumonia which could be detected by early use of the X-ray which was differentiated from ordinary pneumonia by fail- to find the pneumonia germs in the sputum. The condition s called atypical virus pneumonia or acute pneumonitis. The dition was not as serious as ordinary pneumonia and the mber of deaths was slight. This virus also failed to be con- lled by the sulphonamide drugs. Studies made by one group of estigators showed that a similar virus is found in cats and in s; furthermore, it was shown that the virus may pass not only m cats to human beings but from human beings to cats. Vari- s pneumonias are spread also by viruses of the type that cause ttacosis in parrots and birds. Several viruses apparently pass from bird to man and from man to bird. This condition was called ornithosis.

Other virus diseases were reported affecting the nervous system including various forms of epidemic inflammation of the brain or encephalitis; also such conditions as typhus fever, which is spread by a virus.

A special commission to study typhus was established by the army, navy and public health service and left in Dec. 1942 for the far east to control the disease there and in north Africa.

Vaccines were developed against the virus of typhus fever by growing the virus on the foetal chick embryo. The entire Iranian army was inoculated with such a vaccine by Dr. A. Neuwirth.

Outbreaks occurred in various portions of the U.S. in hospital nurseries producing epidemic diarrhoeas among newborn babies, in some instances related to the usual germs of dysentery, in others to unknown viruses.

Surgery.—The results of modern surgery were vastly improved by the development of new devices and techniques and by the application to surgery of new discoveries in other fields. Thus the giving of blood plasma previously and subsequent to operation helps to avoid shock and the bad effects of haemorrhage. A wide variety of anaesthetics makes possible lessening of risk from anaesthesia. The use of sulphonamide drugs pre- and postoperatively controls infection.

New methods included the development of an electromagnetic device for determining the exact spots in which bullets or other metallic fragments lie in the body. An automatic sewing device made easier the technique of stitching and also shortened the time required for repair after operation.

The tendency was more and more to treat wounds with plenty of soap and water rather than with antiseptics. In one large industry more than 12,000 wounds were treated exclusively with soap and water. In no instance was it necessary to put a worker in the hospital because of infection of the wound.

A new splinting device was developed by a veterinarian named Stader. It involves the insertion of pins into the fragments of bone and the interlocking of these pins with an adjustable splinting device. With this device persons whose bones had been fractured could walk or use the arms within one or two days after the fracture occurred.

In removal of the prostate gland, transurethral resection with electric coagulation by a heated knife introduced through a cystoscope became established as the optimum procedure in most cases.

The sewing of a torn or broken nerve is about as delicate a task as is known to medicine. In World War I doctors used linen and silk thread and also human hair for this purpose. British investigators introduced a new method which consists of a form of fibrin from clotted blood and which is dropped between the torn ends of the nerve. The nerve is then drawn together with fine silk.

Russians introduced sawdust in sacks of thin gauze in place of wool and cotton in dressing war wounds.

Russians also claimed to have grafted nerves from corpses to living persons. Wounds were treated by covering them with peritoneum—the thin tissue which lines the abdominal cavity.

Refrigeration was used to anaesthetize limbs that had to be amputated in the case of a patient with diabetic gangrene since such persons cannot take the ordinary anaesthetics. The limb is packed thoroughly in ice and covered with a rubber blanket. Salt is added to the ice to maintain the low temperature. Before application of the tourniquet, ice bags are applied for 30 minutes to shut off all pain of applying a tourniquet. After the leg is in ice for two and one-half hours, it is without sensation of pain.

Especially serious among war injuries is the effect of blast.

Sailors thrown into the water and swimming on the surface suddenly become unconscious and some of them die when depth charges explode in the sinking ship. Most post-mortems showed the intestines torn in many places. Navy investigators developed information regarding the mechanism of this injury and devised a special jacket to be associated with the life preserver which serves to interfere with pressures that cause blast injury.

In operating rooms the use of ultra-violet rays was efficient in freeing the atmosphere of infectious organisms. Sprays of propylene glycol, harmless antiseptic, were also found efficient in controlling germs in the air.

Operations were done on hearts of persons with angina pectoris resulting from insufficient circulation of blood to the heart muscle by opening the sac containing the heart and putting in a small amount of talcum powder. This caused adhesions and the development of a new blood supply. Drs. S. A. Thompson and Milton J. Raesbeck did this operation on 19 people of whom 4 died and 15 recovered with improvement. (*See* also SURGERY.)

Obstetrics.—Especially notable in 1942 was the development of a technique leading toward a method for safe painless childbirth. This method, developed by Hingson and Edwards, is an extension of a method used in surgery involving the injection of an anaesthetic into the caudal area or lowermost portion of the spinal column. A needle is passed into the area around the membranes which cover the end of the spinal cord. From this area emerge the nerve roots which control the sensations to the uterus and the genital area along which the child passes in the process of childbirth.

A device was projected for continuing such injection of an anaesthetic over long periods of time, in some instances as long as 28 hours. In hundreds of cases the method seems to have been successful in producing complete insensibility to pain, yet without any loss of consciousness and without postpartum nausea, vomiting or other unfavourable symptoms. The drug used was a product called metycaine, which is dissolved in a physiologic salt solution.

In 25 cases treated by this method in the Chicago Lying-in hospital, obstetricians reported complete success in 85%, partial success in 15%.

The method was in an early experimental stage and subject to considerable improvement both in the materials used and in the technique. (*See* also GYNAECOLOGY AND OBSTETRICS.)

Cancer.—Cyclotrons were improved to provide 3,000,000 volts and the General Electric company was reported to be building a cyclotron that would produce 200,000,000 volts. Cancers treated with neutron produced by the cyclotron showed improvement in three months. In 20% of instances, however, the tumours were not affected. Neutron particles are thought to be more destructive of cancer tissue than equivalent amounts of the X-ray. (*See* also CANCER.)

Nutrition.—Restrictions on the diet in warring countries produced conditions which caused scientists serious concern. People in England were found to be suffering with increased amounts of anaemia due to wartime diets. Tuberculosis increased in practically all of the warring nations—this increase was believed to be associated both with overcrowding and with dietary deficiencies. Most serious were the deficiencies of protein known to be just as necessary as vitamins for health and growth. Biochemists were studying the individual amino acids which make up protein. Means were developed for injecting such amino acids directly into the blood in serious cases of protein deficiency. Special studies were made of the trace elements in the diet, including manganese, zinc, boron, cobalt and other minerals. It was known that small amounts of such minerals play an important part in metabolism.

Statisticians for the Metropolitan Life Insurance comp stated that a wartime lessening of food might prove a bless in disguise to American women by aiding their programs of we reduction. Stout people are more likely to develop chronic ease at an earlier age than are those who are underweight. Wo who are overweight are particularly susceptible to diabetes, eases of the gall bladder, and some forms of arthritis.

People who are looking for pep pills and vitamins need believe that any vitamin or group of vitamins can produce en when it is lost by exhaustion and fatigue.

Diabetes tends to disappear from racial stocks due to a reces trend. The tendency of the disease is to appear at a younger younger age but less and less in the descendants of diabetic ents.

Aeroplane watchers were found frequently to be suffering f deficiencies of vitamin A in the diet which produced night bl ness. They were placed on diets containing enough vitami and in order to adapt themselves to seeing in the dark were quired to wear dark goggles for at least 45 minutes before un taking their work.

Investigators showed that canned foods maintain their vita content better than raw fruits and vegetables, which lose v mins when held in storage.

Peanuts were found to lose from 70% to 80% of thiamin vitamin B_1) when processed in hot oil or roasted.

It was established that the presence of any alkaline substa in cooking will destroy at least 50% of the thiamin conten food.

From lemon peel, Szent-Györgyi isolated another vitamin ca citron, or vitamin P, which is said to have a definite relation to the capillaries or smallest blood vessels. (*See* also DIETETI

Venereal Disease.—Studies by R. A. Vonderlehr and Lid Usilton of the United States public health service made 2,093,000 selectees and volunteers indicated positive or doub blood tests for syphilis among 45.3 per 1,000. Calculating on the rate of prevalence for the entire male population of United States between the ages of 21 and 35 years would gi rate of 47.7 per 1,000. The rate of prevalence among Negro lectees was 252.3 per 1,000. Among the white selectees it 17.4 per 1,000. This would give a rate for the entire male N population between the ages of 21 to 35 of 27.2 for each people, and for the white population of 2.35 for each 100 pe The rate for rural areas was 4.38 per 100 as contrasted with for the cities. The highest rates were found in the southeas states; the lowest in New England, western, north central middle Atlantic states.

During 1942 continued attention was given to intensive met of treatment of syphilis, including the five-day treatment, a week treatment, and a new one-day intensive method. In a these methods injections of arsenical drugs are made directly the blood stream. In addition the injection of the drug is cont ous in the one-day treatment and the patient is submitted ing the course of the treatment to seven hours of continued ing to bring the temperature of the body up to 106°. All of intensive methods of treatment were considered to be in an e experimental stage since syphilis is known to be a disease of duration, with the organisms hiding themselves away dee various portions of the body and with the manifestation app ing sometimes after 5 to 25 years. Thus these manifestations not show themselves for some time following the initial treatm and the change of the blood test from positive to negative.

Especially significant was the development of a rapid me for the cure of gonorrhoea so that in many army camps by combination of the use of the sulpha drugs internally and he of the body with hyperthermic devices patients were cure orrhoea in one or two days. For control the army tended to such boys under hospital conditions for from five to ten s in all.

s a means of controlling the dissemination of venereal dis- the government recognized that these are infectious diseases. els, which were cited by members of the armed forces as es in which they were infected, were placarded and quaran- d in many cities. Many concentration camps were established ospitals in which professional or clandestine prostitutes were ited by compulsion and given various methods of treatment. also Venereal Diseases.)

nusual Observations.—In Yale University Medical school A. V. N. Goodyer and associates recorded the heart beats of embryo in the fourth month by using an amplifier connected the electrocardiographic apparatus.

orking with Drosophila, the fruit fly, Gowen discovered that predetermination of sex is a function of the genes in the egg In *Science,* Dec. 18, 1942, he made the claim that the means predetermination of the sex through specific agencies under 's guidance were established.

uring 1942 the fattest person known to medical science died. was Mrs. Ruth G. Pontico of Tampa, Fla., 5 ft. 5½ in. tall, weighed 772½ lb. The heaviest person (but not the fattest) ever lived was Miles Darden who died in 1857 in Henderson ty, Tenn. He was 7½ ft. tall and weighed a little over 1,000 lb.

o settle an argument Dr. Paul Dudley White circulated a tionnaire among long-distance and marathon runners. He d that the heart beat does tend to be smaller in marathon long-distance runners. Four of the most widely known cham- s in this field had pulse rates at rest of 38, 37, 38 and 35 per minute respectively. Les MacMitchell, champion two- , had a normal pulse rate of 32.

hen the blood pressure is recorded in an ordinary bedroom ad of a doctor's office it tends to measure 10 to 15 mm. of ury less.

actically no animals, except human beings and pet dogs, r from constipation.

perience with chiggers, fleas, ticks and other insects in World II activities produced shortages of pyrethrum, a rotenone il as a repellent of insects.

octors Wolf and Wolff studied a man, 56 years old, who had fed since youth through an opening made into his stomach. found that anger produces congestion of the wall of the ach, spasms and sometimes little haemorrhages which may t in ulcers.

cteriologists have classified 33 different types of pneumonia with special antiserums, made from rabbit blood, against of them.

patient was maintained for 17 days by injecting food directly his veins, including protein from casein digest, fat from olive nd sugar in the form of dextrose.

baby chicken can be caused to exhibit the behaviour of a er hen by injecting it with prolactin, a glandular substance ed from the pituitary gland.

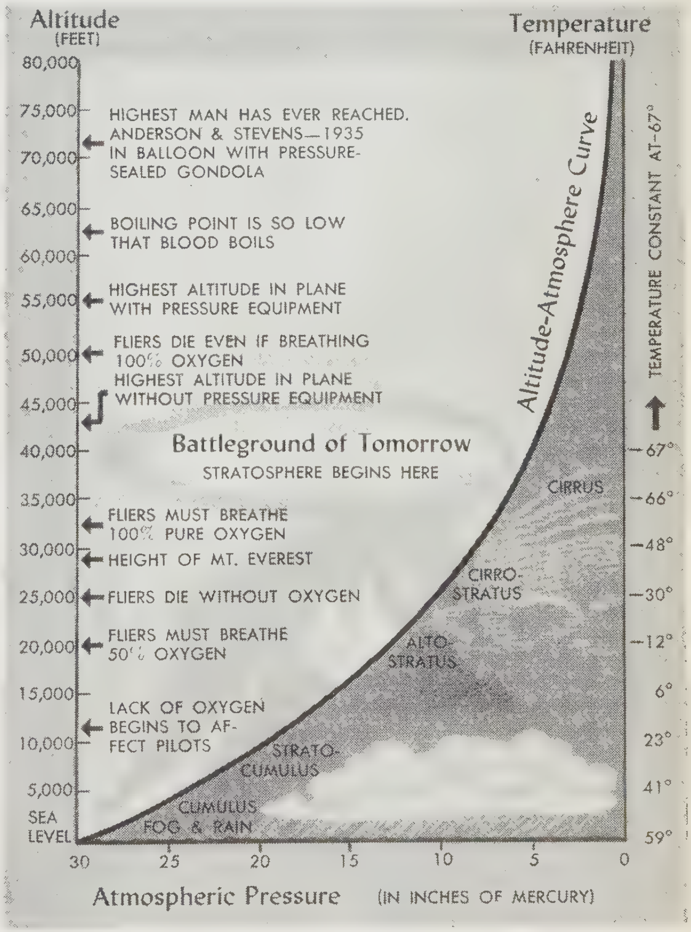
omen are less fit than men for both moderate and strenuous ion. Studies made in the laboratories of Wellesley and Har- showed that the eight best women equalled the performances e poor men, "proving" that women are the "weaker sex."

oise is detrimental to health and hearing. The sounds of an ge office reach 40 decibels, ordinary street traffic 80 decibels, p boiler 90 decibels, and an aeroplane motor 110 decibels.

ar Medicine.—From the Solomon Islands came the report mortality from wounds of all types had been less than 1% ntrasted with a mortality for wounds of all types for World I of 7%. The figure of one-half of 1% compares with the figure of 1.5% for the Russian army in World War II. These results were achieved by the administration of blood plasma in the field to all seriously wounded men, the injection of a narcotic, the sprinkling of sulphanilamide or sulphadiazine on the wound, and the administration of sulphadiazine or sulphathiazole internally. The wounded man was then conveyed to the rear where he was placed in an aeroplane ambulance (carrying 12 stretcher patients or 25 ambulatory cases) and flown to a base hospital in some far removed place where he received the best that modern scientific medicine could offer under good hospital conditions. The initial mortality among those engaged was high, however, because of the deadliness of modern methods of destruction.

Outstanding in war medicine was the use of blood plasma, for which 2,000,000 people contributed blood in 1942; the use of human blood proteins; the use of the sulpha drugs internally and externally; the inoculation of troops against yellow fever, cholera, plague, typhus, tetanus and other infections and the development and use of atabrine as a substitute for quinine in the prevention of malaria. Contributing also to the effectiveness of troops were the application of modern information regarding nutrition, new studies of fatigue and tremendous advances made in aviation medicine. Whereas aeroplanes went to heights of 7,000 to 10,000 ft. in World War I, bombers in World War II went in at 30,000 to 45,000 ft. altitude. This required special materials for oxygenation, warmth and other controlled conditions.

Special problems of World War II were the high incidence of gastric ulcer as a cause of disability, the large number of rejections for nervous and mental conditions, and the breakdown of considerable numbers of men actually in the service from nervous



EFFECTS OF DIFFERENT ALTITUDES on fliers. As the climbing ranges of fighters and bombers increased in 1942, scientists in all belligerent countries intensified their researches into the effects of cold and low atmospheric pressure on men and machines and mental conditions.

The most serious cause of disability thus far in the armed forces in the United States was the epidemic of hepatitis with jaundice which affected somewhere between 60,000 to 75,000 men and caused something less than 100 deaths. Current belief was that the jaundice was due to a virus carried by the blood of some of the donors who provided serum which was mixed with the vaccine to maintain its potency.

A striking observation in World War II was the preponderance of head injuries by blunt objects over those of penetrating missiles. This was believed to be due to the increase in aerial warfare.

At Pearl Harbor burns constituted 60% of injuries to the sailors. Such burns were treated with sprays of the sulphonamide drugs with excellent results.

Parachute jumpers were studied in jumps ranging from 8,400 to 29,300 ft. In falling from maximum heights the body reaches a velocity of 171 m.p.h. In fact during the period just before the parachute is opened the body may reach a velocity of 229 m.p.h. The mental reactions during this period are clear and rapid in the person who is calm and unfrightened. The blood pressure is not influenced, the respiration is irregular, the ability to hear is disturbed, and there may be nausea and faintness if the body is spinning or tumbling.

Selective Service Administration.—During 1942 the medical examinations under Selective Service were changed to include a coarse screening only by the Selective Service boards with a detailed examination made by the physicians associated with the army and navy induction and enlistment boards. The standards for service, both full and limited, were greatly modified. Men were no longer rejected because of deficiencies related to the teeth unless seriously infected but were inducted into the army or navy where suitable dental care was supplied. Arrangements were made for induction for limited service of the draftee, depending on the physical disability. The medical department of the Selective Service system developed means for improving physical fitness of boys and girls in schools and for prehabilitation and rehabilitation. Pilot tests conducted in Maryland and Virginia indicated the desirability of as much medical rehabilitation as possible but relatively little desirability for surgical rehabilitation, including operations on ruptures, flat feet, spinal curvature, or similar disabilities.

Socialization of Medicine.—During 1942 the United States public health service and the bureau of maternal and infant welfare in the department of labour were greatly expanded to meet the needs of the war. Liaison officers were created to handle problems of health between army camps and civilian communities. Special efforts were required for the control of venereal disease. Arrangements were made to expend funds derived under the Social Security taxes for the care of mothers in childbirth, particularly the wives of men in the armed forces. Obstetrical departments and nurseries were established in many large army hospitals. Congress provided a largely increased appropriation for the venereal disease control campaign.

Medical service plans continued to develop so that by the close of 1942, 16 states developed through their state medical societies mutual plans for extending medical services to large numbers of workers in industry. The outstanding plans were those of the Michigan State Medical society and of the California State Medical society. Plans were also developed and became effective in Massachusetts and New Jersey. The Farm Security administration developed a medical service plan with 793 units in 40 states, covering 1,017 counties and having a membership of 109,964 families, including 578,804 persons.

Another plan developed in California was the Agricultural Workers Health and Medical association which provided m care for an additional 600,000 persons. The Michigan M Service plan had enrolled 455,000 people including more 160,000 employees of General Motors corporation.

In the U.S. as a whole, more than 15,000,000 people volum insured themselves against the costs of hospitalization in v mutual and private insurance plans.

The Supply of Physicians.—At the end of 1942 more 40,000 physicians of the 186,000 physicians licensed to pr medicine in the United States had been enrolled in the a forces.

The Procurement and Assignment Service for Physicians, tists and Veterinarians, established as a part of the Offi Defense Health and Welfare Services, became associated wi War Manpower commission as did also the National Rost Scientific and Trained Personnel. The directing board o Procurement and Assignment Service established quotas fo of the states so that a minimum of one physician to civilians would be left in each state while meeting the of the armed forces, with the understanding, however, that tinuous demand might permit extension to a figure o physician to 3,000 of the civilian population.

Arrangements were made for accelerating medical educ decreasing the premedical education to two years and the i ship to one year and making medical education on the qua system continuous so that the complete medical course be limited to three years. Thus a medical education that for required ten years was compressed into a six-year period.

Special regulations were issued by the War Manpower mission providing for occupational deferment of prem students and induction of medical students and interns int armed forces so that they might continue medical educatio interrupted and might be available to the armed forces f ing internship.

To meet the needs of the civilian communities the Comm on War Participation of the American Medical associatio directing board of the Procurement and Assignment Servi Physicians, Dentists and Veterinarians, the United States health service and the Federation of State Medical Lic boards engaged in a joint effort to bring about the issuar temporary licences to practise during the emergency and t location of physicians to meet war needs. (*See* also All Anaesthesia; Bacteriology; Biochemistry; Birth Con Chemistry; Chemotherapy; Drugs and Drug Tr Endocrinology; Epidemics and Public Health Con Hospitals; Industrial Health; Nervous System; P ology; Psychiatry; Urology; Veterinary Medicine; X Also *see* articles on specific diseases.)

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(M. Fi.)

diterranean, British Possessions in the.

se comprise Gibraltar, the Maltese islands and Cyprus, of ch the accompanying table gives certain statistics. (*See* also TISH EMPIRE.)

istory.—*Gibraltar.*—Preparations to meet attack by land and continued actively in Gibraltar, and in 1942 details were reed of improved anchorages and dock facilities, the tremendous seaplane base whose aircraft guard convoys and patrol the tern Mediterranean, and the completion of ten miles of tunnel he Rock in which 20,000 men could live indefinitely. Largee land, sea and air manoeuvres were carried out. A few atpted raids by axis bombers were ineffective. During the first k of November, Gibraltar was the assembly point for the U.S.-ish Expeditionary forces which landed in North Africa early he morning of Nov. 8.

n May 30, Gen. Mason Macfarlane was appointed governor commander-in-chief of Gibraltar in succession to Lord Gort, replaced Sir William Dobbie as governor and commanderhief of Malta.

alta.—During 1942, Malta continued its epic defense. By . 21 it had had its 1,660th bombing raid and had destroyed 9 axis aircraft. Heavy property damage was sustained. In letta, 75% of the houses had been destroyed or damaged, the ce of the Grand Masters of the Order of St. John halfroyed, and the Royal Opera house, an architectural gem, ed. Owing, however, to excellent discipline and good rock ters, the loss of life was not heavy. In recognition of the mitable spirit of Malta, King George VI on April 6 bestowed George cross on the island, which thus became the first comnity to receive this honour. The official presentation took place Sept. 13.

A STATUE OF QUEEN VICTORIA in the centre of Valletta, Malta, was one of the few items that escaped destruction during the incessant axis air raids on the city and island in 1942

After the temporary loss in June of British bases in Libya, the supplying of Malta became increasingly difficult, but a long-term agricultural policy insured the cultivation of every scrap of fertile land, and farmers reaped a bounteous harvest. A system of communal feeding utilized local resources; the health of the islanders remained good. To meet the heavy call on manpower a department of national service was established in June for the control of labour in all technical trades. Despite all difficulties the schools were well maintained.

Owing to the greatly increased expenditure, the imperial government proposed during 1942 to give a grant-in-aid of £1,300,000, to which was added the cost of the supply scheme estimated at £700,000. In addition the British government agreed to stand behind the war damage scheme, which was based on the United Kingdom war damage act of 1941.

Cyprus.—In striking contrast to Malta, Cyprus had no serious air raids, but its important strategic position necessitated continual vigilance. The garrison was reinforced by Indian troops and a Palestinian unit, and the volunteer force was strengthened.

Military requirements depleted the forests, but rapid afforestation was aided by a government grant. During the annual "Arbor Week," 300,000 trees were planted by private individuals. The bad harvest of 1941 weakened the agricultural position in 1942.

The introduction of new labour laws at the beginning of 1942,

British Possessions in the Mediterranean

ritory and Area in sq. mi.	Population	Principal Products 1939 (in metric tons)	Imports and Exports (in thousand £)	Road, Rail and Shipping	Revenue and Expenditure (in thousand £)	Education, Elementary and Secondary 1938
BRALTAR, 1⅞ .	(1938) 20,139	. .	free port; no statistics kept	(1938) shpg. cleared, 13,748,978 tons net	(1939) rev. 204 exp. 275	elem. schools 13; scholars 2,714; sec. schools 4; scholars 450
LTA, 122 . . .	(1939) 270,000	potatoes, 31,500 wheat, 7,600 barley 4,500	(1938) imp. 3,866 exp. 219 re-exp. 468	(1939) rds. Malta 267 mi. Gozo 68 mi.	(est. 1939-40) rev. 1,524 exp. 1,517	elem. schools 82; scholars 29,118; sec. schools 3; scholars 1,244
PRUS, 3,572 . .	(1940) 382,000	wines, 158,000 hectolitres; pyrites (1938), 776,000; barley, 49,200; wheat, 68,300; potatoes, 31,300	(1941) imp. 2,515 exp. 977 re-exp. 98	(1939) rds. 864 mi. rlys. 71 mi.	(1940) rev. 951 exp. 1,146	elem. schools: Christian 492; Moslem 212; scholars: Christian 37,646; Moslem 7,493; sec. schools 34; scholars 4,463

THE CATACOMBS OF MALTA provided impregnable air-raid shelters for inhabitants of the island in 1942

and the government's recognition of trade unions, were followed by a number of small strikes, chiefly for increased wages to meet the rise in the cost of living, officially stated in June to be 114%. The price control system was also severely criticized. Shortage of certain products led to hoarding by shopkeepers, profiteering and black market activities, notably in gasoline. Austerity measures, however, banned private cars and authorized the requisitioning of tires and other parts for the war effort.

Expenditure for 1942–43 was estimated at £1,418,833, and revenue at £1,194,901. Further expenditure on defense necessitated a grant-in-aid from the British government. Income tax was raised by 25% on all incomes over £200, with allowances for children and life insurance premiums. (L. E. Be.)

Merchant Marine: *see* Shipping, Merchant Marine.

Mercury.

Although the mercury output of the United States had been more than doubled in 1940, a further increase of 16% was attained in 1941, with a total of 44,000 flasks of 76 lb. each, or 1,517 metric tons. Domestic consumption in 1941 was 46,800 flasks, leaving a small deficit to be supplied from stocks. Imports during the first nine months of 1941 were 879 flasks, and exports 1,932 flasks, but indications pointed to an increasing rate of imports during the remainder of the year. New deposits were discovered in Idaho and Nevada, and additions were made to the known reserves in California. Prices had for some time ranged higher than was approved by the Price Administration, and on Feb. 4, 1942, ceiling prices were set at $193 per flask for metal produced in Texas and Arkansas or imported from Mexico, and $191 for all other.

The Mexican production was reported at 797.6 metric tons in 1941, of which 618 tons was in the first eight months of the year, and most of it went to Japan; beginning with September an agreement with the Metals Reserve Co. went into effect, under which the entire output was to be shipped to the United States, but for some reason not explained, the output for the last f months of the year was a full third less than the preceding rat

As a result of war demand Canada developed into a produ of material importance; the plant at Pinchi lake, B.C., enlarged to treat 450 tons of ore per day, and development w was done on deposits in other areas in the province. A sn retort plant was put into operation in March 1942 at the Jacinto mine, near Carora, state of Lara, Venezuela. (G. A. Ro.

Merriam, Clinton Hart

(1855–1942), U.S. biologist author, was born Dec. 5 in N York city. Merriam, who was a research associate of the Sm sonian institution, retired from this post in 1939 after 30 year service. He was renowned as a student of animal and plant and as an authority on Indian tribes of the western United Sta He died in Berkeley, Calif., March 19. (See *Encyclopædia Bri nica.*)

Metallurgy.

Pressure for top production continued to b abundant fruit in the line of new developme in metallurgical processes and practice, which were so numer and so varied that only a few typical illustrations can be m tioned in the brief space available.

Chromizing.—This method of forming a corrosion resist surface by heating steel for an extended time in contact w chromium powder was first suggested in 1936, but had b neglected. It came to the front as a means of conserving H chromium stainless steels where the application requires only surface to have the typical chromium resistance. The absorpt is less than ½ oz. Cr per sq.ft. of surface in a coating 0.00004 thick.

Dry Blast.—Need for improved efficiency in operation led a revival of interest in the application of dry blast in blast f naces, cupolas, open hearth furnaces and bessemer converters.

Flame Hardening.—There was a marked lightening of load in the regular heat treatment furnaces of plants using flame hardening method of treatment for localized hardening.

Metal Working.—Probably the greatest advances in the en field of metallurgy were to be found in metal working, where only the skilled efforts of engineers but also the native ingenu of the workers on the production line combined to produce alm unbelievable savings in working time in a wide variety of chanical operations.

Substitutes.—Scarcity of so many metals commonly availa in plentiful amounts led to an extended application of substitu to save materials short in supply. For example, the use of s in cartridge cases was expected to save close to 300,000 tons copper in 1943, and the use of steel in tanks to save one-th that much aluminum in parts formerly made of that metal.

Welding.—Methods were being developed, perfected and tended to new applications and metals. The construction o welded all-magnesium aeroplane was possible, using sheets, truded shapes and castings, and a modified arc welding proc similar to the atomic hydrogen process, but using helium inst of hydrogen.

Aluminum.—Demand for unusually large amounts of bau to supply the expanding requirements for aluminum caused seri consideration to be given to the development of processes for recovery of aluminum from low grade bauxites, high alum clays, alunite, and other minerals high in alumina content. Ind tions pointed to a considerable development and use of s processes in Europe, and pilot plant work was being done in United States.

Indium.—This metal, though still rather scarce and high price, was a centre of some interest as one of the few that was bject as yet to any limitations in use. The most important ap- cations developed were in brazing and soldering alloys which proved properties because of the greater fluidity and better hesion of the alloy in the joint.

Manganese.—Electrolytic manganese made in the pilot plant erated by the U.S. Bureau of Mines was being used in com- unding the alloy for the new five cent coins, in which silver and nganese replaced the nickel formerly used.

Silver.—Industrial uses of silver were expanding, especially brazing and soldering alloys, which were being used to the ex- it of several pounds total weight in the assembly of certain oes of artillery.

Sponge Iron.—In spite of arguments that its production and was not practical or economic, a test plant was being built the production of sponge iron from iron ore, the product to used as a substitute for scrap in the production of high grade oy steels.

Steel.—A "film" process for the production of steel from pig n was proposed which combined the oxidation procedures of h the bessemer converter and the open hearth furnace. The lten metal is flowed in a continuous film $\frac{3}{16}$ in. thick, in con- t on both sides with air or a previously prepared molten slag, a rate of 1 to 3 tons per minute.

Tin.—The electrodeposition of tin on long continuous strips sheet steel was replacing the standard dipping process of mak- tinplate, since a workable coating could be produced with one- rd the amount of tin.

Extensions in the facilities for detinning and recovery of tin m scrap and tin cans included the construction of a plant handle 60,000 tons a year, recovering 1,970 lb. of scrap steel l 23 lb. of tin per ton. Possible recoveries by detinning were uced to a fraction of their former level, since a large proportion the use of tin cans was already shifted to glass or other types container, and a large share of the tin containers that were still isidered essential were to be used in lend-lease shipments or t to the U.S. armies abroad, with no recovery possible except the small share left for use at home. (*See* also articles on indi- ual minerals.) (G. A. Ro.)

etal Prices and Production: *see* Mineral and Metal ices and Production.

eteorology. **The Weather of 1942.**—On the whole, the winter of 1941–42 in the U.S. was warmer n normal, although in much of the south, locally in the north- t, and in most Rocky Mountain and Great Basin sections the nperature averaged below normal. The outstanding feature of winter was a prolonged period of abnormal warmth, em- cing largely the last half of January and the first half of oruary, with severe wintry conditions immediately preceding l following. The lowest temperature reported in January was 48° in west Yellowstone park, Mont., and in February −52° Taylor Park, Colo. The lowest reported for Alaska was −58° Ft. Yukon.

Spring had mostly favourable weather for agriculture, except t drought conditions developed in the more eastern states, ich, however, were relieved by good rains the latter part of y; subsequent showers furnished sufficient moisture for crop ds. Most of the principal agricultural areas of the country l from near normal to above normal rainfall and temperatures re largely favourable. Consequently, crops entered the summer h good prospects, although in some northern states spring ntings, especially of corn, were delayed considerably by rains l wet fields.

The summer of 1942 was characterized by unusually favourable weather for the development of crops. This season was noteworthy for the persistence of near normal temperatures with practically all sections having seasonal means within 2° of normal. All states east of the Rocky mountains, except Nebraska, Minnesota and Florida had above normal rainfall, in marked contrast to the several dry years in the 1930 decade. With favourable temperature and moisture conditions crops made phenomenal development and at the end of the summer record yields were practically assured. The highest temperature for the summer was 126° at Cow Creek, Calif.

The fall months had too much rain in some interior, eastern and far western states, and unfavourable dryness in much of the south. The most adverse weather feature of the year was the early frosts and freezing weather in the interior and central northern states which resulted in more or less damage to late crops that had not matured; the bulk of corn had developed beyond the susceptible stage but a good many late fields were affected rather extensively, resulting in considerable soft corn. The most damage was sustained by late truck and garden crops, and more extensively to soybeans. Fortunately, following the freeze the weather was ideal for drying out crops that were frosted so that the final loss was reduced from that at first apparent. Otherwise, fall weather was generally favourable.

The temperature for the year as a whole averaged above normal in most sections of the U.S., in keeping with a good many years immediately preceding. Much of the south and a small northwestern area had annual means slightly below normal, but all other areas, except very locally, had above normal warmth though the anomalies were relatively small. The year was characterized by unusually abundant precipitation, with 9 of the 12 months, in general, having above normal, while every month from March to December, except July, had more than the normal amount. The annual average for the United States was 31.10 in., or 7% above normal; 5 of the years 1937–42 had more than

FEDERAL SNOW SURVEYOR in Oregon early in April 1942. By analyzing layers of snow in certain key spots throughout the western United States, engineers are able to forecast the amount of water that will be available for agriculture and hydro-electric plants

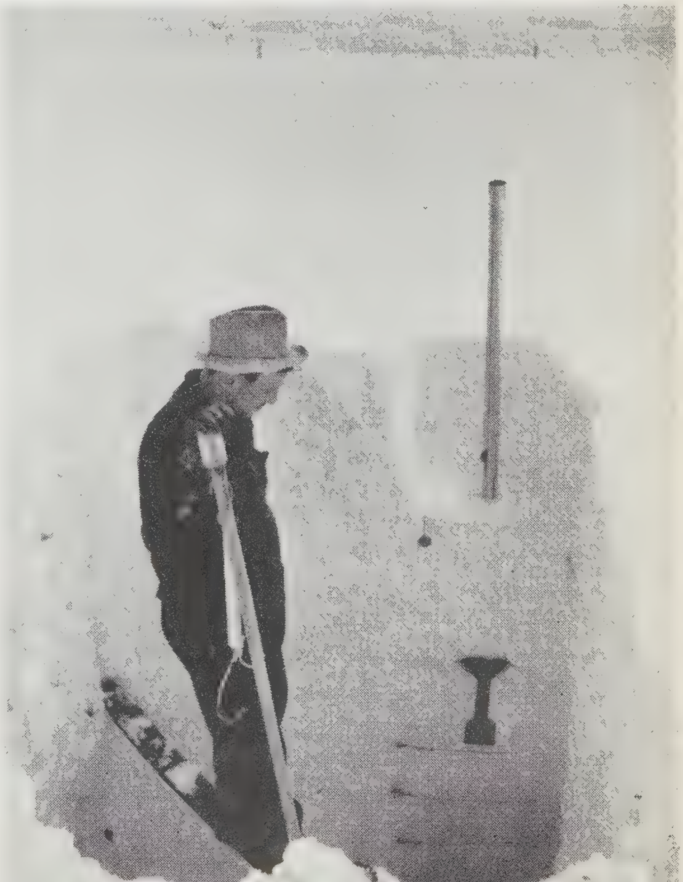

Table I.—*Monthly and Annual Mean Temperature and Extremes in ° F., 1942, in Cities of the United States*

Cities	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	An. Dept. *	Highest	Lowest
Albuquerque	37.0	36.2	43.3	54.8	64.4	74.8	78.8	75.8	68.6	57.8	48.1	40.8	56.7	+1.4	100	7
Bismarck	19.4	16.8	31.4	46.2	50.6	61.5	68.6	68.0	55.2	47.1	29.8	12.6	42.2	+3.1	99	−28
Buffalo	24.2	20.9	36.1	46.8	56.4	65.7	68.0	67.8	62.0	53.2	40.3	25.2	47.2	+0.2	88	− 7
Charleston	49.6	45.2	58.1	65.9	73.2	80.0	84.1	80.8	78.0	69.4	61.1	50.4	66.3	+0.3	101	22
Chicago	25.6	26.5	39.6	53.9	59.5	68.2	75.2	72.3	62.4	53.3	40.9	23.0	50.0	+1.4	100	−13
Del Rio	50.5	54.3	62.6	71.0	76.8	84.0	84.0	84.6	75.4	71.2	63.4	55.7	69.5	−0.1	108	25
Helena	9.8	15.5	32.6	45.6	48.6	55.9	68.4	65.8	56.0	46.7	30.8	27.7	42.0	−1.3	97	−37
Houston	51.4	53.4	60.6	68.3	75.4	81.5	81.8	82.8	77.2	72.3	64.8	57.0	68.9	−0.2	95	28
Knoxville	37.6	36.1	50.2	61.6	67.8	76.7	78.5	75.0	69.2	60.0	51.2	38.8	58.6	+1.2	97	4
Los Angeles	58.6	55.7	58.8	59.4	62.8	65.9	71.8	71.0	67.8	67.6	63.5	58.8	63.5	+1.1	99	35
Memphis	36.9	40.0	53.6	63.4	69.3	78.8	82.8	78.0	71.8	63.2	55.6	42.4	61.4	+0.8	101	1
Miami	66.5	63.2	70.4	72.8	78.3	81.2	84.5	83.3	82.4	78.0	73.7	71.0	75.4	+1.1	95	40
Mobile	48.4	49.6	57.5	66.2	73.4	81.0	82.4	81.8	76.0	70.1	60.8	53.7	66.7	−0.6	98	18
New York	30.9	29.6	42.9	53.3	64.1	69.8	74.9	72.8	67.5	58.8	46.6	31.6	53.6	+1.4	93	− 3
Norfolk	41.1	38.8	51.1	60.2	70.9	77.3	82.0	77.6	74.6	64.6	54.8	42.4	61.3	+1.8	104	11
North Platte	26.0	24.6	37.9	53.4	57.2	67.9	76.6	73.8	60.8	52.7	39.0	31.2	50.1	+1.8	101	−16
Oklahoma City	37.8	40.8	51.0	62.8	68.0	77.1	82.0	80.0	70.4	62.0	52.2	40.8	60.4	+1.0	100	2
Portland, Me.	20.8	22.1	36.0	44.6	54.8	62.4	66.8	66.3	58.9	49.2	36.2	23.0	45.1	−0.4	92	−16
Portland, Ore.	36.6	44.2	47.9	54.2	57.4	62.4	71.0	70.2	65.5	57.4	46.4	44.2	54.8	+1.7	107	21
San Francisco	51.2	53.4	55.2	55.6	56.8	58.6	59.7	58.5	60.2	60.9	56.0	52.1	56.5	+0.4	93	38
Sault Ste. Marie	14.5	14.8	28.2	43.8	49.1	59.5	62.7	63.0	54.3	46.0	31.6	16.2	40.3	+1.1	91	−23

*Annual departure.

Table II.—*Monthly and Annual Rainfall, in Inches, 1942, in Cities of the United States*

Cities	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	Annual Dept.
Albuquerque	0.13	0.54	0.39	1.97	T	0.22	0.20	1.42	1.55	0.73	T	1.10	8.25	+ 0.19
Bismarck	0.04	0.30	1.18	2.58	3.04	2.21	4.17	1.17	2.08	0.71	0.08	0.48	18.04	+ 1.70
Buffalo	3.25	4.26	3.79	2.16	3.75	0.76	2.42	2.45	3.40	3.12	4.26	5.01	38.63	+ 2.63
Charleston	2.88	2.94	4.92	0.85	2.70	5.30	7.37	4.65	5.23	0.01	1.56	2.96	41.37	− 3.85
Chicago	1.39	3.03	2.68	1.59	4.50	1.87	4.01	3.61	5.12	1.44	3.71	2.71	35.66	+ 2.63
Del Rio	0.30	0.75	0.01	0.99	4.33	0.70	0.13	2.92	3.96	1.58	0.83	0.39	16.89	− 3.01
Helena	0.60	0.49	0.51	0.55	2.35	1.96	0.48	0.60	0.66	0.58	0.87	0.29	9.94	− 3.69
Houston	0.98	2.25	1.91	5.21	1.09	4.89	14.10	4.08	3.28	1.50	2.55	3.43	45.27	− 1.78
Knoxville	3.63	3.72	5.02	0.84	5.20	2.04	9.19	8.88	2.82	3.12	0.97	8.30	53.73	+ 6.35
Los Angeles	0.59	1.05	1.26	2.44	T	T	0.00	0.23	T	0.58	0.24	1.01	7.40	− 7.83
Memphis	4.35	4.22	5.56	5.14	2.33	2.39	1.78	4.90	0.67	3.54	3.16	5.04	43.08	− 4.64
Miami	2.02	2.77	2.51	13.62	1.74	13.90	1.24	3.36	6.25	5.27	1.75	2.37	56.80	+ 1.14
Mobile	4.10	7.32	7.43	2.20	6.36	13.07	6.73	6.54	4.98	3.18	1.58	7.80	71.29	+ 9.68
New York	3.17	2.94	6.76	1.40	1.84	5.69	6.24	7.01	3.82	1.91	4.47	4.31	49.56	+ 6.57
Norfolk	2.76	2.63	5.52	0.73	2.70	1.23	1.61	15.61	2.83	5.87	0.96	5.15	47.60	+ 3.51
North Platte	0.25	1.32	1.41	6.83	3.70	5.06	1.82	1.40	7.54	0.01	0.25	0.15	29.74	+11.35
Oklahoma City	0.37	1.40	0.53	8.58	0.43	6.97	0.60	4.87	6.73	2.50	0.73	2.07	35.78	+ 4.63
Portland, Me.	3.20	3.92	7.55	2.17	1.77	5.94	5.01	1.03	1.28	2.55	4.71	4.99	44.12	+ 2.18
Portland, Ore.	4.18	4.19	1.81	1.98	2.59	2.04	0.96	0.48	0.09	3.75	14.39	11.09	47.55	+ 5.93
San Francisco	4.76	4.27	2.62	3.65	1.11	T	0.01	T	0.18	0.95	4.45	2.87	24.87	+ 2.85
Sault Ste. Marie	1.42	0.82	2.90	0.90	2.46	2.69	1.47	2.53	5.62	2.68	3.61	3.11	30.30	+ 0.36

T=Trace: less than 1/100 of an inch.

Table III.—*Duration of Sunshine, in Hours, 1942, in the United States*

Cities	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	Annual Dept.
Albuquerque, N.M.	228	217	277	251	385	380	351	305	306	227	266	261	3454	+ 48
Bismarck, N.D.	184	115	169	242	214	284	308	298	217	185	149	87	2452	−212
Buffalo, N.Y.	83	89	112	256	208	278	318	268	214	159	122	55	2162	−182
Charleston, S.C.	198	157	242	337	356	341	367	349	297	293	270	172	3379	+448
Chicago, Ill.	150	96	153	305	243	220	311	261	214	210	133	103	2399	−254
Del Rio, Tex.	202	120	243	200	214	292	311	291	227	215	201	216	2732	+ 26
Helena, Mont.	154	129	224	227	221	275	372	351	264	204	126	113	2660	− 16
Houston, Tex.	174	79	183	164	232	240	249	231	183	193	172	205	2305	−493
Knoxville, Tenn.	162	119	201	295	262	303	280	177	225	187	165	107	2483	−133
Los Angeles, Calif.	208	231	318	214	353	274	374	335	286	251	255	233	3330	+129
Memphis, Tenn.	196	133	243	248	302	309	377	264	271	252	160	111	2866	+ 88
Miami, Fla.	155	215	226	253	273	190	280	248	210	203	218	185	2656	−295
Mobile, Ala.	203	144	187	263	297	235	190	202	238	237	225	128	2549	−199
New York, N.Y.	186	178	177	267	257	226	284	236	229	213	169	135	2555	−140
Norfolk, Va.	161	176	219	323	321	290	346	271	247	181	209	119	2863	+142
North Platte, Neb.	198	154	240	212	318	300	374	290	205	202	183	134	2810	−265
Oklahoma City, Okla.	267	198	300	212	321	263	371	308	266	177	185	152	3020	+ 16
Portland, Me.	153	179	193	247	173	237	303	303	188	243	145	138	2502	− 69
Portland, Ore.	110	87	193	204	198	224	290	257	238	160	68	19	2050	−101
San Francisco, Calif.	129	202	306	223	341	381	312	239	252	265	194	181	3025	+ 96
Sault Ste. Marie, Mich.	101	148	165	286	209	262	270	227	130	173	79	37	2087	− 38

Table IV.—*Monthly Rainfall in Inches Outside the United States, Oct. 1941—Sept. 1942*

Cities	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.
London	0.8	2.5	1.6	2.2	0.9	1.7	0.8	3.0	1.4	1.7	2.2	1.0
Edinburgh	3.2	1.9	0.9	3.9	1.0	1.0	1.6	1.5	1.0	3.2	2.2	2.6
Stockholm												
Lisbon	0.4	5.7	0.8	3.7	1.7	8.2	4.2	1.1	0.6	0.0		
Calcutta	10.6	0.1	0.0	0.0	0.0	0.0						
Bombay	1.6	0.0	0.0	0.0	0.0	0.0						
Baghdad												
Singapore	3.0											
Cape Town	2.1	0.6	1.2	0.7	0.2	0.5	1.9	6.0	7.8	2.6	3.7	2.1
Johannesburg												
Salisbury (Rhodesia)	0.5	5.0	7.1	7.6	3.6	1.1	0.8	0.0	0.7	0.01	0.0	
Quebec	6.9	4.7	3.4	4.4	3.0	4.9	2.0	2.7	8.4	4.0	1.8	
Toronto	3.7	2.2	1.5	2.1	1.9	3.9	1.7	6.8	1.3	5.7	1.2	3.7
Winnipeg	1.9	0.6	0.7	0.6	0.6	1.9	2.5	1.5	2.0	6.5	3.0	1.1
Victoria, B.C.	2.3	3.4	4.4	1.2	1.7	0.9	1.0	0.8	1.6	0.7	0.1	0.1
Sydney	2.0	1.1	1.3	0.5	1.4		0.5	1.5	5.3	1.9	1.1	
Melbourne	1.7	1.7	3.7	1.4	3.1							
Perth	2.5	0.8	0.1	0.1	0.02	1.8						
Wellington, N.Z.	10.2	3.1	3.5	2.1	2.6	6.3	2.7	11.9	0.5	10.1	2.3	3.4

normal moisture.

The heaviest local mont rainfall reported was 34.99 at Valsety, Ore., in Novem On an annual basis, the wett state was Louisiana with 56 in., and the driest Nevada, 7 in. By state averages, more th 50 in. of rain occurred in A bama, Florida, Georgia, Lou ana, New Jersey, North Ca lina and Tennessee.

March 1942 brought very usual conditions to the H waiian Islands. While the mo was the second wettest of r ord for the group as a wh the outstanding feature was very uneven distribution rainfall. For example, one s tion on the island of Ma which is less than half the s of Delaware, reported a total 111.75 in., while some other calities on the island had rain at any time during month. Alaska, also, had so heavy autumn rains, the ma mum reported being 40.16 for October at Baranof in southeastern group of islands

Miscellaneous.—Fewer th the normal number of tornad were reported for the year. P haps the most destructive sto of this character occurred Pryor, Okla., and vicinity April 27, when wind, with t rential rains, caused the de of 50 persons and an estima property loss of more than 000,000. Also, a series of hea thunderstorms on Sept. 11 Minnesota resulted in about same amount of loss. In M tana a series of hailstorms July 30 resulted in dam amounting to approximat $1,500,000.

There were several outsta ing floods during the year. February a major flood curred in the Sacramento ba of California, causing an e mated damage of nearly 000,000. Again, beginning April and continuing thro May and into June extens floods occurred in the midw from South Dakota and Min sota southward, being especi severe in the Trinity river Texas where damage estima at about $10,000,000 occur The total losses in this serie

Table V.—*Monthly Mean Temperatures in °F. Outside the United States, Oct. 1941—Sept. 1942*

Cities	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.
London	51.5	44.7	42.1	33.9	33.0	42.0	49.9	53.9	60.8	61.9	63.4	58.7
Edinburgh	40.1	42.8	42.3	35.1	33.5	39.1	45.7	49.3	55.3	58.0	58.5	53.9
Stockholm												
Lisbon	67.8	55.9	49.1	51.4	50.2	57.0	58.3	63.1	68.9	73.2		
Calcutta	81.7	74.5	70.9	67.6	73.0	84.0						
Bombay	84.9	84.1	78.7	75.3	78.1	80.3						
Baghdad												
Singapore	83.0											
Cape Town	62.2	64.4	68.0	70.6	71.7	69.3	67.1	60.1	55.9	55.7	54.8	57.8
Johannesburg												
Salisbury (Rhodesia)	71.9	71.4	69.3	70.3	70.7	69.7	66.2	61.5	59.9	56.7	61.7	
Quebec	44.0	32.0	21.0	11.0	16.0	30.0	41.0	52.0	64.0	67.0	65.0	
Toronto	52.0	42.2	32.2	24.8	24.3	36.2	49.8	56.4	66.0	70.3	69.3	61.5
Winnipeg	41.9	23.6	13.3	11.5	5.4	27.5	41.0	49.0	61.3	64.9	64.4	52.5
Victoria, B.C.	52.1	47.1	42.1	41.1	42.0	45.0	50.6	54.7	58.0	63.1	63.3	58.7
Sydney	62.5	68.3	69.2	73.1	71.1		65.1	62.3	56.5	53.7	57.7	
Melbourne	55.6	62.1	65.5	67.9	67.7							
Perth	61.5	65.3	72.7	73.5	73.5	69.7						
Wellington, N.Z.	51.4	55.9	58.7	59.1	59.8	58.7	56.8	51.9	48.7	47.5	48.8	51.4

ods reached the impressive al of about $25,000,000. Sev- al bad flash floods occurred ring the year, especially in stern Pennsylvania and adja- nt portions of New York, ich caused crop and property mage of some $13,000,000 d a loss of more than 30 lives, ile nearly as much loss was stained in northern Pennsyl- nia and southern New York. te in December widespread ods covered most of the east- half of the United States and western Oregon. Property loss s considerable and the high water resulted in widespread dis- ption of vital industries. (*See* also DISASTERS: *Natural;* OODS AND FLOOD CONTROL.)

Crop Weather Summary for 1942.—Summarizing the above, weather in the United States during the year was unusually ourable for crops, on the whole, although there were a few verse conditions, such as too much rain in northern states ring part of the season, deficient moisture with an early summer ought in the east and south central states, and untimely early l frost in several sections. The active growing season, May August, had a country-wide average of 12.12 in. of rainfall, king it one of the wettest seasons of record. This was approxi- tely 4 in. in excess of that in the 1934 and 1936 drought years, ich means, on the average for these 4 months, a difference of ne 450 tons of water for every acre of land in the United ates. Rainfall was unusually well distributed geographically l temperatures were largely favourable.

The importance of good weather to the United States, and espe- lly the farmer, was emphasized by comparing the agricultural tput in 1942 with that for two previous dry years, 1934 and 36. The unprecedentedly high yields of 1942, compared with the mediately preceding favourable years, were accounted for in ne measure by wartime efforts for greater production, in some es to improved seed, such as hybrid corn, etc., but the enomenal increase over the drought years was due primarily the difference in the weather. For example, the department agriculture summary of 1942 production showed that the nbined output of four important small-grain crops (wheat, s, rye and barley) was nearly 1,500,000,000 bu. in excess of average for 1934 and 1936; this represented an increase of re than 100%. Production of corn was more than 1,500,- ,000 bu. up, while hay showed an increase of more than 000,000 tons.

Research.—Investigations in the long-range prediction prob- n, conducted by collaborating meteorological offices of the ny, navy and weather bureau, confirmed the general opinion practising meteorologists that the most dependable indexes veloped for the longer time-range were to be found in statistical erpretation of known details of climate.

The "spot-weather" forecasting technique promised a limited t definitely worth-while usefulness to armed units operating yond the reach of more generalized forecasting service—in h areas, for example, as the south Pacific islands. The method, rther developed by intensive experiment and study in 1942, s to apply refined methods of interpretation to surface and per-air observations made at a single ground station. Repre- nting a continuous measure of humidity, temperature, pressure, nd direction and wind velocity through the atmosphere directly ove the point of observation, these observations provided the erpreter a reasonably dependable index to short-term meteorological changes for the surrounding area within a radius of a few hundred miles. The local-area studies, designed to answer meteorological questions bearing upon military field operations, proved the immense practical usefulness of meteorological information as a contributory factor in aerial and expeditionary tactics.

Operations.—With the wartime cessation of weather reporting from ships at sea and from Europe and Asia—reports heretofore considered indispensable to forecasting for periods greater than 48 hours in length—the dependability of forecasts for periods of 5 or 6 days seemed seriously threatened. The deficiency was mitigated as much as possible by adjustments in interpretative methods, by expansion of the observing field and by special observing and reporting procedures for receiving weather information from aircraft in transoceanic flight.

Demands for accurate meteorological advice to meet specific wartime needs necessitated specialized forecasting in several instances—*e.g.,* for safeguarding manufacture, for convoying operations, for transcontinental ferrying of aircraft and for large-scale transoceanic flights to Europe and elsewhere. The procedures varied from the assignment of a specialist to a middle west forecasting centre to predict thunderstorms for munitions plants, to the staffing of large coastal stations with experts in the forecasting of weather conditions for transoceanic flights.

The objective of the national censorship was to withhold significant weather information from the enemy without failing the essential requirements of civilian commerce and agriculture. To accomplish this, all regular announcements by radio were stopped early in 1942, except for the issue of warnings of storms or other conditions sufficiently severe to threaten life or property; issues of significant detail were withheld from press or other publication for one week; tables of current temperature, pressure, precipitation and wind data previously published in newspapers were reduced in quantity and detail; and the Office of Censorship, collaborating with the weather bureau, censored all weather-news reporting in story or report form by the press and radio. The system was generally effective and successful, though in several instances, particularly of outlying public utilities which had previously depended upon the radio for weather information to guide their activities, the establishment of special services for providing information on temperatures, winds and glaze storms was necessary.

In addition to structural improvements in the radiosonde and the production of a potential gradient recorder to indicate the approach and intensity of electrical storms, an outstanding instrumental advance of 1942 was the development of a ceiling light projector for determining by actual measurement the elevation of cloud ceilings during daylight as well as darkness. The electrical-storm detector, developed at the University of New Mexico, should prove particularly useful as a safeguard to personnel and stores at munitions manufacturing plants between the Allegheny and the Rocky mountains. The ceiling light projector represented a fundamental contribution to safety in aircraft operations. The instrument consists of two parts: a projection unit which emits a pulsating vertical light-beam, and a photronic receiver with tuned amplifier and meter. In operation, the telescope of the receiver, trained upon the beam from a known horizontal distance, is rotated upward along the beam until the "light spot" on the base of the cloud layer (coinciding with the point of maximum output of the amplifier) is reached. From the angular elevation of the telescope the ceiling height can then be readily computed. Since the receiver's meter responds only to the pulsating beam, regardless of the intensity of the prevailing natural light, the instrument operates as well by day as by night.

Under plans formulated in 1940, close and informed collaboration continued between military services and the weather bureau to provide the fullest possible benefit of meteorological services to military operations with the least loss to civilian interests. Significant points in the organization of 1942 were:

(1) The weather bureau maintained the basic network of some 500 synoptic observing stations within the continental United States, Alaska, the Hawaiian Islands and the Caribbean. These reports were distributed via 56,000 mi. of teletype lines to the offices of the weather bureau, army airfields and military meteorological training fields; and all weather forecasting, military or civilian, was based upon them.

(2) The weather bureau and the military services collaborated with five American universities in the training of young men and women in professional meteorology. Qualified graduates (already numbering several hundred) were eligible for commissioned status in the weather bureau or the armed services.

(3) The weather bureau maintained the basic forecasting service for civilian, commercial and military needs; but at military flying fields army forecasting units served the specialized and individual military aviation training and operations.

(4) All major meteorological problems involving the military services were decided by a consultative body consisting of representatives of the weather bureau, the U.S. army air forces and the bureau of aeronautics of the navy. For consideration of meteorological questions of international scope, these consultations included accredited meteorological representatives of the foreign nations concerned. (F. W. Rr.)

Other Countries.—The values for monthly rainfall and monthly mean temperatures given in the tables on pages 438 and 439 referring to countries outside the United States are provisional and may in some cases require a small correction. On account of war conditions it has not been possible to give complete data for some of the stations. Gaps in the tables indicate that the data could not be obtained. (D. Bru.)

Methodist Church.

Prior to the Japanese attack on Pearl Harbor, Dec. 1941, the Methodist Church was a centre of active pacifist propaganda in general conference press and pulpit. Vestiges of this still remained, especially in student groups, though in May 1942, the council of bishops adopted a resolution expressing "high appreciation of the nobility of the sacrifice which the youth of our Methodist homes and churches are making in military service at the call of our nation." Voluntary enlistments of Methodist ministers as chaplains in the armed forces were less than 60% of the quotas. The number of Methodist boys in the Civilian Service camps exceeded that of any other denomination of its rank. Not only did offerings for overseas relief continue on a high level, more than $1,250,000 having been given since March 1941, but all collections reflected the improvement of general financial conditions because of increased employment and higher wages. Receipts of the Commission on World Service and Finance for the fisc year ending May 31, 1942 were $4,324,150, a gain of $137,88 The Episcopal fund (salaries and pensions of bishops) reach the unprecedented total of $638,963, and the general administr tive collection rose to $140,175. A financial survey of the tot Methodist church giving in the second year of the unification Methodism 1940–41, showed total giving of $88,908,330, which $34,789,412 was for ministerial support; $20,131,317 f other local church current expenses; and $21,046,329 for buil ings and indebtedness. For benevolent causes the total w $12,764,965, about one-seventh of the whole. The publishi house declared a dividend of $200,000, which is double that 1941.

Although the war in eastern Asia and the Indies seriously e barrassed mission work and necessitated the recall of worke from Japanese controlled areas, activities were not at a stan still. Of the China force, about 180 in normal times, 21 remaine at their posts in occupied China, while 46 were in Free (Wes China. Of the rest 37 were "on emergency furlough due to wa Of the 167 workers of the woman's division 56 served in Free a 32 in occupied China; 40 were on furlough and 29 were engag in Christian work in other fields or in the United States. Mo of the higher institutions of learning which were maintaine wholly or in part by American Methodists migrated to We China "for the duration."

In Japan itself one male missionary and four women remaine at their posts, disregarding the timely recall which the Ne York office issued before Pearl Harbor. All came away fro Korea, though a number of these found work in other field When Malaya was overrun by the Japanese, Bishop Lee of Sing pore brought most of the missionaries home by way of Australi In most instances, native pastors and teachers were left to car on the churches and schools. The "sealing" of the Philippin cut off all the missionaries in the islands from escape. They we still in and around Manila, and were carrying on the work best they could under the circumstances. Burma was evacuate Elsewhere in India, Africa and South America activities pr ceeded as usual. At least three American workers were strande in nazi Europe. The Methodist census for 1942 in the Unite States was incomplete at the close of the year. However t official figures of membership on June 1, 1942, showed a total 6,539,595, which is a net gain of 43,650, with less than one-ha of the annual conferences reporting.

Great Britain.—On July 13, 1942, the Methodist conferen met in a four-day session in Manchester, in reduced number Membership showed a decline of 12,000, bringing the total 759,869, a loss of about 100,000 since the union in 1933. T Rev. W. J. Noble was elected president for the year; Herbe Ibberson, a Yorkshire layman, vice-president, and the Rev. Edw Finch, secretary. Officers designated for 1943 were the Re Leslie F. Church, president and Charles T. Nightingale, vic president. The Fernley-Hartley lecturer for 1943 was to be t Rev. F. B. Clogg. Financial reports were somewhat encouragin Home missions receipts advanced and the debt was reduced £15,320. Total receipts of the War Emergency fund reache £157,841, of which £50,000 came from the Methodist Church the United States, £10,000 from South Africa, £14,500 fro Australia and £4,500 from Canada. The trustees of the confe ence reported the largest receipts in the history of the fun £41,366. The principal in 1942 was £526,435. A resolution sympathy for the people of France was adopted and ordered se to General De Gaulle, leader of "Fighting France," not to Marsh Pétain. Actions of importance were taken with regard to de conesses and youth. The status of the deaconess group was i proved, and a comprehensive plan for a youth department, co sing Sunday school and Methodist guild and the newer groups young people, was approved. Rev. A. William Hopkins, R.A.F., s designated secretary of this organization.

It was reported that 1,227 chapels and 242 manses had suf- ed damage in air raids, half of them destroyed. First aid to amount of £27,000 had been loaned from emergency funds. entually the government would make good the war loss. The olution of support for Premier Churchill was unanimously opted. The 1943 conference was to meet in Birmingham.

(J. R. J.)

exico. A federal republic of North America lying between the United States and Central America. Area, ,168 sq.mi.; pop. (1940) 19,473,741. Approximately 55% the population was mestizo, 29% Indian, 15% white, with eigners and others making up less than 1%. The language is nish, but an estimated 14% speak only Indian tongues. There no official state religion, but the people are overwhelmingly man Catholic. The capital is Mexico City (pop. 1,464,556). ier principal cities are: Guadalajara, 228,049; Monterrey, ,942; Puebla, 137,324; Mérida, 98,334; León, 86,089; npico, 81,334; Aguascalientes, 81,124; San Luis Potosí, 042; Torreón, 76,613; Veracruz, 70,958; Chihuahua, 57,456; chuca, 52,387. The president in 1942 was Gen. Manuel Avila nacho (took office Dec. 1940).

History.—The most outstanding event of 1942 in Mexico was declaration of war against Germany, Italy and Japan. This laration, unanimously approved by both houses of congress May 29 and 30, went formally into effect on June 1. It came the culmination of a series of events which thoroughly aroused country against the axis. At the Rio de Janeiro conference foreign ministers of the American republics, Jan. 15–28 (*See* SPANIC AMERICA AND WORLD WAR II), Mexico's foreign min- r, Ezequiel Padilla, was an outstanding leader in the move to sent a united American front by a general severance of lomatic relations with the axis powers.

The earlier months of the year saw Mexico strengthening her ustries, improving her defenses, and generally striving for ernal unity. Until May the break with the axis was diplomatic y. On May 13, however, a Mexican tanker, the 4,000-ton otrero de Llano" was torpedoed off the Florida coast. Mexico thwith gave Germany, Italy and Japan what was in effect an ultimatum demanding complete satisfaction and a guarantee of reparations by May 22. Meanwhile, popular demonstrations against the axis took place throughout Mexico. A second Mexican tanker was sunk on May 20, and as the ultimatum deadline approached, the government took steps to freeze axis assets in Mexico and to put the armed forces on the *qui vive.* Pres. Avila Camacho and his cabinet met to make the war decision while throngs demonstrated in the streets of the capital. The declaration itself was followed quickly, on June 5, by formal adherence to the United Nations declaration and the Atlantic Charter and, on June 15, to the covenant originally signed by Great Britain and the U.S.S.R., under which all signers pledged to make no separate peace with the axis.

Internally, one of the government's earliest war moves, following suspension of certain constitutional guarantees, was to seize axis-owned properties. These holdings, estimated at between 200,000,000 and 250,000,000 pesos in value, consisting largely of real estate, mines, securities and some 25,000,000 pesos of commercial enterprises, were placed under control of a government board of administration.

Broadly, public opinion rallied behind two of the most outstanding figures of the country—Gen. Lázaro Cárdenas, predecessor of Pres. Avila Camacho, and Vicente Lombardo Toledana, long Mexico's most powerful labour leader. Gen. Cárdenas, who had been placed in command of the Pacific defense area in Dec. 1941, became minister of national defense in Sept. 1942, assuming the task of bringing about a large-scale expansion of the army. Lombardo Toledana, head of the Confederation of Latin American Workers, visited the United States in April to confer with labour leaders and government officials on efforts for the full co-operation of Latin-American workers in the United Nations war effort. To this end, in September, he undertook a trip around Latin America. Another ex-president, Gen. Abelardo L. Rodríguez, an able soldier as well as one of the country's most capable businessmen, took command of the Gulf of Mexico military area, a district of major importance in view of the extensive axis submarine activity in the gulf, and subsequently became national co-ordinator of industry.

On Mexico's Independence day (Sept. 16), as a symbol of national unity, all of the country's six living ex-presidents, between some of whom great bitterness and personal animosities had previously existed, assembled with Pres. Avila Camacho to join in the official celebrations in the national capital.

Despite these and other manifestations of national unity,

ETING OF THE MEXICAN WAR COUNCIL in the national palace at Mexico
, Sept. 24, 1942. At this meeting President Avila Camacho, at right, ex-
ned Mexico's war plans

several elements in Mexico, notably the powerful Sinarquistas, caused some concern. Early in 1942 this fiercely nationalistic and anticommunist organization, whose membership was drawn largely from the rural farming population in the more conservative and strongly clerical states, showed some fascistic and pro-axis leanings. Following Mexico's entry into the war, however, the official head of the Sinarquistas, Manuel Torres Bueno, endorsed national unity and, pledging full support of the war effort, exhorted the Sinarquista farmers to increase agricultural production as their contribution to the national cause. Torres Bueno's stand allayed the fears of many that Sinarquism would be a tool of axis agents, but distrust of the movement continued to be felt by many, both in Mexico and elsewhere.

A focal point of attention in the matter of food production was the Second Inter-American Agricultural conference, which met in Mexico City July 6 to 16 with delegates from all 21 of the American republics present. The conference's keynote was a plea for maximum production of food and strategic war materials so as to insure victory over the axis and then to provide a higher standard of living for the peoples of America and the world.

During this conference efforts were made to arrange for the emigration of Mexican labour to the United States to prevent the threatened loss of fruit and vegetable crops due to the manpower shortage in that country. The possibility of the use of Mexican labour in the United States in both agriculture and mining was explored by officials of both countries. Its success was limited during 1942, however, owing to the late start and to Mexico's desire for adequate guarantees of wages and working conditions, immunity from military service, and return to Mexico on the expiration of their contracts.

The agricultural conference likewise gave serious consideration to commercial production of rubber and its substitutes. A project for the intensive cultivation of fast-growing rubber-producing plants was pushed, with special emphasis on the guayule of the semideserts of northern Mexico. Some hope was offered that the production of guayule in 1942 might equal Mexico's all-time record of 10,687 tons set in 1910. Concurrently with the conference, Mexico and the United States signed an agreement whose objective was the stimulation of natural rubber production in Mexico through United States financial aid and technical assistance. The first step was the establishment of five 750-ac. demonstration plantations in southern Mexico. Nearly 1,000,000 test seeds, 25,000 grafted plants and 250,000 rubber-producing shrubs of different varieties were made available for planting.

During 1942 the national land program regained some of the momentum it had lost in the previous year. Under an extensive program outlined by the government in March, more attention was given to precise surveys and to perfection of land titles. At the same time it was noteworthy that large landholders had become more nearly reconciled to land partition. In addition, emphasis was made by the Avila Camacho administration on increasing productivity.

Another trend of great importance in Mexico was the evident desire on the part of the Avila Camacho administration to end the conflict with the church. A tacit understanding had been reached in Pres. Cárdenas' administration (1934–40) by which the church was allowed to operate without much governmental opposition. However, the Avila Camacho government went much further. First, it nullified the ban against religious teaching in schools by ruling that such teaching would not be interfered with in private schools; then, under a decision of Mexico's supreme court early in August, confiscation of church property, except in the case of actual church buildings, was held to be
unconstitutional. This decision paved the way for the reope
of the schools of the church orders, and possibly the restora
of much of the confiscated property.

Closely allied to world events was the question of Spa
born residents of Mexico, estimated to number more than 35
Efforts to settle the more recently arrived, practically al
whom were refugees, in agricultural colonies, were made diff
through the influence of the Spaniards of long residence in
country, many of whom were known to be pronounced sy
thizers of the Franco dictatorship in Spain.

On April 18, 1942, an agreement was reached with the U
States for settlement of the long-standing controversy over
oil properties expropriated by the government of Mexic
March 18, 1938. A valuation of 119,979,955 pesos ($23,995,
was reached by the United States and Mexican experts, a
considerable reduction from the company claims of bet
$150,000,000 and $200,000,000. This was in addition to ea
separate settlements made with Sinclair Oil company ($8,500,
and with Cities Service ($1,100,000). At the same time
companies were released from all claims against them ex
for unpaid taxes and duties, or such payments as had been
on their behalf by the Mexican government. The amounts
each company were to be paid in five annual instalments be
ning July 1, 1943. Claims of British and Netherlands compa
whose oil properties had been expropriated remained still
settled, however. The United States companies affected
pressed themselves as thoroughly dissatisfied with the settle
asserting that the liability for taxes and duties left them p
tially with almost no net settlement at all.

On its part the Mexican oil industry regarded the agreeme
opening the way for a considerable improvement in Mexica
export through a 400% increase in the export quota to
United States. The actual effect was even greater, for by
close of 1942 the quota restriction was entirely lifted.

Just prior to the oil settlement, Foreign Minister Padilla,
the United States undersecretary of state, Sumner Welles, is
a joint statement on arrangements for increasing Mexico's
time production. The plan included the establishment in Me
of "basic" industries of steel and tin plate, and a surve
Mexican railroads and shipbuilding possibilities. Funds
the United States Export-Import bank were to be used to o
the necessary equipment, materials and machine tools.

General claims of citizens of the United States against Me
were the subject of a settlement, the machinery for which
arranged in Dec. 1942. This was the so-called "global" settle
by which a stabilization loan of $40,000,000 was made to Me
by the United States treasury for the payment of claim
American nationals. The claims dated back as far as 1869,
did not include those relating to petroleum.

Rehabilitation of Mexico's railroads was begun shortly
the Padilla-Welles arrangements. An army survey was instit
and in the meantime, the United States government was qu
casting around for the necessary capital. There was a dire
of rolling stock, locomotives and other equipment. Rails
roadbeds were insufficient, and the railways were in nee
refinancing. Purchases in the United States were made of
and used freight cars, including 4,000 built for another L
American country, but to which delivery was impossible bec
of the shipping shortage. In October a special Mexican mis
visited 30 United States railroads in order to buy rolling s
It was hoped thus to obtain 30 locomotives and 300 tank ca

Business in general during 1942 was characterized by se
factors, many of them due to war conditions. One of the
noticeable changes was the sudden shift to a favourable bal
of trade and the decrease in tourist business. An intere

siness activity in Mexico was the continued boom in construc- n in Mexico City. Permits were granted ranging from 7,000,000 10,000,000 pesos monthly, with rents and prices still holding n. Much of the real estate activity was ascribed to a general gration to the capital of persons from the rural districts, and ir desire to find relatively safe investments.

Not the least of the commercial activities was the fast-growing xican motion picture industry, which threatened to supplant gentine and Hollywood films in Latin America.

ducation.—Education is free, compulsory, and divorced m religion. Private schools, however, may teach religion. In 1 Mexico had 23,181 primary schools, with 2,037,870 enrol- nt (about half the children of school age). Secondary schools 1942 had about 80,000 enrolment and the country's ten versities around 30,000. There were more than 100 technical ools, including 30 vocational agricultural schools for Indians l 91 for adult education.

ince 1930 illiteracy had been reduced from 50% to 45% less, largely through rural education among the Indian popula- n. Rural education is supported by the federal government, an by the states and municipalities.

efense.—At the outbreak of war Mexico's army comprised ne 70,000 men, with about 400,000 partially trained reserves; navy consisted of three 2,000-ton gunboats, 11 armoured stal patrol vessels and one heavy transport. A conscription gram was begun for all men between the ages of 18 and 46. er the outbreak of war, large quantities of land, air and naval ns and war materials, including patrol boats, were furnished xico under lend-lease agreements with the United States.

inance.—The monetary unit is the peso (value in 1942, ap- ximately 20.65 cents U.S.).

During 1942 bank circulation increased approximately 15%. ween June 14, 1941 and July 10, 1942, bank loans rose from ,199,000 to 316,889,000 pesos.

rade and Communication.—While imports exceeded exports ing 1941, the process was reversed in 1942, and the total vol- e greatly increased.

xports in 1941 totalled 728,800,000 pesos as against 960,000,- pesos in 1940. However, an increase in foreign trade was dent by the fact that exports equalled 521,100,000 pesos for first six months of 1942, a heavy increase over 1940, one of peak years of Mexican foreign trade. The lifting of the ited States quota system on oil was expected to bring an even ater upswing in exports. Gold, silver, copper, lead, zinc and comprised the bulk of Mexico's export goods. Beef, henequen, natoes and *huarachos* (sandals) also stood high on the export . Chicle, coffee, chick peas, cotton, vanilla, guayule, vegetable and fodder were also exported in appreciable quantities.

mports in 1941 were 914,500,000 pesos as compared with 668,- ,000 pesos in 1940. During the first six months of 1942, im- ts aggregated 409,100,000 pesos. This was above normal even ugh somewhat under the 1941 rate. Manufactured articles, luding machinery, composed the largest single category of im- ts. Wheat was also imported in substantial quantities during 2. The above figures do not include munitions of war.

xternal communication is by sea, especially through Veracruz; three main railways to the United States and one to Guate- la; by air to all parts of the hemisphere; and by highway, ably through Nuevo Laredo to the north. In 1942 railway nmunication to Guatemala was notably bettered through the ning of a bridge permitting direct traffic without transship- nt.

he national railway system (14,500 mi. in 1942) links the re important population and industrial centres. There were re than 36,000 mi. of improved roads in 1942, of which 4,500 mi. were paved. The Inter-American highway, already complete from the United States to south of Mexico City, was being rapidly carried to the Guatemala border in 1942. In 1940, 23 domestic air routes carried 86,599 passengers, 3,460 tons of freight, and 272 tons of mail.

Agriculture.—Mexico has an estimated 15,000,000 hectares of tillable land (1 hect. = 2.46 ac.), of which 5,429,375 hect. were under cultivation in 1940 and an estimated 7,000,000 hect. (or 3.5% of the total area of the country) in 1942. Forest land comprised 10,483,398 hect. and grazing land 28,224,176 hect. In 1940 there were 26 irrigation districts comprising 2,742,910 hect., of which 832,840 hect. were irrigable, with 445,833 hect. actually under irrigation and an additional 212,141 hect. in dry farming.

The outstanding agricultural products (with 1941 tonnage) are: maize 124,085 tons (1942 est.: 2,000,000 tons); wheat 316,000 tons (1942: 430,000 tons); rice 113,310 tons (1942: 130,000 tons); beans 139,000 tons (1942: 180,000 tons); green peppers 30,945 tons; tomatoes 126,376 tons; vanilla 216 tons (in 1940); sugar cane 5,677,398 tons; flax 7,950 tons; tobacco 19,633 tons; cacao 2,655 tons; limes 53,366 tons; bananas 370,643 tons (in 1940); henequen 94,721 tons (in 1940); coffee 119,256 tons. Timber produced commercially includes pine, spruce, cedar, mahogany, rosewood and logwood.

Manufacturing.—In 1941 production in certain selected industries (estimated to represent 62.17% of all production) was valued at 1,085,031,000 pesos. In 1942 Mexico experienced a great expansion in manufacturing, with some industries reporting as much as 300% increase over 1941 totals. During the year $11,-000,000 was invested in 101 new industrial organizations. These included 18 small mining companies and 25 chemical laboratories. Steel production was especially active during the year, with plants running at full capacity. Only in the ports of Veracruz and Tampico, which were adversely affected by shipping disruption, was there any serious unemployment.

Mining.—Mining is basic to Mexico's national economy. Mexico in 1942 ranked first in world silver production, second in lead, and fourth in gold. Metallic production and value in 1941 was: gold 24,822 kg. (136,000,000 pesos); silver 2,437,392 kg. (133,-000,000 pesos); copper 45,716 tons (56,600,000 pesos); lead 155,259 tons (102,200,000 pesos); zinc 155,231 tons (128,000,000 pesos). Great stimulation was given to mining of strategic war minerals, especially zinc, copper, graphite and iron, during 1942.

Petroleum production was 41,160,000 bbl. in 1941. Refinery capacity was increased to 165,000 bbl. daily. The oil industry at the beginning of 1942 had ten tankers with a combined capacity of 1,225,000 bbl. In addition nine interned Italian tankers were added to Mexico's tanker fleet. (*See* also INTERNATIONAL LAW.)

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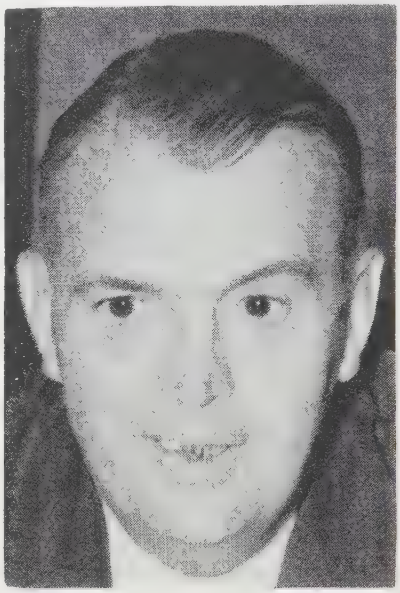
Mica. No official report was made on mica production in the United States in 1941, but there were indications of an increase of about one-half over the 1,625,437 lb. turned out in 1940. Imports were not reported, but apparently increased materially. Canada was the only country for which 1941 data had been received—1,744 short tons produced, as against 975 tons in 1940. (G. A. Ro.)

Michigan. One of the north central group of states, Michigan was the 26th state admitted to the union; it is popularly known as the "Wolverine state." Area, 97,940 sq.mi. (including 39,960 sq.mi. of Great Lakes' water surface);

pop. (1940) 5,256,106; (estimate Jan. 1, 1943) 5,600,000. Of the state's population in 1940, 3,454,867 were urban, or 65.7%; 1,801,239, or 34.2%, were rural. Whites comprised 95.892% of the population, nonwhites 4.108% (215,934). Capital, Lansing (78,753).

Larger cities were Detroit (1,623,452); Grand Rapids (164,292); Flint (151,543); Saginaw (82,794).

History.—Wartime conditions made 1942 a particularly eventful year for Michigan because of the prominent place which the state's facilities took in the war production program. On the industrial side the most conspicuous development was the conversion of the huge automobile industry to war production. Not only were existing resources utilized by this industry; marked extension of resources occurred, the most conspicuous example being the opening of the Ford bomber plant, with facilities for the employment of 80,000 persons, at Willow Run, near Ypsilanti. Practically every urban centre in the state had at least one manufacturing plant which had been converted to war production.


HARRY F. KELLY, Republican, elected governor of Michigan Nov. 3, 1942

Thousands of Michigan residents flocked from the less populous areas to the manufacturing centres; many more thousands poured into Michigan from other states. According to estimates of the United States bureau of the census, the Detroit area (including Wayne, Oakland and Macomb counties) by May 1, 1942 had reached a population of 2,710,000—representing an increase of 336,000 from the 1940 figure; the second half of 1942 saw the increase continuing. This swift augmentation of the population of the manufacturing centres created acute housing problems, with numerous trailer communities and small-house settlements springing up.

In the election of Nov. 1942 Judge Homer Ferguson, Republican, defeated Senator Prentiss M. Brown, Democrat, for U.S. senator. Brown had achieved considerable prominence during the summer and fall as the chief supporter in the United States senate of President Roosevelt's price control program. Gerald L. K. Smith, who ran as an "Independent Republican" candidate, polled only a few thousand votes. For the seventh time in as many successive gubernatorial elections, Michigan voters chose to restore the governorship to the party currently in opposition. Harry F. Kelly, Republican, defeated Gov. Murray D. Van Wagoner, Democrat, by a margin somewhat larger than that in the senatorship race. Indeed, the Republicans obtained the election of their entire party slate. Dr. Eugene C. Keyes was chosen lieutenant governor; Herman H. Dignan, secretary of state; Herbert J. Rushton (incumbent), attorney general; Vernon J. Brown (incumbent), auditor general; D. Hale Brake, state treasurer (defeating the veteran incumbent, Theodore I. Fry). In the nominally nonpartisan contest for justice of the state supreme court, Raymond W. Starr, incumbent, who had been endorsed by the Democratic party, defeated Earl C. Pugsley, whom the Republicans had sponsored. With Republicans winning 25 of the 32 seats in the state senate, and 73 of the 100 seats in the house of representatives, the position of the Democr was left very weak. This condition was intensified in Dec. 1 by Gov. Van Wagoner's decision to withdraw from leaders in state politics and by the resignation of State Highway Co missioner Donald E. Kennedy, who had been Van Wagon closest political assistant.

Michigan's constitution requires that the question of whet to authorize a convention for its general revision must submitted to the electors every 16 years. In the November el tion the electorate decided against this step. The electors a rejected a proposal to authorize general reform in Wayne cou (county seat, Detroit) government; a proposal dealing with m marketing was likewise defeated.

Education.—The 5,555 elementary schools of the state had enrolment of 582,263 in 1942; they were staffed by 19, teachers. Secondary schools numbered 763, with 388,041 pu and 12,881 teachers. State expenditures for public scho amounted to $107,189,177.15.

Public Welfare, Charities, Correction.—During the fi 11 months of 1942, a monthly average of 31,000 cases represe ing 95,000 persons received a total of about $8,197,000 in di relief. The load, however, from January to November fell 44.12 WPA employment likewise fell from 32,899 workers in Janu to 11,844 in November. Old-age assistance grants were made a monthly average of 92,134 persons; payments from Jan. 1 Dec. 1 totalled $19,692,383, or approximately $19.43 mont per recipient. Aid to dependent children saw a gradual dec between January and December, reflecting improving empl ment opportunities. An aggregate of $9,698,722 was paid 21,392 cases in behalf of 47,230 children during the 11-mo period. Pensions to the blind during the same period total $396,250, and were distributed to a monthly average of 1, cases.

There was a generally steady and sharp decline in the numbe claims filed for unemployment insurance, from the week Jan. 10 to that of Nov. 28. In the former, 177,348 claims w filed, and the value of checks issued was $1,565,560; in the lat week, only 10,086 claims were filed, while the value of che issued was $112,833.

On Dec. 1, 1942 there were 7,556 inmates in Michigan's f correctional institutions. New prisoners committed in the months ending Dec. 1, 1942 numbered 2,337.

Communications.—Michigan had 9,595 mi. of trunk highways and 80,606 mi. of county roads in 1942. State oper ing expenditures on highways in 1942 totalled $60,924,833 Railroad mileage at the end of 1941 amounted to 7,438 War demands for the ore supplies of the Northern peninsula of the other states bordering on Lake Superior increased many thousands of tons the shipping passing through the lo at Sault Sainte Marie.

Banking and Finance.—Total assets in banking instituti in 1942 were as follows: state banks, $1,029,362,011.35; dustrial banks, $7,581,389.43; trust companies, $36,218,421 For the fiscal year ending June 30, 1942, revenues credited the general fund of the state treasury amounted to $170,55 459.51; operating expenditures from this fund were $147,3 158.16, leaving a surplus of $23,215,301.35. Revenues credi to the state highway fund totalled $64,981,968.72; expenditu were $60,924,833.34. The end of the fiscal year thus saw considerable surplus in the treasury.

Agriculture.—Total estimated value of agricultural product in Michigan in 1942 was $421,628,000; total acreage harves 7,940,000. Despite considerable crop losses due to exces moisture and early frosts, the 1942 production of corn, o beans, soybeans and alfalfa was the highest on record.

Table I.—*Leading Agricultural Products of Michigan, 1942 and 1941*

Crop	1942 (est.)	1941
rn, bu.	69,703,000	48,032,000
ts, bu.	67,410,000	45,900,000
ieat, bu.	16,322,000	16,286,000
rley, bu.	7,293,000	6,520,000
ld beans, bags	6,124,000	5,267,000
ybeans, bu.	3,740,000	1,267,000
tatoes, bu.	16,562,000	20,020,000
ples, bu.	9,234,000	8,000,000
me hay, tons	3,926,000	3,286,000
alfa hay, tons	2,268,000	1,813,000

Table II.—*Principal Industries of Michigan, 1939 and 1937*

Industry	Value of products	
	1939	1937
tor vehicles, motor vehicle bodies and accesories	$2,284,666,538	$2,926,602,282
el works and rolling mills	99,939,525	130,888,132
er and paperboard mills	89,112,533	92,418,197
emicals	59,518,193	60,035,644
at packing, wholesale	57,069,086	60,963,261
ad and other bakery products	55,156,386	64,878,822
rigerators	51,805,725	75,966,655
chine shop products	50,803,932	67,428,487
igs and medicines	49,953,160	44,975,552

e III.—*Principal Mineral Products of Michigan, 1941, 1940, 1939, 1938*

Mineral	Value			
	1941	1940	1939	1938
ore			$37,026,665	$13,139,823
roleum			21,350,000	19,300,000
iron	.		18,872,150	9,806,994
e	.		12,408,881	10,135,722
nent	.	.	10,891,978	8,769,859
per	$10,959,840	$10,214,748	9,148,880	9,161,628
ural gas	8,339,000	.	7,411,000	6,387,000
sum	1,090,309	1,017,126	834,856	.
	.	.	6,726,912	6,151,154

anufacturing.—The year 1942 witnessed a tremendous in- se in manufacturing in Michigan; latest official statistics lable, however, were for the year 1939. In that year the l value of manufactures was $4,348,223,244; total employed manufacturing, 621,173; total salaries and wages paid, 27,488,238.

lineral Production.—Wartime demands upon Michigan's eral resources brought a marked increase in production in . Estimates placed production figures as follows: iron ore, 00,000 tons; copper, 10,000,000 lb.; oil, 20,000,000 bbl.

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chigan, University of.

The University War board enlarged its facilities for inform- students about the national services. To accelerate training, a calendar of three terms, October–January, February–May, June–September, was adopted, with the result that Com- cement was held on May 30, nearly a month early, and 3,860 ents attended the full summer term, besides 2,708 in the ter summer session. The courses in subjects important for the effort were revised and augmented, and preinduction training rams arranged in co-operation with the army and navy. A ired physical conditioning course was instituted. Engineering, nce and Management War Training courses were given to oximately 4,000 persons between April 1941, and July 1942, instruction in subjects such as electronics, ordnance materials ection, and radio was furnished to numerous groups of gov- ient trainees. The Judge Advocate General's school of mili- law was moved from Washington to Ann Arbor. Many lty members engaged in confidential government research ects, and 78 others, by July 17, had been granted leave of ab- e for military or civilian service. Aside from war activities, the erection of the new school of public health building went forward with expectation of occupancy in Feb. 1943. The Rackham Educational memorial, which houses the Detroit extension work of the university, was dedicated in Jan. 1942. (A. G. R.)

Microphotography: *see* PHOTOGRAPHY.
Microscope, Electron: *see* PHOTOGRAPHY.

Midleton, William St. John Fremantle Brodrick,

1ST EARL OF (1856–1942), British statesman, was born Dec. 14, the oldest son of the 8th Viscount Midleton. He entered parliament in 1880 and was seated in the house of lords in 1907. He was prominent as a leader of the southern Unionists of Ireland, and served on the Irish convention in 1917 and 1918. In his memoirs, he recalled an interview with Kaiser Wilhelm in which the German emperor assertedly declared that he wanted to seize some South American state as an outlet for Germany's overflowing population. The Kaiser, Lord Midleton said, believed he could defy the Monroe Doctrine if he could land his troops. Lord Midleton died Feb. 13 at his residence, Peper-Harow Park, Godalming, Surrey. He was the author of *Ireland, Dupe or Heroine* (1932) and *Records and Reactions, 1856–1939* (1939). (See *Encyclopædia Britannica.*)

Midway, Battle of: *see* JAPAN; WORLD WAR II.

Midway Islands.

A group of two small islands and several sand islets of the Hawaiian group lying in longitude 177° 23′ W. and latitude 28° 13′ N., 1,149 mi. N.W. of Honolulu, possessions of the United States of America. Sand, the larger island, about 850 ac. in area, has a maximum height above sea level of 43 ft.; the smaller island, Eastern, about 328 ac. in area, is very low.

The islands are enclosed in a circular reef about five mi. in diameter, nearly four-fifths of which is above water. They are nonproductive, being little more than sand dunes, and have no native inhabitants. Sand Island is the site of a commercial cable station.

In 1859 Captain Brooks of the U.S.-owned Hawaiian bark "Gambier" discovered the group and took possession in the name of the United States. Formal possession was taken Aug. 28, 1867 by Capt. Reynolds of the U.S.S. "Lackawanna." An executive order dated Jan. 20, 1903, placed the islands under the control and jurisdiction of the U.S. navy department. Under licence from

OIL TANK burning on Midway during the Japanese attack in June 1942 this department Pan American Airways established facilities on Midway for use in connection with its transpacific commercial airline. The 76th congress authorized the navy department to construct a seaplane base at Midway and appropriated approximately $5,000,000 for the purpose. Construction work on this base was in progress in 1941.

Midway was attacked by Japanese naval and air units Dec. 7, 1941. For a number of days no word was received from the small group of U.S. marines there, and the islands were believed lost. The defenders finally beat off all attacks, however, and by 1942 the island was firmly entrenched in U.S. hands—a stronghold in the nation's Pacific outposts. The great naval battle of Midway (*see* World War II), in which the United States defeated an invading Japanese fleet, was fought in the vicinity of the island June 4–6, 1942. During the early stages of the engagement, Midway was bombed by enemy planes.

In view of the intimate connection of these island areas with the conflict in the Pacific, it is not practicable to supply up-to-date information because any accurate information would reflect military secrets.

Mikell, Henry Judah (1873–1942), U.S. bishop, was born Aug. 4 at Sumter, S.C. A graduate of the University of the South, 1895, he received his D.D. degree from the University of Nashville in 1910. He was ordained priest in 1899, served as rector in Charleston, 1899–1908, and in Nashville, Tenn., 1908–1917. In 1917, he was consecrated as bishop and served in the Episcopal diocese of Atlanta, Ga. From 1930 to 1936, he was president of the Fourth Province of the Episcopal church. He died in Atlanta, Feb. 20.

Mikhailovitch, Draja (1893–), Yugoslav army officer, was born in Shumadija, a village near Belgrade. He fought in the Balkan War, 1912–13, and in World War I. He saw action on the Salonika front, was thrice wounded, decorated for bravery and was promoted to a captaincy. He then attended the higher military academy and the general staff school. After the swift nazi conquest of Yugoslavia in April 1941, Mikhailovitch fled to the mountains, where he rounded up scattered Yugoslav detachments and welded them into a powerful guerrilla force. This army destroyed bridges and roads, dynamited trains and troop convoys and compelled the Germans and Italians to divert at least 10 divisions to Yugoslavia. In Jan. 1942 Mikhailovitch was named war minister by the Yugoslav government-in-exile. In the late fall of 1942 it was rumoured that he had "sold out" to the Italians and that the great majority of his force of 200,000 Chetniks had joined a partisan army commanded by a Croat peasant, Kosta Nagy. On Dec. 11, 1942, the Yugoslav government in London denied these rumours, declaring they were inspired to break up Yugoslav solidarity and said Mikhailovitch was "just as powerful as ever."

Milk. Although production of 140,000,000,000 gal. of milk in the United States was announced as needed in 1943 to supply the requirements for domestic consumption and military and lend-lease shipments, the government placed the goal of production for 1943 at 122,000,000,000 gal., only 2,000,000,000 gal. more than the 1942 production. Government authorities urged and hoped for a still larger increase, but pointed out that statistics did not indicate a greater milk flow in 1943 than the goal stated. Cows on farms in 1942 numbered 26,000,000.

Based on the number of cows slaughtered during the year and reports of the number of two-year-old heifers on farms, the milking herds might approximate a 2% increase in number. If such reports were correct and production of milk per cow could be maintained at the 1941–42 level (4,750 lb.), the goal of 122,0 000,000 gal. for the year 1943 might be reached, the governm indicated. It added that hope for larger production depende better care and feeding and that there were abundant supplie high protein feed for this purpose. Scarcity of farm labou some areas, particularly in the northeast and on the Pacific c were a deterrent to increase in production.

Especially noticeable in 1942 was the rapid increase in d milk in overseas shipments because of ship losses from sub rines. When lend-lease shipments first assumed large volume portions, manufacturers of evaporated milk were urged to incr production greatly. Butter was not in demand for lend-lease plies, and it was urged that creameries be converted to the ma facture of evaporated milk. After the U.S. entry into World II augmented need for shipping and further losses from sub rines led to the supplanting of evaporated milk by dried m because dried milk occupies less cargo space. The evapor milk industry increased production to an all-time peak out and the government continued to buy large quantities. By 1942, the Evaporated Milk association reported, the governm had accumulated approximately 25,000,000 cases (48 cans to case), valued at $80,000,000. Later in 1942 the government leased 2,000,000 cases when shortages of fresh milk devel with the seasonal decline in the milk flow. At the beginnin 1943 the government held 17,000,000 cases. (*See* also But Cheese; Dairying.) (S. O. R

Millard, Thomas Franklin Fairfax (1868–1942), journalist, was July 8 in Phelps county, Mo. After working as a reporter in Louis, 1895–97, he was taken on the *New York Herald* staff foreign correspondent. Subsequently, he covered the Gra Turkish War, the Boer War, the Spanish-American War, Boxer Rebellion, the Russo-Japanese War, World War I and Sino-Japanese War. He founded the *Daily China Press* in the first U.S. newspaper in Shanghai, and also founded the *C Weekly Review,* a periodical. Despite his criticism of Chi officials, he was held in high esteem by Chinese autho and acted as unofficial adviser to the Chinese delegation at Versailles conference in 1919. He returned to the United S in 1941, after his editorial attacks on Japan led the Nippone regard him as their public enemy No. 1 in Shanghai. He die Seattle, Wash., Sept. 8.

Miller, Alice Duer (1874–1942), U.S. novelist and was born July 28 in New York While studying at Barnard college, she earned her tuition by ing for magazines. An active suffragist, she was one of founders and first president of the New York Women's City Her early novels were modelled on serious lines, but she turned to light romance. Her most popular work, *The W Cliffs* (1941), a short novel in verse, enjoyed immense popul in the United States, Canada, England and South America. A her other works are: *Are Women People?* (1915), *Are Pa People?* (1925), *The Springboard,* a play (1927), *Forsakin Others,* verse (1930), *Gowns by Roberta* and *Come Out o Pantry* (1933), *Death Sentence* (1934), *The Rising Star* (and *I Have Loved England* (1941). She died in New York Aug. 22.

Millstones: *see* Abrasives.

Mineral and Metal Prices and Production.

Because production data were so extensively suppressed o

Table I.—*World Mineral and Metal Production in 1941*

(Metric tons unless otherwise specified; Th. indicates thousands and Mi., millions of units.)

Country	Aluminum (Th.)	Bauxite (Th.)	Antimony (Th.)	Asbestos (Th.)	Cadmium (Th. Lb.)	Chromite (Th.)	Coal (Mi.)	Coke (Mi.)	Copper in Ore (Th.)	Copper (Blister) (Th.)	Diamonds (Th. carats)	Gold (Mi. Oz.)	Iron Ore (Mi.)	Pig Iron (Mi.)	Steel (Mi.)	Lead in Ore (Th.)	Lead (Th.)
lgeria	..	..	[1.0]	..	..	..	p	..	p	..	..	..	..	..	..	[4.6]	..
ngola	..	..	..	..	..	..	..	..	..	..	787	..	..	..	..	..	..
ustralia	..	[1.7]	[0.6]	(0.5)	[376]	[1.0]	[17.5]	[1.4]	[19.8]	(22.7)	p	(1.66)	..	..	(1.25)	[278.8]	315
elgian Congo	..	..	..	..	..	..	p	..	(148.6)	165	..	[0.49]	..	p	..	..	..
elgium	..	..	..	..	[1,168]	..	[29.8]	[5.2]	..	[65.9]	..	..	[0.2]	[3.07]	(2.23)	..	20
olivia	..	..	14.9	0.2	..	..	..	..	7.2	..	..	(0.01)	..	..	..	15.7	..
razil	..	20	..	0.5	..	(4.6)	..	..	p	..	325	(0.32)	[0.26]	0.19	..	p	..
urma	..	..	[0.1]	..	..	..	1.4	..	[3.4]	..	..	p	..	..	..	[78.6]	84
anada	200	..	p	(313 5)	[940]	p	16.5	2 4	[276.1]	(281 2)	..	5 33	..	1 41	2 19	[176 3]	220
hile	..	..	..	..	..	..	2.0	..	(352 0)	453.6	..	(0.34)	(1.75)	..	..	(0.8)	..
hina	..	..	(5.5)	..	..	..	(17 8)	P	p	p	..	p	..	..	p	..	..
olombia	..	..	..	..	..	..	(0.5)	..	..	..	..	(0.63)	..	[1.0]	..	..	..
zechoslovakia	..	[0.8]	[1.2]	[2.7]	..	..	[305]	[2.4]	..	..	..	[0.01]	[1.84]	..	..	..	..
rance	60	500	..	p	[256]	..	[51]	[7.8]	p	..	..	[0.09]	[33.14]	[7.9]	(5.45)	[5]	10
ermany	270	135	[0.1]	..	[952]	..	[433]	[43.5]	(35.8)	[66.0]	1,000	p	[10.94]	[20.3]	(25.13)	[96]	225
old Coast	..	..	..	..	..	..	..	..	..	..	..	(0.89)	..	..	..	..	..
reece	..	(180)	p	..	..	[55]	[0.1]	..	..	..	..	..	[0.31]	..	..	[4.1]	[4.9]
uiana, Brit.	..	900	..	..	..	..	..	..	..	..	27	(0.04)	..	..	..	..	..
uiana, Neth.	..	1,100	..	..	..	..	..	..	..	..	..	(0.02)	..	..	..	..	..
ungary	3	600	..	..	..	..	(10.7)	p	p	..	..	p	[0.37]	[0.46]	(0.74)	..	..
dia	..	(15)	p	[0.3]	..	[49.9]	[28.2]	[1.9]	[5.6]	(6.9)	p	(0.29)	[3.12]	(2.02)	(1 37)	..	..
do-China	..	..	..	..	..	..	(2.5)	p	..	..	..	p	(0.03)	..	..	..	..
aly	40	380	[0.9]	[6.9]	[182]	..	[3.1]	[1.7]	p	[3.0]	..	p	[0.99]	[1.0]	(2.5)	[39.5]	45
panese Emp.	40	..	p	(1)	[52]	[39]	..	..	(129)	(125)	..	(1.93)	[1.0]	[3.0]	(6.34)	[12]	17
uxembourg	..	..	..	..	..	..	..	..	..	..	..	..	[5.14]	[1.8]	(1.30)	..	..
alaya	..	(63.8)	..	..	..	..	(0.8)	..	..	..	..	(0.04)	(1.87)	..	..	..	..
anchoukuo	..	..	..	..	..	..	..	..	..	..	..	[0.12]	..	(0.7)	..	..	..
exico	..	..	11.1	..	1,994	..	0.9	[0.5]	48.7	40.9	..	0.80	(0.11)	(0.07)	..	155.3	160
orocco, Fr.	..	..	[0.1]	..	..	..	(0.1)	..	..	..	..	p	[0.27]	..	..	[19]	..
eth. E. Indies	..	100	..	..	...	..	(2.0)	..	p	..	..	[0.08]	..	..	..	..	..
ew Caledonia	..	..	..	..	..	(55.8)	..	p	..	..	..	..	..	..	..	..	..
orway	35	..	..	..	[204]	p	..	..	(20.0)	(7.3)	..	p	[1.43]	[0.17]	..	p	p
eru	..	..	1.5	..	..	..	0.2	p	35.4	28.2	..	(0.29)	..	..	..	54.8	43.0
ilippines	..	..	..	..	..	(194.4)	p	..	..	..	..	1.16	..	..	..	..	..
land	..	..	..	..	[538]	..	[38.1]	[2.5]	9.9	..	..	..	[0.87]	[1.0]	..	[5.3]	[5.6]
rtugal	..	..	[0.1]	..	..	..	0.6	..	..	..	..	p	p	..	..	..	..
hodesia, No.	..	..	..	..	..	..	..	..	[259.4]	(231.3)	..	0.79	..	..	..	..	..
hodesia, So.	..	..	[0.1]	[52.9]	..	(300)	[1.1]	p	..	..	..	p	..	..	..	..	..
am (Thailand)	..	..	..	..	..	..	..	..	..	..	..	[0.01]	..	..	..	..	..
erra Leone	..	..	..	..	..	..	..	..	..	..	850	(0.03)	[0.88]	..	..	..	..
uth Africa	..	..	p	(20.1)	..	(163.6)	(17.3)	[0.2]	(13.4)	(17.0)	150	14.39	(0.64)	(0.30)	(0.4)	..	..
.-West Africa	..	..	..	..	[71]	..	..	..	(1.5)	..	46.6	p	[0.02]	..	..	[14.7]	0.7)
ain	1	..	..	..	..	..	(9.6)	0.8	P	(4.5)	6,106	p	(2.9)	[0.5]	(0.75)	(57.9)	57
veden	..	..	..	..	..	..	[0.4]	[0.1]	[9.6]	(12.5)	..	(0.20)	[13.79]	[0.69]	(0.88)	[8.7]	..
nisia	2	..	..	..	..	..	..	..	..	..	..	..	[0.70]	..	..	[17.2]	[23.4]
rkey	..	..	[0.6]	..	..	(110.0)	(3.0)	p	(8.7)	(8.7)	..	p	[0.24]	..	..	[7.6]	p
ited Kingdom	35	..	..	..	7,234	..	[236.7]	[13.0]	p	(4.5)	..	p	[12.05]	[8.3]	(13.4)	[30.2]	10
ited States	280	900	0.4	22.1	[275]	(2.7)	515.0	59.1	869.2	1,015.3	..	4.75	94.04	51.42	75.15	417.1	438.2
S.S.R.	50	(270)	..	[86]	..	[217]	(200)	(16.5)	..	..	..	4.4?	(26.53)	[15.2]	(19.47)	[69]	90
nezuela	..	..	..	..	[250]	..	p	..	(157)	(157)	..	(0.15)	..	..	..	..	..
goslavia	1	400	[4.2]	..	..	[59.5]	[6.1]	..	[64.2]	(43.0)	..	[0.34]	0.67	[0.06]	..	(68.8)	(14.0)
orld Total	1,045	5,500	[34]	?	[9,200]	(1,250)	1,600+	?	2,500?	2,550?	9,350?	40.4?	208?	(106.4?)	(143.4?)	?	1,850?

Country	Magnesite (Th.)[1]	Manganese Ore (Th.)	Mercury	Nickel (Th.)	Petroleum (Mi. Bbl.)	Phosphate Rock (Mi.)	Platinum (Th. Oz.)	Potash (Th.)[2]	Pyrite (Th.)	Salt (Mi.)	Silver in Ore (Mi. Oz.)	Sulphur (Th.)[3]	Tin in Ore (Th.)	Tin (Th.)	Tungsten Conc.[4] (Th.)	Zinc in Ore (Th.)	Zinc (Th.)
geria	..	..	[7]	..	..	(362)	..	..	[44]	[0.1]	[0.08]	..	..	..	..	[3.3]	..
gola	..	..	..	..	..	..	..	..	..	p	..	..	..	..	..	..	..
stralia	[19.8]	p	p	..	..	p	p	p	[55]	0.1	[14.68]	..	[3.5]	[3.3]	0.4	[224]	(85)
lgian Congo	..	[7.7]	..	..	..	..	p	..	..	p	[2.09]	..	14	[2.1]	..	..	..
lgium	..	..	..	..	..	[34]	..	..	..	..	..	..	..	[3.1]	..	[3.0]	(65)
livia	..	p	p	..	p	..	..	..	..	..	(5.63)	(4.0)	41	..	5.1	7.3	..
azil	..	433.3	..	[0.3]	..	p	..	..	p	0.6	(0.02)	..	..	..	..	..	..
rma	..	..	..	[0.9]	7.8	..	..	..	..	p	[6.18]	..	[5.8]	..	8.3	[29.6]	..
nada	..	p	P	[102.6]	10.1	2	[149]	..	[207]	0.5	21.75	..	..	..	..	..	(180)
ile	..	23	..	..	..	(32)	..	..	..	p	(1.52)	(29.5)	..	..	..	..	..
ina	..	p	(216)	..	..	(8)	..	p	..	[3]	[0.20]	..	[11]	[10.9]	9.3	..	..
lombia	..	..	..	..	24.3	..	[39]	..	..	[0.2]	(0.26)	..	..	..	..	..	..
echoslovakia	[74.7]	..	[100]	..	p	..	..	..	..	[0.2]	[1.19]	..	..	..	..	0.8	[8.9]
ance	..	..	..	..	p	(10)	..	[582]	[147]	[1.6]	[0.57]	..	..	..	..	..	[35]
rmany	[439]	p	[65]	[0.6]	4.4	[3]	..	[1861]	[465]	[3.3]	[7.01]	..	[0.3]	[3.0]	..	[185]	[225]
ld Coast	..	341.7	..	..	..	..	..	..	..	..	[0.02]	..	..	..	..	..	..
eece	[168.2]	[11.2]	..	[1.3]	..	..	..	..	[217]	[0.1]	[0.34]	..	..	..	..	[3]	..
iana, Brit.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
iana, Neth.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
ngary	..	[22.2]	..	..	p	..	..	..	..	..	[0.04]	..	..	..	..	..	..
dia	[26.0]	[858.2]	..	..	2.3	p	..	[4]	..	(1.5)	[0.02]	..	..	..	..	..	..
do-China	..	[2.4]	..	..	..	(22)	..	..	..	(0.2)	p	..	1.6	..	..	(5.6)	[5.3]
ly	[6.2]	[48.3]	[2315]	[0.1]	p	p	..	p	[930]	[1.5]	[0.81]	[355]	[0.2]	[0.2]	..	[77.6]	(40)
panese Emp.	..	[70]	[21]	p	2.7	365	p	P	[2000]	[0.9]	[10.3]	[172]	1.7	[1.7]	2.0	..	(60)
xembourg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
alaya	..	[32.0]	..	..	..	..	..	..	..	..	p	..	83	[81.5]	0.5	..	..
anchoukuo	[331]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
exico	..	p	798	..	34.6	..	..	..	..	[0.1]	78.36	[1]	[0.3]	..	0.2	122.8	(40)
orocco, Fr.	..	[86.6]	..	[0.1]	..	(714)	..	..	..	p	[0.21]	..	p	..	..	..	..
th. E. Indies	..	[12.1]	..	[0.8]	62.0	(34)	..	..	..	[0.1]	[0.62]	(17.2)	54	[14.8]	..	..	..
w Caledonia	..	..	..	(17.5)	..	[5]	..	..	..	..	..	..	..	..	..	..	..
rway	[2.1]	..	..	[1.2]	..	..	..	..	[1025]	..	[0.30]	..	..	[0.3]	..	[4.5]	(20)
ru	..	p	..	..	12.8	..	..	..	..	p	(18.45)	(0.6)	p	..	0.2	20.3	..
ilippines	..	(58.0)	..	..	..	p	..	..	..	p	1.24	..	..	..	..	..	..
land	..	..	..	..	3.3	[10]	..	[108]	[92]	0.6	[0.06]	..	..	..	..	(66.6)	(120)
rtugal	..	p	..	..	..	..	..	..	[372]	p	[0.02]	..	[1.5]	p	5.5	..	..
odesia, No.	..	[3.0]	..	..	..	..	..	..	..	..	[0.08]	..	p	..	..	(12.7)	(15)
odesia, So.	..	..	p	p	..	..	..	..	[27]	..	(0.19)	..	[0.4]	..	p	..	..
m (Thailand)	..	..	..	..	..	..	..	..	..	[0.1]	..	..	16.5	p	0.5	..	..
rra Leone	..	..	..	..	..	..	p	..	..	..	p	..	..	..	..	..	..
uth Africa	[2.6]	(412.1)	..	[0.4]	..	p	[40]	..	(37)	[0.1]	(1.29)	..	0.5	..	p	..	..
-West Africa	..	..	..	..	..	(1)	..	..	..	p	(0.46)	..	[0.1]	..	p	..	..
ain	..	..	[1842]	p	..	(125)	..	P	(957)	..	[0.60]	..	[0.1]	..	0.6	29.0	(12)
eden	..	[5.9]	..	..	..	[6]	..	..	[192]	..	[1.22]	..	..	..	0.2	[28.9]	..
nisia	..	..	[9]	..	..	(936)	..	..	..	[0.1]	p	..	..	..	..	[0.4]	..
rkey	[0.8]	[3.3]	[12]	..	..	..	..	..	..	[0.3]	[0.58]	[2.6]	..	..	..	[10.1]	..
ited Kingdom	..	..	..	..	..	..	..	..	[4]	[2.7]	[0.07]	..	[1.8]	[37.4]	0.1	[9.6]	(60)
ited States	[302]	77	1517	(0.5)	1404.2	4764	[38]	476	670.1	11.5	65.85	3,181.9	..	p	6.5	667.6	745.7
S.S.R.	P	[2272]	[300]	[2.5]	226.3	(1461)	[170]	[266]	[980]	[4.4]	[8.0]	..	p	..	..	?	(85)
nezuela	[39.3]	..	..	..	222.9	..	..	..	..	p	..	..	..	..	..	..	..
goslavia	..	[5.7]	..	..	..	p	..	..	(146)	p	[2.29]	..	..	..	..	(18.8)	[4.2]
rld Total	?	[4,600?]	[5,500?]	136?	2,223.8	10,000?	[460?]	?	?	?	265?	?	250?	[170.7]	47?	?	(1,732?)

OTES: A figure in parentheses is for 1940, 1941 data not being available; one in brackets is for a preceding year, 1939, or the latest available. A figure without decimals is an iate, except with cadmium, mercury, potash and pyrite. The letter "p" indicates a production unknown or smaller than the minimum base of the table, while "P" indicates an ut of greater size.

rude magnesite. [2] K_2O equivalent of salts produced. [3] Mainly crude sulphur, but includes some ore, where sulphur content is not reported; also includes some sulphur vered from industrial gases, especially from the roasting of sulphide ores. [4] 60% WO_3 basis.

Table II.—*Mineral and Metal Prices in 1942*

New York market as reported by *E&MJ Metal and Mineral Markets*					London market as reported by the *Metal Bulletin*							
Open	Close	Grade	Units		Grade	Units	Open			Close		
							£	s.	d.	£	s.	d.
15.00 ¢	15.00 ¢	99% ingot	Pound	Aluminum	98–99%	Long ton	110	.	.	110	.	.
$ 2.05	$ 2.15	50–55% Sb.	S.T. unit	Antimony, Ore	50–55% Sb	Unit	.	14	3	.	nom.	.
14.00 ¢	16.049 ¢	Domestic, cased	Pound	Antimony	Domestic, 99%	Long ton	120	.	.	120	.	.
16.50 ¢	16.50 ¢	Chinese	,,		Chinese	,,	.	nom.	.	.	nom.	.
4.0 ¢	4.0 ¢	White oxide	,,	Arsenic	Foreign, 99%	,,	33	10	.	44	.	.
$ 15.00	$ 15.00	4% Be (*a*)	,,	Beryllium-copper alloy	Strip	Pound	.	12	.	.	9	[illegible]
$ 1.25	$ 1.25	Ton lots	,,	Bismuth		,,	.	6	3	.	6	[illegible]
90 ¢	90 ¢	Commercial sticks	,,	Cadmium		,,	.	5	5	.	5	[illegible]
$ 40.00	$ 43.50	48% Cr_2O_3, 3 Cr:1 Fe	Long ton	Chromium, Ore	Rhodesian, 1st grade	Long ton	11	19	.	11	19	.
89 ¢	89 ¢	97%, spot	Pound	Metal	98–99%	Pound	.	3	11½	.	4	6½
13 ¢	13 ¢	4–6% C, 66–70 Cr (*a*)	,,	Ferro-alloy	4–8% C.	Long ton	45	.	.	45	.	.
19.5 ¢	19.5 ¢	2% C, 67–72% Cr (*a*)	,,	Chromium, Ferro-alloy	2% C. (*a*)	Pound	.	1	½	.	1	[illegible]
$ 1.50	$ 1.50	97–99% Co	,,	Cobalt		,,	.	8	6½	.	8	6½
11.775 ¢	11.775 ¢	Domestic	,,	Copper	Fire ref., high gr.	Long ton	61	.	.	61	.	.
11.200 ¢	11.700 ¢	Export	,,		Electrolytic	,,	62	.	.	62	.	.
$ 35.00	$ 35.00		Ounce	Gold	Official	Ounce	.	168	.	.	168	.
$175.00	$165.00	Sponge, powder	,,	Iridium		,,	32	10	.	32	10	.
$ 4.45	$ 4.45	Mesabi, non-bessemer	Long ton	Iron, Ore	50% No. African	Long ton	.	nom.	.	.	nom.	.
$ 23.50	$ 23.50	Basic	,,	Pig	Basic	,,	6	0	6	6	0	[illegible]
$ 68.64	$ 76.54	80%, Joplin, Mo.	Short ton	Lead, Ore	80% R/C	,,	.	nom.	.	.	nom.	.
5.85 ¢	6.50 ¢	New York	Pound	Metal	Foreign, soft	,,	25	.	.	25	.	.
27 ¢	22.5 ¢	99.8% car lots	,,	Magnesium, ingots		Pound	.	1	6	.	1	[illegible]
34 ¢	29.5 ¢		,,	Sticks		,,	.	1	10	.	1	[illegible]
63 ¢	76.8 ¢	46% Brazilian	L.T. unit	Manganese, Ore	50–52% Mn	Unit	.	1	2	.	1	.
$120.00	$135.00	78–82%	Long ton	Ferro-alloy		Long ton	18	10	.	18	10	.
$ 36.00	$ 36.00	19–21% Mn	,,	Spiegel	18–22% Mn	,,	11	1	.	11	1	.
$202.60	$197.00	(76 lb.)	Flask	Mercury	(76 lb.)	Flask	48	5	.	69	2	[illegible]
45 ¢	45 ¢	90% MoS_2 (*b*)	Pound	Molybdenum, Ore	85% MoS_2	Unit	.	43	9	.	43	[illegible]
95 ¢	95 ¢	55–65% Mo (*a*)	,,	Ferro-alloy	70–75% Mo, C free (*a*)	Pound	.	6	.	.	6	.
35 ¢	35 ¢	Cathodes	,,	Nickel	Refined	Long ton	192	10	.	192	10	.
$ 24.00	$ 24.00		Ounce	Palladium		Ounce	5	15	.	5	15	.
$ 75.00	$ 75.00	24% P	Long ton	Phosphorus, Ferro-	20–25% P.	Long ton	26	.	.	15	.	.
$ 36.00	$ 36.00		Ounce	Platinum		Ounce	8	15	.	8	15	.
$125.00	$125.00		,,	Rhodium		,,	34	.	.	34	.	.
$ 1.75	$ 1.75	99.5%	Pound	Selenium		Pound	.	8	6	.	8	.
14.25 ¢	14.75 ¢	97+% Si, spot	,,	Silicon	98–99% Si	Long ton	85	.	.	85	.	.
$ 74.50	$ 74.50	50% Si	Long ton	Ferro-alloy	45% Si	,,	23	10	.	23	10	.
$135.00	$135.00	75% Si	,,	,,	75% Si	,,	36	.	.	36	10	.
35.125 ¢	44.75 ¢	Foreign, New York	Ounce	Silver	Official, spot	Ounce	.	.	23½	.	.	23
$ 1.75	$ 1.75		Pound	Tellurium		Pound	.	7	.	.	7	.
52.00 ¢	52.00 ¢	Straits	,,	Tin	Standard, cash	Long ton	259	10	.	275	.	.
$142.50	$142.50		Short ton	Titanium, Ferrocarbon-	15–18% Ti	Pound	.	.	8¾	.	.	8
$ 26.00	$ 26.00	Domestic	S.T. unit	Tungsten, Ore	65%	Unit	.	50	.	.	77	6
$ 24.00	$ 24.00	Chinese	,,	,,								
$ 1.90	$ 1.90	75–80% W (*a*)	Pound	Ferro-alloy	80–85% W (*a*)	Pound	.	5	1	.	9	8
$ 2.625	$ 2.625	99% W	,,	Powder	98–99% W	,,	.	5	2½	.	9	9½
27.5 ¢	27.5 ¢	(*c*)	,,	Vanadium, Ore	10–12% V_2O_5	Unit	.	nom.	.	.	nom.	.
$ 2.80	$ 2.825	(*a*)	,,	Ferro-alloy	35–60% V. (*a*)	Pound	.	15	6	.	15	6
$ 55.28	$ 55.28	60%, Joplin, Mo.	Short ton	Zinc, Ore	52% R/C	Long ton	.	nom.	.	.	nom.	.
8.25 ¢	8.25 ¢	St. Louis	Pound	Metal	G.O.B., foreign	,,	25	15	.	25	15	.

(*a*) Per pound of base metal contained. (*b*) Per pound of MoS_2 contained. (*c*) Per pound of V_2O_5 contained.

layed, it was difficult to contrive a single table which could give an adequate idea of the situation; working on the theory that if one could not have current figures, the next best thing was to have those of the immediate past, the first of the accompanying tables (page 447) gives, so far as data were found, the production of the leading minerals and metals in most of the producing countries in 1941; where 1941 figures were lacking, those for 1940 were inserted; lacking these, the 1939 figures were used.

As to current developments in general, the *Mineral Industry* index of aggregate world mineral production rose to a new high of approximately 163 in 1941, from 159 in 1940, 152 in 1939, 139 in 1938, and the former high of 150 in 1937; in comparison with these figures, the 1929 peak was 136, and that of World War I in 1917 was 88, which also was the low point reached in 1933, at the nadir of the depression years.

The second of the accompanying tables (above) shows the opening and closing quotations for the leading metals and ores on the New York and London markets in 1942. With most prices under governmental control and with only advances to be expected in others, the practice of showing high and low points for the year was dropped. The *Engineering and Mining Journal* index of nonferrous metal prices rose from 85.39 in Jan. 1942 to 88.74 in September to December, with an average of 86.80 for the year, as compared with an average of 83.49 in 1941, 79.22 in 1940, and 77.71 in 1939. (G. A. Ro.)

Mineralogy.

The methods and instruments used in mineralogy were discussed in 1942 by Wright in his address as president of the Mineralogical Society of America (*American Mineralogist,* March). Two new minerals were reported during the year: Rankinite, tricalcium disilicate, by Till (*Mineralogical Magazine,* March) and sampleite, hydrated chlo phosphate of sodium, calcium and copper, by Hurlbut (*Americ Mineralogist,* Aug.). In a most interesting article Tomkei traced the origin of the name "quartz" to "querkluftertz" (cro vein-ore), which was probably contracted to "querertz," then "quertz," and eventually to "quarz" in German, "quarzum" Latin, and "quartz" in English (*Mineralogical Magazine,* Marc During 1942 the excellent *Optical Mineralogy* by Rogers and K was issued as the second edition of *Thin-Section Mineralogy* the same authors; and a new text *Elements of Mineralogy* Winchell was published.

Gem Minerals.—An extremely important contribution knowledge of the uses of the diamond as a gem and for industr purposes was the series of eight articles under the caption "Sy posium on Diamonds" (*American Mineralogist,* March), as f lows: "General Statement," by Kraus; "Diamond Productio by Ball; "Cutting of Gem Diamonds," by Kaplan; "Diamonds the Wire-drawing Industry," by Herz; "Diamond Dies in t National Defense Program," by Shayne; "Diamond-set Tools," Slawson; "Bonded Diamond Wheels," by Klein; and "Evaluati Criteria," by Berman. Other noteworthy publications of 19 included: "Investigation of the Minor Elements in Diamond," Chesley (*ibid,* Jan.); "American Synthetic Emerald," by Rog and Sperisen (*ibid,* Nov.); "Causes of Colour in Gem-Stone by Anderson (*Gemmologist,* London, Jan., Feb., March) and Wade (*ibid,* April, May); "The Diamond Industry," by B (*Jewelers' Circular-Keystone*); and the following books: *D mond and Gem Stone Industrial Production,* by Grodzinski (L don); *Gem Testing for Jewellers,* by Anderson (London); *Secr* *he Diamond,* by Monnickendam (London). During the year Linde Air Products company completed its plant at East Chi- , Ind., for the manufacture of synthetic sapphires and rubies, ntial for use as watch jewels and bearings in precision electri- and physical instruments, and production on a relatively large e was begun.

See also MINERAL AND METAL PRICES AND PRODUCTION.)

(E. H. KR.)

iature Photography: *see* PHOTOGRAPHY.

inesota. A north central state of the United States, popularly known as the "Gopher state." Area, 84,068 i., of which 4,059 are water. Pop. (1940) 2,792,300. The l population was 50·2% of the total. Capital, St. Paul (287,- . The only city in the state with a larger population was neapolis (492,370); Duluth had 101,065.

istory.—Officers of the state in 1941, re-elected in 1942, : governor, Harold E. Stassen; secretary of state, Mike n; treasurer, Julius A. Schmahl; auditor, Stafford King; at- ey general, J. A. A. Burnquist; and chief justice, Henry M. agher. The entire Republican state ticket carried the elections. Thye, whom Stassen selected as his running mate, was elected ucceed C. Elmer Anderson as lieutenant governor. Special est centred in Thye's election, because Governor Stassen had unced before the primaries that, if re-elected, he would resign nter active service in the navy when the state legislature ad- ned; thus the lieutenant governor would be his successor. ph H. Ball, who had held office under gubernatorial appoint- t, was elected United States senator by a large majority, and ur E. Nelson was chosen to fill the short-term vacancy.

e dominant note in Minnesota was war—mobilization of in- ry, intensified mining, accelerated agriculture, bond sales, campaigns, the development of munitions plants, and the rture of men for the armed forces as manpower was mobilized.

ducation.—In 1941–42, Minnesota had 8,278 elementary, secondary and 440 consolidated schools; also 13 junior col- . Enrolment was 316,695 with 12,956 teachers in the ele- tary grades; 187,612 with 8,344 teachers in the secondary es; 2,570 with 172 teachers in junior colleges; 10,163 in t-education classes with 188 teachers; and 465 in teacher ing departments with 34 teachers. The total public school nditure for 1941–42 was $53,674,181.

ublic Welfare, Charities and Correction.—During the ending June 30, 1942, $6,088,856 was spent on general re- the average number of cases being 22,053; on old-age assist- , $16,659,938, the average number of recipients being 63,420. tal of $3,826,455 was spent on dependent children; this sum d for an average of 9,211 families and 21,929 children. An age of 1,006 persons received $325,545 as aid to the blind. WPA employed 25,774 persons; total expenditures were 252,520, of which $10,611,664 represented contributions by sors. For the same period, the state prison, two state reforma- s, and two training schools for delinquents, had a total of 8 inmates, and an aggregate expense of $4,674,046. Unem- ment compensation paid out was $5,600,000 in 1942, a drop 0.9% from 1941.

ommunication.—Highway mileage totalled 11,267 mi. at end of 1942. Railway mileage was 9,097. During the fiscal nium 1940–42, 51 new bridges were constructed in the state, cost of $3,130,000.

anking and Finance.—On July 1, 1942, there were 486 state s, one mutual savings bank and four trust companies in nesota with deposits of $371,639,689; 186 national banks with sits of $919,648,000 and resources of $1,009,385,000; 44 building and loan associations with resources of $36,216,314. The state revenue fund and expenditure for the year ending June 30, 1942, were as follows: receipts, $34,711,745, plus transfers, warrants cancelled, and cash balances, making an available total of $56,451,967; payments, $45,686,602, plus transfers, making a total of $53,637,299; balance, $3,286,175. The unpaid bonds and certificates of indebtedness on June 30, 1942, totalled $106,064,553, a reduction in one year of nearly $13,000,000.

Leading Agricultural Products of Minnesota, 1942 and 1941

Crop	1942 (est.)	1941
Corn, all, bu.	209,000,000	196,245,000
Oats, bu.	177,375,000	116,019,000
Barley, bu.	48,865,000	44,604,000
Wheat, all, bu.	26,504,000	20,506,000
Potatoes, bu.	19,350,000	17,200,000
Flaxseed, bu.	17,260,000	14,858,000
Tame hay, tons	5,553,000	5,453,000
Rye, bu.	4,572,000	3,540,000

Agriculture.—Minnesota enjoyed its greatest agricultural year in 1942, with a gross cash income from the sale of agricultural products and physical volumes of sales by the farmers the largest on record. The total sale of the 19 principal agricultural products of Minnesota approximated $650,000,000, as compared with $480,000,000 in 1941, or an average of $311,000,000 for the five-year period, 1935–39.

Manufacturing.—Official figures later than 1939 were not available in 1942. According to the U.S. biennial census of manufacturers, principal industries were as follows in 1939: meat packing $198,124,044; butter making $78,029,290; flour and grain milling $67,437,432; liquor manufacturing (malt) $23,364,854; printing and publishing (newspaper and periodical) $21,964,698; making of bread and other bakery products $21,349,382.

Mineral Production.—The 1942 output of iron ore in Minnesota was estimated at about 74,309,252 tons, in the longest and heaviest season in Lake Superior ore shipments, extending from March 26 to Dec. 7. The production of coke in 1941 was estimated at $5,082,787.

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(T. C. B.)

Minnesota, University of. An institution of higher education at Minneapolis, Minn. A drop in enrolment for the second consecutive year was experienced in the fall quarter, 1942. The decline was 13.4% over the corresponding period in 1941, which had been, in turn, 10.5% below 1940. An accelerated program began in the 1942 summer session, in which 25% of the students from the previous academic year were enrolled. During 1942 the university provided instruction, physical training facilities, medical services, social and cultural opportunities, housing and meals for trainees in several branches of the armed services, turning over three entire buildings in addition to classrooms and laboratories in other buildings for such purposes. This training of enlisted men was in addition to such regular campus student programs as the army and navy reserve officers' training corps, and the various enlisted reserve corps in which many students were enrolled. An increasing number of staff members were carrying on secret war-related research projects. Staff members on leave for service in the armed forces or for other war-related work totalled 407 on Nov. 1, 1942. During the year Walter C. Coffey was promoted from acting president to president.

For statistics of the university, *see* UNIVERSITIES AND COLLEGES.

(W. C. C.)

Minor League Baseball: *see* BASEBALL.
Mint, United States: *see* COINAGE.
Miquelon: *see* FRENCH COLONIAL EMPIRE.
Missions: *see* FOREIGN MISSIONS.

Mississippi. A southern state of the U.S.A., admitted to the union in 1817, popularly known as the "Magnolia state"; area, 47,716 sq.mi.; pop. (1940), 2,183,796; capital, Jackson (62,107). Other cities: Biloxi (17,475); Greenville (20,892); Gulfport (15,195); Hattiesburg (21,026); Laurel (20,598); Meridian (35,481); Natchez (15,296); Vicksburg (24,460). Of the state's population in 1940, 432,882 were urban, or 19.8%. In 1940 there were 1,106,327 whites; 1,074,578 Negroes; 2,177,324 native born; 6,472 foreign.

History.—The constitution of 1890 was amended in 1942 to provide for a constitutional board of trustees for institutions of higher learning and in reference to the sale and lease of 16th section lands. The chief accomplishments of the legislative session of 1942 were slightly decreased tax rates, increased support for pensions and education, provision for a compilation of the general statutes of the state, and the establishment of a reformatory for Negro juveniles, a board of pardons, a state civilian defense council, and a vocational school for the adult blind.

For 1940–44 the elected officers of the state were: governor, Paul B. Johnson; lieutenant governor, Dennis Murphree; secretary of state, Walker Wood; attorney-general, Greek L. Rice; state tax collector, Carl N. Craig; state treasurer, Lewis S. May; superintendent of education, J. S. Vandiver; state auditor, J. M. Causey.

Education.—In 1942 there were 1,355 white elementary schools and 3,637 Negro elementary schools, or a total of 4,992. Enrolment in elementary schools in 1941–42 was 238,090 whites and 287,139 Negroes. The state had 524 white high schools and 100 Negro high schools. Enrolment in high schools was 62,864 whites and 12,495 Negroes.

Public Welfare.—In 1942 approximately 300,000 workers in the state were covered by unemployment insurance. Benefits paid to unemployed in 1942 amounted to $1,582,631. The Work Projects administration employment average per month during 1942 was approximately 13,500; its total expenditures for the year were approximately $10,000,000.

Leading Agricultural Products of Mississippi, 1942 and 1941

Crop	1942	1941
Cotton, bales	1,880,708	1,385,990
Corn, bu.	49,198,000	51,255,000
Oats, bu.	9,610,000	10,152,000
Hay, tons	1,125,000	1,269,000
Sweet potatoes, bu.	6,460,000	6,460,000
Sugar-cane syrup, gal.	3,300,000	3,135,000
Sorghum syrup, gal.	1,800,000	2,150,000
Peanuts, lb.	30,600,000	14,040,000
Lespedeza seed, lb.	3,300,000	3,000,000
Peaches, bu.	974,000	1,394,000
Pecans, lb.	5,400,000	6,890,000

Communications.—The state maintained 6,266.6 mi. of highways and the counties, 54,405.9 mi. in 1942. Total state expenditure for highways in 1941 was $15,599,780; the total county expenditure was $19,668,721. The total mileage of railroads in the state on Dec. 31, 1942, was 3,937.39 mi.

Banking and Finance.—On Dec. 31, 1942 there were 178 state banks, 22 branch banks, 23 branch offices and 24 national banks. The resources of the state banks were $283,433,557.58 and deposits were $262,186,370.82; the resources of the national banks were $135,551,751.84 and deposits were $126,686,634.01. The total state receipts for the biennium 1940–42 were $98,044,606.28 and total expenditures were $90,603,979.07. On June 30, 1942 the general fund debt of the state was $24,998,000; outstanding highway bonds amounted to $54,421,000, or a total state debt of $79,419,000.

Agriculture.—There were 291,092 farms covering 19,156, ac. in 1941, with a crop output of $212,159,000, of which $1 140,250 was cotton and $29,550,912 was cotton seed.

Manufacturing.—The value of manufactures in the state 1937 was $190,670,510; in 1939 (the last federal biennial cen as of 1942), $174,937,294. The number of persons employed 1937 was 49,246; in 1939, 50,014. The wages paid in 1 amounted to $32,091,639; in 1939, $34,083,646.

Mineral Production.—The total value of mineral product in Mississippi in 1939 was $5,192,156; in the preceding yea was $5,209,547. Since 1939, 48,726,357 bbl. of petroleum been produced, of which 28,616,509 bbl. were produced from wells in 1942. The production of natural gas declined consid ably in 1942. (W. D. McC.

Missouri. A west north central state of the U.S.A., admit to the union in 1821; popularly known as the "Sh Me" state. Area, 69,270 sq.mi.; pop. (1940), 3,784,664 (51· urban). Capital, Jefferson City (24,268). Largest cities: St. Lo (816,048), Kansas City (399,178), St. Joseph (75,711), Spri field (61,238). Aliens (1940) numbered 42,049.

History.—In the election on Nov. 3, 1942, the Republic made substantial gains in Missouri. Eight Republicans and Democrats were elected to the national house of representativ the Republicans gained five seats, a larger Republican gain t in any other state. Eighteen Democrats and 16 Republicans w elected to the state senate (a Republican gain of ten seats), 95 Republicans and 55 Democrats to the state house of rep sentatives (the first Republican majority since the election 1928). The voters approved three constitutional amendme one to increase the pay of members of the legislature; but t rejected an amendment to repeal the nonpartisan court ame ment adopted in 1940. They also approved a proposal to ca convention to revise the state constitution.

During a special session of the Missouri general assem (Nov. 4–28, 1942) Governor Donnell asked for appropriati of about $2,536,020, to provide additional funds for state partments and institutions for the remainder of 1942. Howe the legislature appropriated $5,203,469, adding funds for d ciencies previously incurred by some of these agencies. Don maintained that, despite the practices of previous legislatu appropriations for such deficiencies were unconstitutional. therefore vetoed these items and approved appropriations amou ing to only $2,335,653.

The major state officers (1942), all Democrats except the publican governor, were: Forrest C. Donnell, governor; Frank Harris, lieutenant governor; Dwight H. Brown, secretary state; Forrest Smith, auditor; Wilson Bell, treasurer; Roy McKittrick, attorney general.

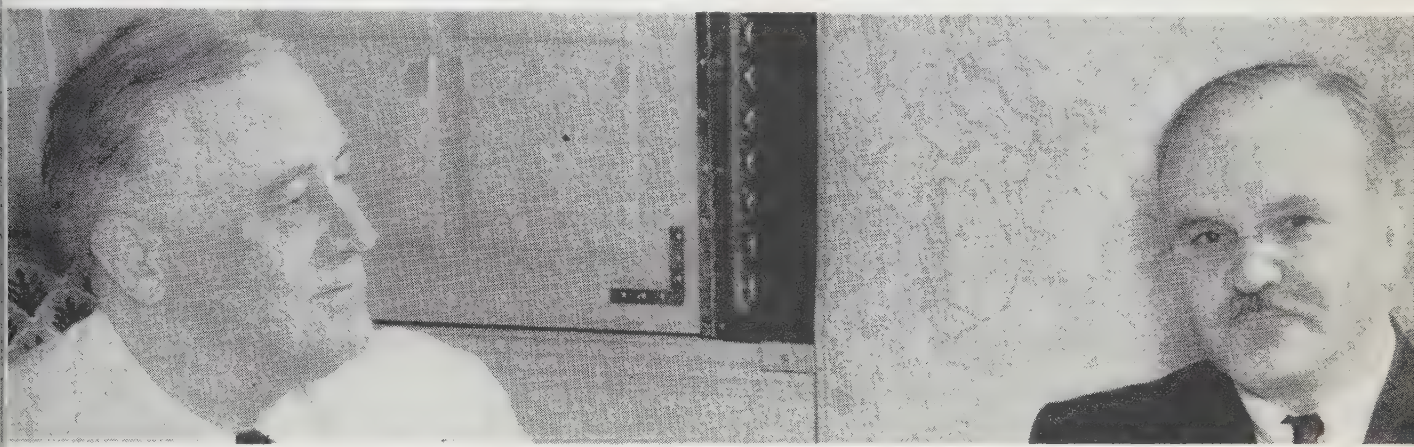
Education.—For the school year ending June 30, 1942, public school system consisted of 8,983 elementary schools, w 505,159 pupils and 17,987 teachers; 987 secondary schools, w 193,138 pupils and 8,208 teachers; 2 state universities (wh and Negro); 5 state teachers' colleges; schools for the deaf blind; and a Negro vocational school. In the same year elem tary parochial and private schools had 63,803 pupils, 1, teachers; secondary schools, 13,351 pupils, 767 teachers.

Public Welfare, Charities, Correction.—For the year e ing June 30, 1942, unemployment compensation totalled $8,0 066, and the government employment services made 216, placements. For the same period WPA earnings amounted $24,700,833; old-age assistance, $18,195,425; aid to depend children, $3,953,827; general relief, $2,764,491; blind pensi $1,016,357 In June 1942, 115,501 persons received old-age stance; 34,214, general relief; 32,339, aid to dependent children; 4,740, WPA earnings; 3,100, blind pensions. In 1940 Missouri aintained 5 penal and correctional institutions; on Dec. 31, 940, the state penitentiary had 3,728 inmates.

Communications.—On Dec. 31, 1941, Missouri had 16,084 i. of state highways and 101,080 mi. of rural roads. During 1941 e state highway department spent $32,539,407 (state and federal nds), of which $13,147,792 was for construction, and $5,895,551 r maintenance. In 1941 railroad mileage totalled 7,042 mi.

Banking and Finance.—On June 30, 1942, Missouri had 530 ate banks, with deposits of $862,213,000 and resources (loans d investments) of $802,909,000; 84 national banks, with deposits of $591,574,000 and resources (loans and investments) of 92,507,000; 194 building and loan associations, with resources $139,245,697.

Total receipts of the state treasury during 1942 amounted to 11,791,871; disbursements for 1942, $101,033,200; gross state bt, Jan. 1, 1942, $89,751,000; net state debt, Dec. 31, 1942, 3,008,000.



ACHESLAV MOLOTOV and President Roosevelt at the White House during soviet foreign commissar's visit to the United States May 29-June 4, 1942

Agriculture.—The value of Missouri's 1942 crops, harvested om 12,408,250 ac., was estimated at $294,965,000, an increase of % over the value of 1941. Unfavourable weather made the winter eat crop the smallest in many years, but the 1942 production of ts and tame hay was the largest on record. In 1942 Missouri's sh income from crops and livestock was estimated at $540,000,o; federal government payments amounted to $22,000,000.

Table I.—*Leading Agricultural Products of Missouri, 1942 and 1941*

Crop	1942	1941
orn, bu.	146,899,000	113,216,000
otton, bales	425,000	476,000
ame hay, tons	4,349,000	3,372,000
ats, bu.	59,427,000	52,938,000
inter wheat, bu.	9,035,000	18,036,000

Manufacturing.—During 1939 Missouri's industries manuctured products valued at $1,388,056,267, employed 178,538 ge earners and 24,275 salaried persons, and paid $190,735,851 wages and $58,937,137 in salaries.

Table II.—*Principal Industries of Missouri, 1939 and 1937*

Industry	Value, 1939	Value, 1937
eat packing (wholesale)	$107,254,213	$116,576,053
ootwear (except rubber)	100,346,106	103,253,379
on and steel (excluding machinery)	89,059,177	77,681,234
earing apparel	85,297,177	76,998,667
alt liquors	41,412,301	34,272,016
rugs, medicines	23,006,499	24,335,460

Mineral Production.—The value of Missouri's mineral proction in 1939 was $45,619,104. In 1940 and 1941 the value ineased. Missouri's lead production in 1941 was 165,900 tons, % of the U.S. output.

Table III.—*Principal Mineral Products of Missouri, 1940 and 1939*

Mineral	Value, 1940	Value, 1939
Lead	$17,205,200	$14,690,414
Cement	Fig. not available	7,420,013
Bituminous coal	Fig. not available	6,124,000
Stone	6,176,867	4,589,986
Clay (raw and products)	Fig. not available	3,931,065
Lime	3,184,293	2,800,379
Barite	1,216,069	1,163,870

(R. P. Br.)

Mohammedanism: *see* ISLAM.

Molotov, Vyacheslav Mikhailovich

(1890–), Russian statesman, was educated at Petersburg polytechnic and during his youth organized bolshevik student groups and worked for the newspaper *Pravda*. February of 1917 found him a member of the Petrograd soviet executive committee. In 1920 he was appointed secretary of the central committee of the communist party of the Ukraine, and in the following year he held this office for the whole of the U.S.S.R. He was appointed president of the Soviet of People's Commissars in 1930 and was named foreign commissar May 3, 1939, to succeed Maxim Litvinov. The latter appointment foreshadowed the temporary shift in soviet foreign policy which led to the nazi-soviet pact of nonaggression, signed by Molotov in Moscow, Aug. 24, 1939.

On May 6, 1941, Molotov resigned as premier of the U.S.S.R. and was succeeded in this office by Stalin; he remained as foreign commissar, however, and took over the vice-premiership. Six hours after the German invasion started on June 22, Molotov denounced the attack and predicted that the U.S.S.R. would administer a "crushing blow" to its enemy. On July 1 Stalin named him vice-chairman of the soviet defense committee, to which was delegated the full authority of state. On July 13 Molotov signed the British-U.S.S.R. mutual-aid pact in which each nation agreed not to make a separate peace. In the spring of 1942, Molotov went to England and on May 26 he and Anthony Eden signed a 20-year Russo-British mutual assistance pact. Under this treaty, both countries agreed not to sign a separate peace with Germany and not to seek territorial aggrandizement; both also pledged postwar co-operation to preserve peace. Molotov then flew to Washington where, after conferences from May 29 to June 4, he and President Roosevelt signed a lend-lease agreement providing mutual defense aid and reached an understanding "on the urgent tasks of creating a second front in Europe." In August, Molotov was named vice-chairman of the people's council of commissars.

Molybdenum. The output of molybdenum in the United States increased from 34,313,000 lb. in 1940 to an estimated 40,500,000 lb. in 1941, the major producer being the Climax mine in Colorado, which also supplied most of the increase. Although a considerable proportion of the output is a by-product recovered from copper ores, the amount thus obtained is determined by the copper output; since the copper output was near its maximum in 1940, there was correspondingly little increase in the recovery of by-product molybdenum in 1941. The production rate at the end of 1941 was in excess of 46,000,000 lb. a year, and subsequent increases in plant capacity still further benefit the 1942 output. Production was practically on a level with demand during 1941, and declines in stocks were small.

The Mexican production increased from 691,000 lb. in 1940 to 1,532,000 lb. in 1941, all by-product recovery from copper ore, and similar recovery from Chilean ores amounted to 506,000 lb. There was a small output in Canada, and while statistics are lacking, it is thought that the Peruvian output increased materially over the 450,000 lb. reported in 1940. (G. A. Ro.)

Monaco.

A principality on the Mediterranean coast, bounded on the land side by French (occupied) territory. Area 375 ac. (0.59 sq.mi.); pop. (census 1939), 23,973. Chief towns: Monaco, La Condamine, Monte Carlo; ruler: Prince Louis II; language: French. The chief occupation is catering for visitors, who, before war broke out in 1939, numbered more than 2,000,000 annually.

Monazite.

There was a small output of monazite from the treatment of beach sands in Florida in 1941. Imports into the United States declined from 2,967 short tons (201 tons from Brazil and 2,766 tons from India) in 1940 to 1,557 tons (411 tons from Brazil and 1,146 tons from India) in the first nine months of 1941. (G. A. Ro.)

Monetary Units: *see* EXCHANGE CONTROL AND EXCHANGE RATES.

Mongolia

(INNER AND OUTER). A vast, arid, sparsely populated tableland in northeastern Asia, with several deserts, of which the Gobi is the largest. Mongolia occupies an area of about 1,000,000 sq.mi. It is bounded N. by Siberia, E. by Manchuria ("Manchoukuo"), W. by Sin Kiang (Chinese Turkestan), S. by China. Of these two parts of Mongolia, which were administratively separated from each other in 1921, when Outer Mongolia came under predominant Russian influence, Outer Mongolia (622,744 sq.mi.) is larger in size. But Inner Mongolia (334,100 sq.mi.) is more closely settled, with some industry, agriculture and mining, along with the vast grazing lands which are to be found in all Mongolian regions.

Outer Mongolia.—Population in 1941 (estimated) 850,000. Capital, Ulan Bator (formerly Urga). Pop.: 100,000. This immense region has been for many years almost completely isolated from the outside world, except the soviet union. Red army troops, pursuing the anti-bolshevik forces of Baron Ungern-Sternberg, entered Outer Mongolia in 1921 and co-operated with Mongolian revolutionaries in setting up a so-called People's Revolutionary government, which passed under the closest control from Moscow and accepted soviet "advisers" in military, commercial and technical matters.

Under a constitution which was promulgated in 1924 and was closely modelled on the soviet constitution, although with some allowance for the pastoral, nonindustrial character of the country, Mongolia was organized as a people's republic, power being vested in a representative assembly, the Great Huruldan, which selects from its members a smaller group, the Little Huruldan, for more frequent sessions. The Little Huruldan, in turn, elects a committee of five, which is in charge of current affairs.

One effect of the new regime was to cut off Outer Mongolia
from economic, as well as political relationship with China a
to give the soviet union a monopolistic control of the countr
foreign trade. Exports to countries other than the U.S.S.
which were 69% in 1924–25, declined to 3% in 1928–29 and
zero in 1929–30. Mongol debts to Chinese trading compan
which formerly operated in the country were repudiated, a
these companies were gradually liquidated. Russian financial
visers helped to work out a new currency system, the unit bein
silver coin called the *tugerik,* valued at 90 kopecks.

Most of the wealth of the Mongols has always been rep
sented by their flocks and herds. It is estimated that in Ou
Mongolia there were, in 1942, 1,340,000 horses, 270,000 cam
1,500,000 oxen and 10,600,000 sheep. Harsh measures, desig
to promote the collectivist ownership of cattle, adopted in l
with the drive for collective farming in the U.S.S.R., led to s
eral uprisings and to a considerable migration of wealthier M
gols across the frontier into China between 1929 and 1932. Th
measures were subsequently mitigated, and Mongols fought alo
side soviet troops in resisting attempts of the Japanese to pe
trate the country from Manchuria ("Manchoukuo"). The m
serious of these clashes was at Nomonhan, in 1939, and was
companied by the use of tanks and planes. After the sovi
Japanese non-aggression pact of 1941, the border was quiet.

Wool, bristles and casings are among the most important Ou
Mongolian exports. In return the soviet union sends Mong
oil, chemicals, cement, textiles and other manufactured produ
Trade is financed through the Mongol bank, in which the sov
government owns half the capital. The chief trading organizat
is the Mongol Central Co-operative society. There is an air l
between Verkhne-Udinsk, in Siberia, and Ulan Bator, and a hi
way between Ulan Bator and the Siberian border town
Kyakhta. Northwest of Outer Mongolia is the little soviet p
tectorate of Tannu-Tuva, area 64,000 sq.mi., pop. 65,000, capi
Kysylchoto, with communication with Siberia by way of
Yenisei river.

Inner Mongolia.—Formerly Inner Mongolia was a term cov
ing the three northern Chinese provinces of Chahar, Suiyuan a
Ningsia. The Japanese invasion of North China in 1937 led
the establishment of a new state called Meng-chiang (Federa
Council of the Mongol Border Land), which included Chinese
well as Mongol regions and contains a population roughly e
mated at five to seven millions. The new state was a federation
three governments, all under strong Japanese control, with he
quarters at Hohohoto (the former Suiyuan), Tatung and Kalg

The regime at Hohohoto is of purely Mongol character; Tatu
is the principal town of North Shansi and the centre of a gr
coal region, and Kalgan is an old established trading post a
commercial town northwest of Peking. News about Meng-chia
became increasingly scanty in 1942 as foreigners were forced
by Japanese monopolistic trading practices.

There was reason to believe, however, that its economic c
dition was not flourishing and that Japanese hopes for a la
flow of raw materials from this region had not been realiz
Parts of the country suffered from drought, others from floods
1939, with the result that exports were curbed and relief s
plies had to be sent in. The Meng-chiang yuan is of the sa
nominal value as the Japanese yen (23.45 cents U.S.), and
amount of currency in circulation, which was 12,966,000 yu
in Dec. 1937, was 70,886,000 yuan in July 1940. Meng-chiang
traversed by the Peking-Suiyuan railway. Imports over this r
way were 70,358,000 yuan in the first half of 1939 and 82,347,
yuan in the first half of 1940. Exports over the railway w
64,404,000 yuan in the first half of 1939 and 28,784,000 yuan
the first half of 1940. The principal products of Inner Mong
are coal, iron, furs, opium, cereals and linseed. (W. H. CH.

ntana. A northwestern state of the United States, popularly known as the "Treasure state." Area, 147,138 ni.; pop. (1940): 559,456. The urban population was 211,535 37.8%. Capital, Helena (15,056). Other cities of 10,000 or e were: Butte (37,081); Great Falls (29,928); Billings (23,-); Missoula (18,449); Anaconda (11,004). Of the total ulation there were 540,468 whites, of whom 484,826 were ve-born and 55,642 were foreign-born. The Indian population ıbered 16,841.

listory.—In the general election of 1942 the Republicans ied control of both houses of the state legislature. Mike nsfield (Dem.) and James F. O'Connor (Dem.) were elected resentatives to Congress. James E. Murray (Dem.) was re- ted to the United States senate. Proposed constitutional ndments for changes in the state board of education and for thening the terms of certain county officials from two to four s were voted down by large majorities.

am G. Ford, elected for a four year term in 1940, was the Republican governor since 1920. Other state officials in 2 were Ernest T. Eaton, lieutenant governor; Sam Mitchell, etary of state; John J. Holmes, auditor; R. V. Bottomly, rney general; Elizabeth Ireland, superintendent of public in- ction.

ducation.—There were 1,847 elementary schools in Montana 942, with an enrolment of 72,542 pupils and a teaching staff 3,642. There were 214 high schools with an enrolment of 35 and 1,513 teachers. The total cost of operating these ools was $14,371,107.

ublic Welfare, Charities, Correction.—Through federal and e aid, approximately 25,000 persons received public assistance 942. Grants totalling over $5,000,000 were distributed in 2 as follows (figures in parentheses indicate the average num- of recipients per month): Old age assistance (12,425), $3,- 500; aid to dependent children (6,192), $931,300; aid to ly blind (316), $92,800; general relief (2,230), $445,000; ical care (528), $53,500; hospitalization (346), $176,800; als (52), $39,500. Unemployment compensation benefits lling $1,229,000 were paid to 9,855 persons, an average of 23 per week for 11.11 weeks, or $124.70 per claimant. Cor- ional institutions with their average population and total ex- litures in 1942 were: Montana State prison, 480 inmates, 9,484; State Industrial school, 127 inmates, $68,769; Voca- al School for Girls, 69 inmates, $44,206.

ommunication.—In 1942 the state highway commission ntained 6,563 mi. of highways at a cost of $8,196,442. The way mileage was 5,203. There were 12 designated airports and emergency landing fields, including those used by the forest ice. The number of telephones was estimated at 67,743.

anking and Finance.—There were 111 banks in the state in 2. The 41 national banks had total deposits of $92,321,000 their total assets were $101,396,000. State banks had total ts of $85,918,930 and their total deposits were $77,903,000. re were 19 savings and loan associations, with assets of $13,- ,000. For the fiscal year 1941–42, the net state income was 925,090 and the total expenditures were $35,362,692. The gross debt of the state was $9,001,712 and the net debt, $7,858,809.

Table I.—*Leading Agricultural Products of Montana, 1942 and 1941*

Crop	1942	1941
eat, bu.	73,783,000	68,239,000
y, tons	2,759,000	2,318,600
s, bu.	20,319,000	14,544,000
ley, bu.	12,330,000	6,020,000
ar beets, tons	947,000	793,000
xseed, bu.	2,550,000	888,000
n, bu.	3,800,000	3,560,000
d peas, bu.	820,000	567,000
atoes, bu.	1,725,000	1,540,000
alfa seed, bu.	96,000	117,000
beans, bu.	563,333	450,000

Table II.—*Principal Industries of Montana, 1939 and 1937*

Industry	Value of products	
	1939	1937
Bread and bakery products	$ 4,020,290	$ 3,733,316
Butter	4,248,762	4,130,181
Flour and other grain mill products	6,254,698	8,146,527
Liquors, malt	2,091,234	2,093,570
Lumber and timber products	7,587,327	9,922,709
Meat packing, wholesale	4,731,496	4,036,095
Petroleum refining	13,461,015	10,892,921
Sugar, beet	10,780,455	9,389,256
Printing and publishing	3,196,483	3,362,559

Table III.—*Principal Mineral Products of Montana, 1941 and 1940*

Mineral	Value, 1941	Value, 1940
Copper	$29,835,000	$28,564,366
Gold	8,627,500	9,541,070
Silver	8,038,400	8,790,080
Zinc	8,496,800	6,625,962
Lead	2,436,000	2,303,600
	Amount in 1940	Amount in 1939
Coal	2,974,000 tons	2,810,000 tons
Petroleum	6,768,000 bbl.	5,961,000 bbl.

Agriculture.—Favourable weather and rapid expansion of some crops made the year 1942 the best since World War I for Montana farmers. The value of all main crops was $134,177,000, as compared with $100,648,000 in 1941. The cash income from livestock and livestock products was $86,598,000. Government payments were $12,923,000.

Manufacturing.—The total value of products manufactured in Montana in 1939 was $151,885,026 as compared with $176,278,814 in 1937. Persons employed in manufacturing numbered 10,898 in 1939 and were paid salaries and wages amounting to $15,832,241.

Mineral Production.—The 1941 production of gold, silver, copper, lead and zinc in Montana was valued at $57,433,700, an increase of 3% over that of 1940. The lead output was less than in 1940, but owing to the higher price its value was greater.

Crude oil production reached an all-time state record of 8,093,972 bbl. in 1942 as compared with 7,517,560 bbl. in 1941.

(E. E. B.)

Montenegro. A former kingdom in the northwest Balkan peninsula, Montenegro had voted Nov. 25, 1918, its union with Serbia in the then newly formed kingdom of the Serbs, Croats and Slovenes, later Yugoslavia. At that time its area was 5,880 sq.mi. with a population est. on Jan. 1, 1917, at 436,789, all of them Serbs of the Greek Orthodox religion. The capital was Cetinje. The last king was Nicholas I, whose daughter married King Victor Emmanuel III of Italy. The occupation of the people is mainly pastoral and agricultural. As a province within Yugoslavia, Montenegro had an area of 3,733 sq. mi. With the redistribution of Yugoslav administration in 1930, Cetinje became the capital of the Zetska banovina or province. The population of Cetinje according to the census of March 31, 1931 was 6,367.

With the disintegration of Yugoslavia as a result of German aggression in April 1941, the country was occupied by Italians. Its fate had not yet been definitely decided in 1942. The greater part of the coastal zone had been directly incorporated into Italy, while the inland districts in about the same extent in which they existed before 1918 became an autonomous province under Italian supervision. Throughout the year the inhabitants of the Black mountains, a proud and freedom-loving people who had resisted for centuries the pressure of Turkey and kept their independence, refused to submit to the "new order" imposed by the axis. Numerous bands of patriots and partisans, some of them in direct collaboration with the Yugoslav patriot arms of

Mikhailovitch and the partisans, harassed Italian garrisons.

Very little authentic news came from Montenegro, or from other parts of Yugoslavia. Yet it was beyond doubt that the people of Montenegro co-operated with the other Serbs and remained loyal to the Yugoslav government and to the cause of the United Nations. An especially violent encounter was reported late in 1942 when patriot troups surrounded an Italian division near Danilovgrad and took a large number of prisoners. (*See* also CROATIA; DALMATIA; YUGOSLAVIA.) (H. KO.)

Montgomery, Bernard Law

(1887–), British army officer, was born Nov. 16. The son of an Ulster clergyman, he joined the Royal Warwickshire regiment as a second lieutenant in 1908. He fought in France during World War I, was wounded twice and received the distinguished service order. After the war, he was a battalion commander, served in Palestine as division commander and was instructor at the Staff college in Quetta, India, remaining until 1937. A month before the outbreak of World War II, in Aug. 1939, he was appointed to command the third division which went to France with the B.E.F. and helped evacuate his troops from Dunkirk in June 1940. Back home again, he became commander of the fifth corps. After Lt. Gen. Neil M. Ritchie's failure to halt Marshal Rommel's drive into Egypt in June 1942, all Britain clamoured for new leadership. Prime Minister Churchill responded by announcing on Aug. 18, 1942, that Lt. Gen. Montgomery was made commander of the British eighth army in Egypt. On Oct. 23, Montgomery launched an offensive against Rommel; within two weeks Rommel's famed Afrika Korps was in wild retreat. By Dec. 31, Montgomery's forces had advanced more than 1,000 mi., chasing Rommel far beyond El Agheila in Libya.

Montgomery, Lucy Maud

(MRS EWAN MACDONALD) (1874–1942), Canadian author, was born Nov. 30 in Clifton, Prince Edward Island. She attended Prince of Wales college in Charlottetown, P.E.I., and later taught school there. She started writing at an early age; at 12, she won a story contest sponsored by a newspaper. The islanders regarded her with admiration as the "girl who writes stories and poems for magazines and gets paid for it." These rugged folk provided her with the inspiration for her most famous novel, *Anne of Green Gables* (1908), which was translated into many foreign languages. Called by Mark Twain "the sweetest creation of child life yet written," the book was twice adapted for the motion pictures. Among her later works were *Tangled Web* and *Jane of Lantern Hill* (1937), *Anne of Windy Poplars* (1938) and *Anne of Ingleside* (1939). She died in Toronto, April 24.

Montreal.

A city of Quebec, Canada, originally Ville Marie, founded in 1642, is situated on an island at the confluence of the Ottawa and St. Lawrence rivers, approximately 1,000 mi. from the Atlantic ocean and 2,760 mi. from Liverpool. It is at the head of ocean navigation and is the terminus for lake vessels from the Great Lakes. It is served by three canal systems: the St. Lawrence canals (1,230 mi. to the Great Lakes), the eastern United States canals, via the Richelieu river and Lake Champlain (127 mi.) and the Ottawa river canals (119 mi.).

The population of the city proper, according to the census of 1941, was 903,007, and of greater Montreal 1,105,359. At the beginning of 1943, as estimated by Lovell's Directory, it was, for the city of Montreal proper, 1,318,595, and for greater Montreal 1,511,930.

The city of Montreal is governed by a mayor and a council of 99 members, of whom one-third are appointed by public bodies, one-third elected by the property owners and one-thi the citizens generally. The mayor is elected by the citize the whole city. The council appoints from among its mem six councillors to act as an executive committee. Greater Mon is governed by a metropolitan commission, on which the city suburbs are represented, the members being appointed by va municipal councils.

The port of Montreal is the largest in Canada. War condi accelerated its activity in 1939–42, but statistics were una able because of war censorship.

In 1942 building permits were issued for 1,216 new proj having a value of $8,754,120, and for 2,265 repair jobs, ha a value of $2,922,000. Bank deposits (for 11 months ended 30, 1942) were $10,348,909,775, and bank clearings for the period $5,942,047,288. The assessed value of real estate a Dec. 31, 1942 was $1,249,055,000, of which $337,533,000 exempt from taxation. (J. A. MA

Montserrat: *see* WEST INDIES, BRITISH.

Mooney, Thomas J.

(1882–1942), former U.S. la leader, was born in Chicago, Ill. at the age of 15 became an apprentice iron moulder. As a y he worked in many parts of the country, then went on a "cult tour of Europe. He returned home an ardent socialist, joined revolutionary wing of the party and was active in many str particularly in San Francisco, Calif. When a bomb was expl during a San Francisco Preparedness Day parade on July 22, Tom Mooney, then organizer of a city street railway strike, arrested and charged with the crime. He was convicted of degree murder and sentenced to hang, although in his testim he insisted he was innocent. His case became a *cause célèb* international labour circles, and the campaign for his release San Quentin prison continued unabated for 22 years. In President Woodrow Wilson won commutation of Mooney's tence to life imprisonment, but four California governors ref to grant him a pardon or parole. When he was finally pard by Gov. Culbert L. Olson, Jan. 7, 1939, Mooney had to spend last years of his life in a hospital bed. His death followe abdominal operation in San Francisco, Calif., March 6.

Morale, National.

When we speak of an individual's " morale" without a second qualifying jective such as "national" or "military" we mean that h confident of himself; that he is under self-discipline; sure o ability to manage the work in which he is engaged; he is pla by no fear; he is proud of himself and will not, therefore cheap or injurious in relation to his neighbours. His morale s up into a feeling of pride in the best sense of the word.

On the scale of intensity the feeling varies among individ —and in the same individual from occasion to occasion— mildness to delirious excitement. It always involves initiative drive. The man whose morale is high does not hesitate to set upon a program that has been chosen and to follow it through

In its most useful sense morale includes knowing or un standing the essential background of a situation. If this is ing or overwhelmed by intensity of emotion, morale is superf and temporary, but may, nevertheless, as in Germany and Ja have its uses. One may, *e.g.*, ignorant of the odds, fight enth astically unto annihilation.

National morale is the morale of citizens when they ha sense of confidence and pride in the nation; in its past acc plishments; in its possibilities; in its resources; in its hist ideals. Each feels that he is a part of the nation; that its tory, resources and future are his; that he is a member of a others like himself; he participates co-operatively with them . He has, therefore, a sense of personal and national strength. hen citizens generally are in that state they co-operate whole- artedly and they approximate invincibility.

Conditions and agencies that affect national morale positively negatively are too numerous to be mentioned. Morale is af- ted one way or another by every personal experience.

The Committee for National Morale was developed particu- ly for research and public education relating to the essential nditions in which national morale arises. It includes sub-com- tees which suggest the range of its studies. The following is partial list: psychology; psychiatry and neurology; medicine l physiology; radio and motion pictures; education and his- y; journalism and public opinion; foreign affairs; military nce and history; opinion and attitude testing; art and music; eign minorities; social science; national economy; social serv- and civic agencies; American tradition.

The committee, active in two principal directions, completed exposition and bibliography of German literature on psycho- ical warfare. The bibliography includes titles of approximately technical articles and books that were published while the ders of the third reich were consciously preparing for World r II. These works were read and digested by members of the nmittee and the whole was made available in a volume en- ed: *German Psychological Warfare.* It shows the means ereby national and military morale were developed in Ger- ny after the nazi regime came into power.

Secondly, the committee invited many American scholars each contribute a memorandum for the purpose of bringing together nprehensive data and opinions concerning the nature of morale the circumstances in which it may grow. These memoranda ly to general morale factors. Some of them are discussed hout respect to particular situations, and others with reference, example, to the development of morale in an industrial estab- ment. In any case, they contribute to an understanding of ional morale. Interpretations of a few selected memoranda are sented here.

Morale Factors.—1. An integrated, healthy, well balanced per- ality is altogether essential to high morale in any association, ll or great. Psychiatrists and mental hygienists recognize ir role in this connection. The official publication (*Mental giene*) of the National Committee for Mental Hygiene and its letins are fundamental instruments through which the mental giene principle is extended to almost all organized and unor- ized educational activities that touch many millions of people the United States. The principle applies to morale for both out warfare and for peacetime.

single psychically instable member of a unit within an armed e may bring fatal results to the entire unit and more; for h a one is likely to break under prolonged tension or at a ical moment. In that case he becomes a source of mental tagion. Hence, for the military, naval and air services it is neasurably important to select psychically stable personalities to maintain them in that condition. It is thus that psychi- sts and mental hygienists through their organization and indi- ually were active in the selection and training of members of armed forces. In time of peace they are equally active in umbered school, industrial and public clinics. In these rela- ns they seek out and try to eliminate conflicts which render individual unhappy, fearful, inefficient and unreliable in the up or industry in which he is placed.

These interests supply the motif for the programs sponsored the U.S.O. and other organizations in military training camps elsewhere. It is not to provide recreation for its own sake, as a measure for mental health, stability and morale. Wherever men and women are engaged in routine, recreation in form of dancing, art, music, wholesome fun, letters from family and friends, telephone calls, all in addition to the daily news, and religious exercises, too, promote mental health and morale because they distract from irritating monotony and self-interest. It is impossible to estimate the value of radio programs and the screen to the millions lonely and anxious at home and in camp.

The American Red Cross, its services and its publications, contribute importantly to the health and morale of men in the armed forces and war industries, of their families and of great blocks of the population in times of disaster.

The American Social Hygiene association whose organization, official publication (*Journal of Social Hygiene*) and bulletins enter every state and municipality aims ultimately, through propaganda and other educational means at the development of a public morale that will make exposure to venereal diseases improbable. It co-operates with official agencies for the cure of these diseases among the armed forces, industrial workers and in the general population, and for eliminating sources of infection. Innumerable other voluntary organizations aim at the promotion of both physical and mental health directly and by educational means. They lift the morale of millions by giving them hope and courage and the possibility of prideful participation in the world's work.

2. Economic security plays an important role in the development and maintenance of morale. The highest values that men and women cherish can hardly mature when they are nagged daily throughout life by the fear of insecurity. Hence a program for elevating morale justifiably emphasizes thrift and wise investment in property and insurance. For national morale the voluntary purchase of U.S. war bonds was especially appropriate because such purchases associated a step toward economic security with citizenship in the nation.

3. Formal academic education is a national morale builder provided it connotes broad relationships and kindles affective warmth toward the nation. Mere acquaintanceship with facts is of little avail.

4. Numerous devices, created by managers of industry, elevate the workers' loyal pride in the plant, *i.e.*, their industrial morale. These devices exhibit applications of the principle of participation which is essential to institutional, group or national morale everywhere. They include plans whereby workers may invest in the industry, become part owners of it, and therefore, theoretically participants in its management.

An especially interesting scheme for obtaining participation is illustrated in a policy of several well known industrial establishments. Workers were encouraged to submit their suggestions for improving the management of the plant, methods for reaching potential buyers and for economizing in the time and material required for production. Responsible members of the firm studied the suggestions that were offered. They found numerous practical measures, put them into operation, estimated their value and paid royalties to their authors. A proportion of the larger plants, moreover, offer facilities for in-service training and education in relation to technical processes within the plant and to the broad social implications that are involved in industry. The idea is to develop the worker's "feeling of identification with the industry," in other words to attach him as a participant to something great outside himself.

Family morale, likewise, is high or low according to the presence or absence of the participation factor. The family in which parents and children participate in work and in discussion of questions that affect all together; in which no member's identity and initiative are neglected; in such a family are found throughout life the strongest bonds of loyalty and pride. It is so likewise with school, club, church and community morale.

Creating High National Morale.—High national morale requires that all other conditions such as health, economic security, etc. be supplemented by a warm participation in the ideal life of the nation as it is today and historically. It was one of the functions of the federal Office of Civilian Defense to build morale. The Office relied largely upon the principle of co-operation in elaborate locally organized defense programs. Theoretically there was emergency work for every one to do: blacking out on signal; learning to extinguish incendiary bombs, etc. Such participation under the pressure of great public interest and enthusiasm was expected to develop national morale.

But national morale must be substantially developed and maintained on a uniformly high level in peacetime when there is no pressure of emergency. How? Procedure in Germany after 1933 was brought to light by the Committee for National Morale. In *German Psychological Warfare* the committee describes devices that nazi leaders employed to build civilian and military morale. Among other means:

1. They exalted personal strength, prowess and self-discipline. Competition in all sorts of sports was encouraged, not for personal satisfaction, but to make the contestants fit to follow the fuehrer, defend the reich and enlarge its sphere of influence. Illustrations of the heroism of the strong were always at hand.

2. They emphasized by every means, as reason for pride, the imagined superiority of the German race over all others; asserted their invincibility and repeated it, and deduced therefrom that they are destined to rule the world. They never failed to encourage the long look ahead and to assert the German capacity to meet the necessities that had been placed upon them by their foes.

3. They stimulated pride in the material resources and practical accomplishments of the German state.

4. Necessary daily work was glorified as participation in state affairs.

5. They never allowed the people to forget that the state protects them in adversity.

6. By clever propaganda they deified their fuehrer as the representative of all that is great and worthy in German history and of all that the reich is yet to be.

7. They continuously exploited the sacrificial and heroic leaders of the German folk, past and present, in picture, song and biography. Their sacrifices, wounds and death were described as in the very cause for which the present generation is urged to struggle to the bitter end. Thus naturally, the worship of heroes became a devotion to the cause of the state that the heroes stood for.

In soviet Russia the methods of morale building were essentially the same. (*See* also PSYCHOLOGY.)

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Moravia: *see* BOHEMIA AND MORAVIA.

Mormons. During the year 1942 the welfare program of the Church was further developed. In the farming and stock-raising communities labour shortage became increasingly acute owing to the large numbers in the armed forces of the country, and in defense works of various kinds, farmers and stockmen being unable to harvest crops, plant fall crops, and care for and market their livestock. Dairymen were likewise shorthanded. To meet the situation, priesthood quorums organized "change work" groups to help meet the labour shortage.

Communities were more and more securing and operating, for the benefit of the needy among them, small farm units whic were worked, so far as possible, by those who would requi some assistance in livelihood necessities. The added labou necessary to operate such "projects" was furnished by the vo unteer labour of priesthood members who are not in need.

The scarcity of building materials and priorities curtailed th Church building program. The priesthood activities of the Churc both secular and religious, were intensified. The priesthood— composed of all male members of the Church over 12 years age—were urged to take on and were assuming increased diligen in their service.

The educational program of the Church—absorbing approx mately 20% of the annual budget—was carried on during 194 without any curtailment. All teachers were retained, despite th decrease in student enrolment, and salaries were adjusted upwa to help meet the increased cost of living.

The women of the Church, through their century-old charitab organization, the National Woman's Relief society, were plannin to meet the nursing needs of the people as the doctors an nurses were more and more drained from the communities. I some areas the situation threatened to be serious. (*See* al CHURCH MEMBERSHIP.) (J. R. CL.)

Morocco: *see* FRENCH COLONIAL EMPIRE; SPANISH COLONIA EMPIRE.

Morris, Ira Nelson (1875–1942), U.S. diplomat, was bo March 8 in Chicago, Ill., the son of wealthy meatpacker. He was educated at Phillips academy, An over, Mass., the Sheffield Scientific school at Yale, and wa graduated with an A.B. from Yale in 1895. He spent only a fe months in his father's business before going to Europe, where spent most of his life. He was minister to Sweden from 1914 1923. In 1926, he accompanied Queen Marie of Rumania on h American tour. Though he was not actively engaged in busines he maintained extensive interests in railways, banks and corpor tions. Morris died in Chicago, Jan. 15.

Mortgages, Farm: *see* AGRICULTURE; FEDERAL LAN BANKS.

Mortgages, Home: *see* NATIONAL HOUSING AGENCY.

Moscow. Since the beginning of the war with Germany, Mo cow had by the end of 1942 passed through thr different periods. Until Oct. 1941, military operations did n seriously interfere with the life of the city, but in the secon period which began early in Oct. and lasted up to the beginni of Dec. 1941, the German army made a supreme effort to encirc and capture it, and the front line approached as near as 20 m During this period Moscow lived in a state of siege, but Dec. 13, 1941 it was officially announced that the danger of e circlement and capture was definitely removed and that the Ge man army had been forced to retreat. Then began the third peri in the war-time life of Moscow. The front line was thrown ba and in 1942 its nearest point was about 120 mi. away. Some i stitutions as well as part of the evacuated population returned Moscow, but many thousands remained in evacuation areas.

In Oct. 1942 the population of Moscow was 2,800,000, again 4,137,000 in 1939. The chairman of the Moscow Soviet stated that time that during 1942 the schools had opened on time a added "the theatres and cinemas are functioning normally a every citizen lives a full, eager life devoted to the task of servi the Red army." Many Moscow factories, as a result of the achievements in socialist emulation, were awarded Red banners the state defense committee: Mobilized men from factories we aced by women who underwent intensive training in skilled . In 1941 the Germans laid waste the Moscow coal basin but as stated "not only has it been restored, it is turning out veen 25% and 30% more coal than it did before the war. Our er stations, factories and institutions are well stocked with for the coming winter of 1942–43. Tens of thousands of our le have gone out to the forests to cut firewood. They have dy stocked several million cu. feet of timber. Hundreds of els tie up each day at the wharves with loads of timber. We repairing damaged houses and flats and making them thor- ly weathertight. Everybody is helping. Over 2,000 well pped flats have been provided for the families of our Red y men. We have plenty of food stored away. We shall, of se, have to economize, but we shall not starve."

hus was the situation in Moscow on the eve of the winter of –43 officially described. (A. M. Bv.)

tion Pictures.

The motion picture industry in 1942 was "stripped for action," literally as well as atively. Names that spelled money, power and importance in motion picture world joined the armed forces. At the year's more than 4,000 of those directly concerned with the mak- of pictures were in uniform, including producers, directors, , writers, technicians and artisans of all kinds. Close to 900 s were in the service. The total represented 22% of studio personnel.

utstanding names of the industry in the armed forces in- d Gene Autry, Richard Barthelmess, Freddie Bartholomew, e Cabot, Jackie Coogan, Broderick Crawford, Donald Crisp, glas Fairbanks, Jr., Clark Gable, William Haines, Stirling den, Peter Lind Hayes, Louis Hayward, Jeffrey Lynn, Ray- d Massey, Burgess Meredith, Robert Montgomery, Wayne ris, Richard Ney, Gene Raymond, Cesar Romero, Charles ddy) Rogers, James Stewart, Robert Stack, Lee Tracy, Irving r, Darryl F. Zanuck, Eugene Zukor, Frank Capra, George or, John Ford, Garson Kanin, William Keighley, Anatole k, Gene Markey, Hal Roach and Robert Presnell.

dded to this devastating loss of manpower, the motion pic- industry also functioned in an atmosphere of increasing re- s and increasing expenses, of ever-growing demands for its uct and decreasing facilities with which to make its product.

he theatres in 1942 did a tremendous business, but while e was more money coming in there were fewer things which on picture money could buy. Executives who once had cas- added half a million dollars to a picture's budget now ap- d for such unimportant objects as old nails.

e greatest problem was the dearth of leading men. All studios engaged in recruiting masculine talent and acquiring stories could be produced with a minimum of males of military serv- ge.

llywood rose to the occasion and met this challenge by pro- g some of the finest pictures in many years. It is no mean te to Hollywood that in 1942 under these trying conditions was an increase rather than a diminution in the quality of roduct.

e capital investment of the industry in 1942, according to ates of the Motion Picture Producers and Distributors, Inc.,

Theatres	$1,900,000,000
Studios	125,000,000
Distribution	25,000,000
	$2,050,000,000

e Producers and Distributors organization estimated federal s at $160,000,000 in 1941, and state and municipal taxes at ,000,000. According to the most dependable surmises, 1942 federal taxes increased about 30%, and state and municipal taxes about 10%, over the 1941 figures.

ROSALIND RUSSELL, U.S. motion picture actress, at a United Service organizations party in Camp Bowie, Tex., in 1942. Stage and movie stars made innumerable tours of U.S. camps during the year

Weekly attendance figures at motion picture theatres in the United States have long been the subject of widely varying estimates. There is no question that attendance increased greatly in 1942. A conservative attendance estimate was 88,000,000, which probably indicated a 12% increase. In addition, attendance at army camp theatres ran into the millions weekly.

The estimated total box office gross of $1,100,000,000 in 1941 undoubtedly increased materially in 1942. The number of operating theatres rose from 16,951 in 1941 to 17,568 in 1942. Because of war restrictions on building, it is likely that a large part of the increase was accounted for by re-opening of closed houses.

While attendance figures were greatly up in metropolitan areas, especially in war production centres, there was a falling off in rural districts where manpower had been diverted to war work and the armed forces.

In English-speaking countries generally motion picture theatre attendance greatly increased. The foreign market as a whole, because of enemy and occupied countries, had been cut about in half by war.

Because of the constantly shifting scene, it is impossible to estimate with any accuracy the number of persons employed in the industry's exhibition, production and distribution branches. The best guess is that the number of employees in 1942 was down about 10%, probably considerably under 200,000. Because of the drainage of manpower by war, many workers doubled up. Payrolls increased probably 10%. The approximate annual payrolls of the industry had previously been estimated by the Producers and Distributors organization at $322,500,000.

The basic problem of the industry in 1942 was the obtaining of an adequate supply of raw film. Because certain of the chemicals used in its manufacture were vital for war purposes and because of the heavy production of government pictures, such as training films for the armed forces, it was early apparent that the raw film supply for entertainment purposes must be curtailed.

One over-all reduction in film, estimated at 24%, was put into effect during the year. At the end of 1942 a second cut of similar proportions loomed.

Emphasis was placed by producers on "fewer and better" pictures. The death knell of "B"—run-of-mine productions—again was sounded. But "B" pictures were still being made in 1942.

Reduction in raw film supply forced more careful shooting of pictures. Continued retaking of scenes was frowned upon, and the necessity obviated by more careful rehearsing.

Governmental limitation of $5,000 for set construction per picture also called versatility and ingenuity into play. In the old days, stage designers summoned by Hollywood sometimes were dazed to find that elaborate and costly sets were constructed to flash for only a few seconds upon the screen.

In 1942, motion picture artists were reconstructing old sets, and calling upon such substitutes as cloth and paint to "stand in" for the unobtainable solids. The success obtained may fairly be called remarkable.

Adequate substitutes were found for 50 critical materials essential in making motion pictures. Included in the list were substitutes for steel, wrought iron, bronze, brass, copper, zinc, asbestos, rubber and wool. Plaster was rapidly emerging as the all-purpose material.

To a certain extent, pictures were driven out-of-doors and often far afield to make up for the production values reduced by lack of materials. Hollywood being in a defense area, there were restrictions upon outdoor shooting. The deserts and mountains of the near interior were increasingly called upon. Yet, to accomplish this, the studios had to meet new transportation problems, brought about by rubber and gasoline limitations.

In a year of alarms, the prize bomb dropped upon the Hollywood scene undoubtedly was the $25,000 a year wage ceiling. Aside from the upheavals in the lives of high-salaried personnel, this made it doubtful how much work could be done by players in pictures and in the neighbouring field of radio, and also left the provisions of players' contracts in a hazy state. At the year's end, there was a hope of amelioration, but the situation had not yet been completely clarified.

The government had early indicated its belief in the power of motion pictures in sustaining democratic ideals and contributing to the morale of both the public and the armed forces. There was much discussion over the advisability of having motion pict declared an essential industry. At the first suggestion, howe of a deferred classification in selective service, the Screen Ac guild went on record in opposition.

Under these conditions, the manpower problem grew prog sively more acute. It was felt not only in the so-called ta classifications, but even more sharply in the technical dep ments. Thirteen branches, however, at the close of 1942 declared essential to the war effort.

Early in the conflict, in a letter to Lowell Mellett, now c of the Bureau of Motion Pictures, Office of War Informa President Franklin D. Roosevelt had said:

> The American motion picture is one of our most effective media i forming and entertaining our citizens. The motion picture must remain in so far as national security will permit. I want no censorship of motion picture; I want no restrictions placed thereon which will impai usefulness of the film other than those very necessary restrictions which dictates of safety make imperative.

Speaking broadly, the war censorship of motion pictures m be compared briefly to that exercised upon the press. In waning days of 1942, however, a flurry was caused by a le from Mellett to studio heads requesting submission of all sc before production, as "this will enable us to make suggestion to the war content of motion pictures at a stage when it is and inexpensive to make changes which may be recommended

New feature pictures approved by the Production Code ad istration of the industry in 1942 were: domestic, 521 (194 546); foreign, 30 (1941—22).

There was almost a complete lack of the obvious heavy-ha propaganda pictures of World War I. The 1942 war pict were more artistic and subtle and therefore more plausible effective. *Mrs. Miniver* and *The Pied Piper* were good ex ples of the new approach. From many regions came report sharp increases in enlistments after good war pictures had shown.

Projects initiated by the government to rally the nation be the war effort found vigorous industry support. Productio training films for the services was undertaken even before Harbor. These proved so helpful that, at the year's end, al 2,000 reels of such film were completed.

Defense and documentary films also were being turned o a steady stream to give quick and emphatic presentation of p which the government considered vital in the prosecution of war.

The industry also gave liberally of its time and talent in s ulating the sale of war bonds through personal appearances appeals of its outstanding figures. The major over-all gr called the War Activities committee, alone carried through a paign which resulted in the sale of $1,000,000,000 in war bo The same committee arranged for the production, distribution showing in 15,000 theatres of the various government shorts trailers.

Somewhat more publicized was the work of the Hollyw Victory committee, organized three days after Pearl Harbor a membership of 100, among them 48 of the screen's top stars

The most spectacular achievement was the "Stars Over A ica" campaign in September. The stars appeared in 300 Amer cities and raised a total of $838,250,000. Highly successful, was the Hollywood Victory Caravan, composed of 32 stars. T toured 12 cities to raise funds for the Navy Relief society the Army Emergency Relief. The Caravan shattered all kn attendance and box office records in the history of entertainm

The industry also sent more than 1,100 of its players to ous camps and military establishments both in the U.S. abroad. They travelled in excess of 1,000,000 mi. during the to participate in 6,828 appearances and 222 radio programs nating from camps.

HER PART in *Mrs. Miniver,* Greer Garson was awarded the 1942 Academy as best actress of the year. She is shown here with Walter Pidgeon

RUTH AND GARY COOPER in *Pride of the Yankees,* a motion picture based he life of Lou Gehrig, famous New York Yankees first baseman, whose part r plays

S CAGNEY and Frances Langford in *Yankee Doodle Dandy.* Cagney received 942 Academy award as the best motion picture actor of the year

SPENCER TRACY AND KATHARINE HEPBURN in *Woman of the Year,* voted the best original screen play of 1942 by the Academy of Motion Picture Arts and Sciences

VAN HEFLIN (left) and Robert Taylor in *Johnny Eager.* Heflin's role in this picture won him a 1942 Academy award for best supporting actor

SCENE from *The Pied Piper,* starring Anne Baxter (left) and Monty Woolley (right centre)

Direct financial contributions of the industry were heavy:

The plan under which 10% of each person's salary automatically is deducted at the source for the purchase of war bonds was originated in Hollywood. By December, under this arrangement, the studio workers were buying $300,000 in war bonds weekly.

Various public charities, such as the Community Chest, Red Cross, Russian, Chinese, Dutch and Navy Relief, received a total of $1,829,424.06 in contributions from the industry.

As its pet contribution to morale building among the armed forces, the industry established its own Hollywood Canteen. It immediately became a great success. All food and entertainment was free, but the chief attractions for the men in uniform were the stars serving as hostesses, dancing partners and waitresses.

Awards.—Academy of Motion Picture Arts and Sciences Awards for 1941 (for the principal 1942 awards see p. 459):

Irving Thalberg award, for most consistent high quality production achievement by an individual producer, Walt Disney; outstanding picture, *How Green Was My Valley,* Twentieth Century-Fox; performances—actor, Gary Cooper in *Sergeant York,* Warner Bros.; actress, Joan Fontaine in *Suspicion,* RKO; supporting actor, Donald Crisp in *How Green Was My Valley;* supporting actress, Mary Astor in *The Great Lie,* Warner Bros.; best direction, John Ford for *How Green Was My Valley;* best original motion picture story, Harry Segall for *Here Comes Mr. Jordan,* Columbia; best written screen play, Sidney Buchman and Seton I. Miller for *Here Comes Mr. Jordan;* best cinematography—black and white, Arthur Miller for *How Green Was My Valley;* colour, Ernest Palmer and Ray Rennahan for *Blood and Sand,* Twentieth Century-Fox; best film editing, William Holmes for *Sergeant York;* best art direction—black and white, Richard Day and Nathan Juran for *How Green Was My Valley;* colour, Cedric Gibbons and Urie McCleary for *Blossoms in the Dust,* Metro-Goldwyn-Mayer; best set decoration—black and white, Thomas Little for *How Green Was My Valley;* colour, Edwin B. Willis for *Blossoms in the Dust;* best sound recording, Jack Whitney for *That Hamilton Woman,* General Service; best scoring of musical pictures, Frank Churchill and Oliver Wallace for *Dumbo,* Walt Disney; best scoring of dramatic pictures, Bernard Herrmann for *All That Money Can Buy,* RKO; best song, Jerome Kern for music and Oscar Hammerstein II for lyrics for *The Last Time I Saw Paris,* from *Lady Be Good,* Metro-Goldwyn-Mayer; special effects, Fariot Edouart and Gordon Jennings for photography and Louis Mesenkop for sound for *I Wanted Wings,* Paramount; documentaries—short subjects, *Churchill's Island,* Canadian Film Board-United Artists; short subjects—cartoon, *Lend a Paw,* Walt Disney; one-reeler, *Of Pups and Puzzles,* Metro-Goldwyn-Mayer; special awards, Ray Scott for producing *KuKan,* the film record of China's struggle, including its photography with a 16 mm. camera under the most difficult and dangerous conditions; British Ministry of Administration for the documentary film, *Target for Tonight;* Walt Disney, William Garity, John N. A. Hawkins, and Radio Corporation of America for their outstanding contributions to the advancement of the use of sound in motion pictures through the production of *Fantasia;* Leopold Stokowski and his associates for the creation of a new form of visualized music in *Fantasia.*

Outstanding Pictures.—Outstanding pictures of 1942 included: *Mrs. Miniver, Random Harvest, Pied Piper, Yankee Doodle Dandy, Wake Island, My Favorite Blond, Once Upon a Honeymoon, My Sister Eileen, Casablanca, This Gun For Hire, To the Shores of Tripoli, Joe Smith American, Woman of the Year, My Gal Sal, Tortilla Flat, This Above All, Bambi, Holiday Inn, Pride of the Yankees, Talk of the Town, Wings and the Woman, The War Against Mrs. Hadley, Across the Pacific, Now Voyager, The Major and the Minor.*

1941 was a banner year for outstanding films, but even th failed to compare with the war year of 1942. The New Yo critics selected Noel Coward's epic, *In Which We Serve,* as t best picture in 1942. The picture was made in England; a Noel Coward wrote, directed and acted in it.

Outstanding Actors.—The *Motion Picture Herald* in its a nual review listed the ten biggest money-making stars of 194 For the first time in three years, Mickey Rooney lost his positi at the top. The two comedians, Bud Abbott and Lou Costel were listed as the greatest draws at the box office, which was amazing tribute to their personal popularity, for their pictu were not especially outstanding.

The others named in order were: 2. Clark Gable, 3. Ga Cooper, 4. Mickey Rooney, 5. Bob Hope, 6. James Cagne 7. Gene Autry, 8. Betty Grable, 9. Greer Garson, 10. Spenc Tracy. (L. O. P.)

Little new studio and theatre equipment was developed duri 1942 because of the lack of materials and manpower caused the national war effort. Certain projects, the principal work which had been accomplished in previous years, were complet and material conserving techniques were evolved.

Optics.—The evaporative process of applying anti-reflecti coatings on lens surfaces came into more general use on came lenses at Twentieth Century-Fox, Technicolor and Paramou Improvement in transmission of 37% for a six-element lens sembly was experienced. The baked coating is of sufficient ha ness to allow cleaning with lens tissue and benzine.

A limited number of large flat glass surfaces such as projecti port glasses at Twentieth Century-Fox and camera blimp windo were treated by the new RCA Magicote "C" method of applyi anti-reflection coating. This method was the commercializati of the Nicoll acid vapour method of reducing the reflectance glass by exposure to hydrofluoric acid vapour. It was not possi by the close of 1942 to apply this treatment to other than surfaces, but the coating secured was of great durability and method allowed the handling of large glass sheets—a procedu not possible with evaporative methods to date.

Film.—The use of fine grain positive film for release pri continued to gain. Most studios were employing this release m dium. Almost all users of variable density recording also adop fine grain sound negative stocks as standard. RKO, among variable area users, adopted fine grain positive emulsions sound negatives. Essentially all studios were making sound pri on fine grain positive stock.

The problem of maintaining accurate print control with f grain positive emulsions and mercury vapour lamps was solv in the case of the M-G-M laboratory by controlling the la intensity by a feed-back circuit actuated by a photoelectric on which falls a portion of the light from the lamp. This cuit was devised by M-G-M in conjunction with DuPont Hanovia and not only corrects for variations in the light out of the lamp but can be used as a light meter for establishing absolute level of the light required for various types of prints.

Triple head process projectors were widely used by War Brothers, RKO, and Paramount. The Paramount projector a relatively silent machine which could be used without sound absorbent booth. The three projection heads, whose co bined light output approximated 50,000 lumens, were mounted a special base. Each unit could be removed and used on an in vidual base as a conventional single-head process projector. eliminating the need for a separate, permanent triple head u a considerable investment was saved.

Along with this improvement in process projectors, Paramo solved the problem of handling process screens and portable li bridges for top lighting above transparency screens by use ni-monocoque steel frames for these screens and light bridges. he screen frames mounted on caster-equipped elevating jacks for nsportation and elevation to "shooting" position without plat- ms. The bridges, inverted "U" shaped structures, telescoped th vertically and horizontally without the benefit of bottom tie ls. They were particularly useful for straddling sets and could used to support both lights and the process screen if desired.

Wartime restrictions made location work difficult and fostered t only a larger amount of process projection of the motion pic- e type but also greatly increased the use of still background ojectors. Paramount developed and employed a unit consisting a multiple relay optical system in conjunction with a still pro- tor. This equipment supplied approximately $2\frac{1}{2}$ times as much ht as conventional projectors. The increased heat of the light m was selectively attenuated by a water cell which absorbs far infra red and cools a near infra red filter glass thus min- izing plate breakage and emulsion fading.

In addition to conservation of sound film stock by pre-selection "takes," a practice common in many studios, Republic added -selection of picture negative stock. Punches were used to boss the film between scenes, and a careful log was kept dur- the actual shooting. Scenes which were not required could n be identified in the dark room by locating the punch marks, noved from the roll, spliced together, and used as "leader" ck for dubbing masters.

Sound.—A number of studios standardized on a uni-directional crophone which provided a smooth frequency characteristic l reduced rear reflections by approximately 15 DB. This micro- one was mounted in a case designed for relative freedom from d noise caused both by actual wind and by "panning" on a crophone boom. The unit was rugged and had sufficient mass oad suitably conventional microphone boom suspension mounts.

Republic continued to use class B push pull variable area ording for all original production recording and music scoring. s system simplified the equipment by elimination of noise re- tion amplifiers and shutters, simultaneously providing maxi- m noise reduction—an inherent feature of this type of class B nd track.

The RCA three layer dichroic reflector continued in use at entieth Century-Fox and was also introduced at Republic for otocell monitoring of the recording light beam. This reflector, sessing a transmission of 95% at 4,400 angstroms and a re- tivity of 65% at 7,340 angstroms, when placed in the light m of a recording optical system transmits the actinic rays ch expose the film and reflects the deep red rays to a caesium otocell for monitoring purposes.

The electronic mixer or volume compressor used in variable a recording channels was improved in performance by Warner others through the introduction into the control circuit of this t of a spectral energy equalization circuit. This circuit in- ased the action of the compressor at the higher speech and sic frequencies at which high peak powers are encountered of h short duration that insufficient energy exists to suitably uate an unequalized compressor.

A single film recording system developed for the use of the ned forces consisted of a recording sound head capable of being unted on conventional picture cameras in place of the stand- magazine without any mechanical coupling to the camera. ra-violet variable area class B push pull sound track was re- ded directly on picture negative stocks with wide processing rance achieved through the use of larger than conventional ro lines" in the class B optical aperture.

Lighting.—Essentially no new development occurred in light- practice because of the government limitation on critical ma- als for new types of lamps or lighting fixtures. Because of the increased speed of motion picture emulsions, the light intensity continued low and further use was made of control by means of individual dimmers on lamps. Conservation of lamps and carbons employed in arcs was accomplished through rehearsals effected with a minimum of light.

Colour.—Usage increased of the 16 mm. kodachrome to 35 mm. technicolor "blowup" technique, pioneered in 1941 by Warner Brothers. This procedure was used by the United States navy for the release prints of the Battle of Midway.

Technicolor introduced a three-colour single film emulsion, known as Monopack. This film could be used with any standard camera possessing a suitably colour-corrected lens and greatly simplified the making of a technicolor picture negative.

The armed forces recognized the value of colour in combat and training films, since it had been observed in such films that patterns could be recognized and objects identified in less time than with black and white photography.

Theatre Equipment.—There was increased installation by theatres of the Century and Brenkert picture projectors. Universal standardized on the use of Brenkert projectors for studio projection rooms.

RCA introduced to the theatre and studio field a new sound screen known as the "Snow White" screen, which meets the S.M.P.E. requirements for sound transmission and possesses a light distribution characteristic that only varies from 93% reflectivity at the angle of incidence to 75% at 60° from incidence. The reflection factor is essentially constant at 85% at 420 millimicrons. The screen therefore exhibited essentially the characteristics of a matte surface with low spectral discrimination. Cost was approximately one-third that of conventional screens of equal performance. (*See* also PHOTOGRAPHY.) (B. K.)

Motor-Boat Racing.

The 1942 motor-boat racing season in the United States suffered severely from wartime restrictions and gasoline rationing, which forced the cancellation of nearly all the nation's outstanding regattas. Such activity as there was was confined to southern waters early in the year and to those midwestern and Pacific coast areas where motor fuel was not at the time restricted. There were few, if any, new boats built for either speed or cruiser racing.

In spite of the limited number of events and participants, five new speed records were certified by the racing commission of the A.P.B.A., as listed in the accompanying table.

Inboard Mile Trials, 1942

Class	Speed	Boat	Driver	Place
225-cu.in. hydro (II)	77.670	Invader	Thos. Ince	Lake Elsinore, Calif.
135-cu.in. hydro . .	73.781	Dinah Mite	Bud Meyers	Salton Sea, Calif.
Class B Rac. R'b't. .	48.387	Dragon XV	Sammy Crooks	St. Petersburg, Fla.
Inboard Competition (5 Miles)				
Class C Rac. R'b't. .	48.361	Saganna	Fr. Foulke	Miami, Fla.
Class B Rac. R'b't. .	45.778	Dragon XV	Sammy Crooks	Lakeland, Fla.

The major trophy events held in 1942, and their winners, were as follows:

Inboard Trophy Winners, 1942

National Trophy (National 91 Champion, St. Petersburg)—"Tops Pup," Jack Cooper.
Auerbach Memorial Trophy (Miami)—"Mercury," Marion J. Cooper.
Hearst Trophy (New Martinsville, Ind.)—"Tempo V," Guy Lombardo.
Palais Royal Trophy (New Martinsville, Ind.)—"Tempo V," Guy Lombardo.
Pacific Motor Boat Trophy (Salton Sea)—"So Long, Jr.," Lou Fageol.
Webb Trophy (Springfield, Ill.)—"Tops IV," Jack Cooper.
International Aquagatta (Buffalo)—"Chrissie IV," George Schrafft.

In the outboard competitive field, the same conditions governed as in the inboard events. The chief regattas of the east were cancelled, but outboard competition continued on a limited scale in the midwest and Pacific coast areas. The following awards were made:

Outboard Trophies and Winners
Eastern High Point Champion—Don Whitfield (amateur).
Eastern High Point Champion—Fred Jacoby, Jr. (professional).
Hearst Perpetual Gold Trophy (Long Beach, Calif.)—Herb Rimlinger.
New Jersey Outboard Assn. Marathon—Charles Strang.

(H. L. St.)

Motor Buses: *see* AUTOMOBILE INDUSTRY IN THE WAR; MOTOR TRANSPORTATION.

Motor Cars: *see* AUTOMOBILE INDUSTRY IN THE WAR.

Motor Racing: *see* AUTOMOBILE RACING.

Motor Transportation.

The common carrier motor bus industry comprised two main operating groups, those companies operating intercity or long-haul service and those engaged in purely local service within the limits of a single city and its adjoining suburban areas. A common carrier is defined as one that operates between fixed termini at a fixed rate of fare. Common carrier operation was protected by franchise or certificate granted by a regulatory body. The long-haul common carriers divide roughly into companies operating within the boundaries of one state, known as intrastate carriers, and interstate carriers, which were licensed to operate across state boundary lines.

All types of common carriers were closely regulated, either by state, federal or municipal agencies, and in some cases by all three. Interstate highway carriers were under federal regulation after 1934. The body charged with this responsibility is the Motor Carrier Bureau, a division of the Interstate Commerce Commission. Intrastate carriers, those operating solely within the boundaries of a state, had long been under the regulation of their respective state governments.

The fundamental provisions of both federal and state regulation were similar. In addition to the granting of operating certificates, regulation also covered insurance requirements: equipment specifications; a standard accounting classification; the filing of tariffs, and compliance with the rates filed in those tariffs. City or local carriers were regulated in a somewhat similar manner either by the governing bodies of the cities or municipalities in which they operate, or the state regulatory bodies.

The Office of Defense Transportation, with Joseph B. Eastman as director, came into being as a result of an executive order issued Dec. 18, 1941, by President Roosevelt. The order delegated to ODT sweeping emergency powers over the nation's transport facilities. Its powers were further broadened by executive order issued May 2, 1942. This latter order, among othe things, directed ODT to "formulate measures to conserve an assure maximum utilization of the existing supply of civilia transport services dependent upon rubber, including the limitatio of the use of rubber-borne transportation facilities in nonessentia civilian activities, and regulation of the use or distribution of suc transportation facilities among essential activities."

THE FIRST BRITISH BUS with producer-gas trailers appeared on the streets of London in 1942. Producer-gas is derived from coke or anthracite

Acting under this mandate ODT issued various orders durin 1942 which had a marked effect upon motor carriers, both moto bus and motor truck. State, municipal and federal regulator bodies worked closely with ODT in implementing its wartim measures. Chief measures were those which abolished charter an sightseeing services for the duration, which curtailed city services and brought similar curtailments to intercity and other types o long haul service.

Buses.—The common carrier motor bus industry in 1941 represented an investment of approximately $550,000,000 in plan and equipment. This does not include a valuation for franchis rights, which under many state laws could not be capitalized.

Motor bus riding increased tremendously in 1942 in both cit and intercity fields. Main contributing factors were the lessene use of private automobiles, and increased riding stemming directl and indirectly from the war effort. In cities, for example, an particularly in heavy manufacturing centres, to-and-from-wor riding increased as much as 60% over 1941 in some instance and the nation-wide average was over 40%. Intercity carriers fo the year likewise showed increases of 60% above 1941 for th whole of the United States.

An actual count of passengers carried in 1942 on motor buse was not available at the close of the year. However, based o 1941's total of 4,800,000,000 passengers, a fair estimate would b 8,000,000,000 bus riders in all common carrier categories fo 1942, or an increase of over 3,000,000,000 passengers compare with 1941.

Including 1942 deliveries the line haul carriers of the moto bus industry owned and operated approximately 65,000 buse There were some 3,500 common carrier companies, divided 2,60 in intercity service and 900 in local transportation. Service wa given by these carriers over approximately 393,000 mi. of highway of which 345,000 was intercity route and approximately 48 000 miles represented city and suburban operation. In additio there were 79,000 school buses serving 1,383,000 mi. of scho route, and carrying 4,259,000 school children daily to and fro their classrooms.

The previous ten years showed an ever-quickening changeov from street railway to bus operation in cities. In 1942, 726 citi having a population of more than 10,000 were served entirely b buses. (There were 1,077 cities in this population group.) Substitution of buses for street cars, however, was halted for th duration under orders from ODT.

Buses were shouldering a number of purely military respons bilities. For example, the selective service system was using buse on a large scale for shuttling drafted men to and from examin tion and induction points, while the army itself used commerci buses extensively for carrying troops in military movements. Th carrying of army, navy and other military personnel on furloug and for the transfer of men between posts and bases, likewi afforded the industry a significant opportunity to perform esse tial wartime services. Should the evacuation of certain areas b come necessary, or should it be necessary to transport large arm forces across the country with the utmost speed, the industr with its vast available pool of equipment and trained personn would be ideally fitted to shoulder that responsibility, and pla were prepared against such an eventuality.

Trucks.—There were many ramifications to the motor tru

Table I.—*Distribution of Motor Truck Fleets by Industries in the U.S.*
(Source: *Commercial Car Journal*, figures of March 1941)

As of March, 1941	Fleets of 8 or More Trucks	
	Fleets	Trucks
eries, Candies, Florists	1,485	62,342
lers, Breweries	930	24,046
l Dealers, Mineral Mines	1,041	18,297
tractors, Builders	2,457	50,775
y Products, Milk, Ice Cream	1,485	62,553
artment Stores, Furniture	417	11,020
r, Feed, Grains	140	3,433
ernment, State, County, Municipal	2,060	239,902
Dealers, Manufacturers	575	15,011
ndries, Cleaners, Dyers	1,556	34,766
ufacturers, Steel Mills	837	15,624
ts, Fish	670	17,489
or Freight, Local, Inter- and Intra-State	5,301	176,313
spapers, Publishers	137	4,988
ts, Chemicals, Drugs	170	3,723
oleum Products	1,224	75,045
ic Utilities, Railroads	1,210	79,545
ners, Vegetables, Chain Stores	1,517	39,769
ellaneous	1,059	23,851
otals	24,271	958,492

and in size it far exceeded the bus field. Trucks were used only by cartage companies in cities and by long-distance haul- but by private businesses as a part of their service to cus- rs. The 1942 edition of "Motor Truck Facts" published by Automobile Manufacturers' association showed, for instance, there were 1,047,084 trucks on farms alone. This same issue ed that 4,911,500 trucks of all types were licensed during the 1941.

e large truck fleets were owned mostly by private shippers. Bell Telephone company, for instance, operated 18,200 s; Standard Oil of New Jersey, 12,000; the National Dairy ucts company, 8,805. According to compilations of the Auto- le Manufacturers' association 36 private companies operated than 1,000 trucks apiece.

ilroad use of motor trucks was rapidly expanding. In 1925 a of 900 trucks were used in railroad service. By the end of this had grown to approximately 94,000 trucks in railroad A 1941 report showed that trucks served 54,000 communities eached by the railroads.

e trucking industry in 1941 gave employment to more than ,000 drivers, with an uncounted number of freight handlers, anics and helpers. It is closely regulated in every state as to weights and speeds and must conform to innumerable other ations both state and federal. (*See* also AUTOMOBILE INDUS- IN THE WAR; BUSINESS REVIEW; HORSES; MUNITIONS OF) (C. W. S.)

her Countries.—Since more up-to-date figures were not able, and, even if available would be useless as a guide to the r transport on the roads, the numbers of motor vehicles in principal countries of the world at the beginning of 1939 are .

ble II.—*Motor Vehicle Registrations, Exclusive of U.S., in Early 1939*

Country	Private Cars Taxis '000's	Trucks Buses '000's	Total '000's
ed Kingdom	1,916	626	2,542
ce	1,750	500	2,250
nany	1,306	402	1,708
da	1,161	220	1,381
ralia	552	252	804
S.R.	85	593	678
	303	86	389
n of South Africa	294	45	339

1942 the decline in the numbers of vehicles continued, and any countries, especially in or close to the war areas, even sary motor transport, *e.g.*, the delivery to retail customers odstuffs, was curtailed. In Great Britain 1941 closed with te motor cars having a basic allowance of gasoline, which ed the car to run about 160 mi. a month regardless of the purpose for which it was used. This was reduced to about half, and ceased altogether at the end of June 1942. Subsequently all gasoline issued was for particular uses, and motorists using it otherwise were liable to heavy fines. In France the cut was even greater; it was well-nigh impossible to obtain gasoline for any use not definitely a government object. Generally this was the condition in all countries in Europe occupied by the Germans. Though the reduction was perhaps greatest in Europe, some reduction was universal. For instance, in South Africa the basic allowance of gasoline for private cars permitted of some 400 mi. per month being driven.

The reduction in civilian motor transport was not met by a corresponding rise in military transport. In some countries, owing to shortage of fuel, this even declined from the level of 1941. As a result, there was substantially less traffic on the roads even allowing for some increase in animal drawn traffic and pedal cyclists. In consequence the heavy toll of persons killed and injured on the roads declined. In Great Britain, since the beginning of July 1942 the reduction of deaths was about 25% on the figures for 1941. The number injured fell more than 30%. A regrettable feature was that the number of children killed or injured remained high. Great Britain and the bulk of the continent of Europe were liable to attack from the air; therefore street lighting was nonexistent, and the lights on vehicles were severely curtailed. This inevitably added to the dangers of motoring. Moreover, vehicles were getting older, many being continued in use long after they would have gone to the scrap heap in normal times. Over and above this the standard of maintenance declined and vehicle failures were more frequent. (*See* also ACCIDENTS; RAILROADS.) (W. T. St.)

Motor Vehicles: *see* AUTOMOBILE INDUSTRY IN THE WAR.

Mountbatten, Lord Louis (1900–), British chief of the combined operations (commandos), was born June 25 in Windsor, England, as Louis Francis Albert Victor Nicholas of Battenberg. His father, Austrian-born Prince Louis of Battenberg, was a cousin of King George V; his mother, Princess Victoria, was the eldest daughter of Louis IV, grand duke of Hesse, and a granddaughter of Queen Victoria. His father, who was a British admiral during World War I, retired from the navy and relinquished his title because of anti-German sentiment and changed the family name to Mountbatten in 1917. A naval cadet at 13, Lord Louis Mountbatten served as a midshipman aboard British battleships during World War I and was a sub-lieutenant in a submarine flotilla at the armistice. Early in World War II he was a captain in command of a destroyer flotilla and was in the thick of naval battles off Norway and Crete. Two destroyers he served on were mined and torpedoed, respectively; he brought each back to port safely; a third was sunk by nazi dive-bombers off Crete and he was picked up by another warship. In May 1942 Prime Minister Churchill revealed that Lord Mountbatten had been chosen to replace Sir Roger Keyes as chief of the commandos. As head of the combined operations of three military services, he directed the commandos in their daring raids in 1942 off the coasts of Norway and France.

Mount Holyoke College. An institution for the higher education of women in liberal arts, founded in 1837 by Mary Lyon and situated at South Hadley, Mass. In 1942 a unit of the naval reserve midshipmen's school (WR) was established on the campus, and some of the college facilities were turned over to the United States navy without decreasing the college enrolment. The campus covers

480 ac. with more than 70 buildings. For statistics of student enrolment, faculty, endowment, library volumes, etc., *see* UNIVERSITIES AND COLLEGES. (R. G. HA.)

Mozambique: *see* PORTUGUESE COLONIAL EMPIRE.
Muang Thai: *see* THAILAND.
Mules: *see* HORSES.

Municipal Government.

Their first war year found U.S. cities adhering remarkably close to the defense pattern laid down in 1941. Some of the war problems indicated in that year stood out in sharper relief, and fresh ones were added. On the other hand, cities in many instances were enjoying a new vigour and prosperity stimulated by wartime activity, though recognized as probably of temporary duration. Fiscal problems engendered by greatly increased expenditures without a corresponding increase in revenues were becoming a major item of concern. Consciousness of the temporary character of the war setup and economy produced widespread interest in postwar planning with a view to bridging effectually the gap between war and peace when hostilities end.

Transportation; War Damage Insurance.—Municipalities continued their collaboration with the federal and state governments and the assumption of local responsibilities in the successful prosecution of the war effort. The transportation crisis resulting from curtailed use of private motor cars was being met by a nation-wide plan, set up by the Office of Defense Transportation, to secure the greatest possible use of existing local transportation facilities. This included: (1) staggering business, school and working hours; (2) group riding; (3) improved traffic regulation and control. It called for establishment of a transportation committee and an administrator on both the state and local levels. By July 1, such programs were either instituted or underway in every state. Over 500 state and local war transportation administrators have been appointed. Staggered hours and group riding plans were in effect in many cities. About 40% of the bus stops were eliminated in New York city. Many other adjustments in the use of local transportation facilities were in process everywhere.

Local governments were requested by the Office of Price Administration to designate a municipal government mileage administrator to survey the transportation needs of the various departments and arrange to reduce driving by 40% or more as compared with 1941. Local government officials and employees were given preferred mileage in connection with their official duties. Gasoline rationing had not up to the close of 1942 seriously affected the operation of essential city services.

Many cities purchased federal war risk insurance, made available July 1. Most cities insured city buildings and their contents, city bridges and reservoirs; others, police and fire alarm systems, automotive equipment, and municipally-owned utilities.

Defense Housing.—The federally aided public housing program furnished the only widespread example of the city building and rebuilding which must be undertaken on a huge scale after the war. This was essentially a local program, despite the federal aid feature. The Federal Public Housing authority supplied government housing. It used local housing authorities wherever possible to construct and manage war housing projects; in other cases, it sought the advice and help of local officials. (*See* also HOUSING.)

The National Housing agency (into which 16 federal housing organizations were consolidated in February) evolved a war housing program based on the needs of an estimated 1,600,000 immigrant workers, one-half of which entailed new construction to be financed 60% out of public funds. The $600,000,000 Lanham act appropriation for this purpose voted in October brought total of federal funds provided for publicly financed war hou projects up to $2,017,288,800. A supplementary leasing prog was also announced, involving conversion of existing pri structures into homes for war workers.

Provision was made for payments in lieu of taxes to be m to local governments by both federal and local housing proj so far as the revenues permit in the latter case.

War Production Board.—In order to deal with the pri requirements of municipal governments and other governme institutions, there was established in the War Production boa "Governmental Division."

Finances.—Several aspects of municipal finance sho marked improvement over prior years, reflected in either existing or expected surplus in a number of cities. But the r rates of expenditure with no corresponding increase in reve and the prospect of a decline in revenues from non-tax sou were causing considerable concern. A survey of 185 cities sho two-thirds of them to be spending more in 1942 than in 1941, nearly 10% to be spending as much. Increased amounts expended for safety, health and sanitation, salaries and wage employees, and reserve funds for emergencies. Population creases, salary and wage rises, the higher cost of supplies, an some cases the assumption of new activities, were responsible the increased outlays. Civilian defense was in most cases ing more in 1942 than in 1941, especially in war industry cen and cities in coastal areas.

To offset increased expenditures and decreasing revenues, e omies were effected through deferment of capital construction essential to the war effort; reduced street maintenance and b ing inspection; doubling up on vacancies in city departments; tailment of city services; and the adoption of various devices greater operating efficiency.

Tax collections improved, due to the upward trend in gen business conditions. But losses in non-tax revenues were n because of decreases in state gasoline and motor vehicle lic taxes, in bridge and tunnel tolls, parking meter fees, building mit fees, and business licence revenues. However, few sources of local revenue were found necessary.

The average tax rate of cities declined slightly in 1941–4 the first time in seven years. There was a slight increas assessed values. These trends were reversed, however, in larger cities (over 500,000 population), which continued to s a decrease in assessed values—though at a decelerated rate— an increase in tax rates.

The drastic curtailment of capital outlays brought a pr itate decline in municipal borrowing. State and municipal sales, for instance, which totalled $1,229,493,072 in 1941, amou to only $570,240,728 in 1942—much the lowest figure in a dec Election authorizations of municipal bonds totalled $50,559 for the first ten months of 1942—a drop of $120,973,000 f the same period of 1941. No sizeable issues for capital cons tion were authorized at the November elections. Interest on municipal bonds were 2.13% and 2.16% on Nov. 1 and De respectively, according to the Bond Buyer's monthly index b on bonds of 20 large cities, compared with 1.90% and 1.9 respectively, in 1941—the lowest yields on record.

A census bureau study showed a decline of 2.2% in the g debt of cities of over 25,000 population during the 1942 f year. Even New York city reduced its debt $19,000,000, in trast with prior years. This reduction reflected the trend in p tically all units except local housing authorities, which obliged to expand their indebtedness to meet the needs of def housing.

Relief.—With the unemployment situation considerably d by the demands of the war situation, local expenditures for f diminished notably in 1942. When WPA was abolished in ember by presidential order, the number of WPA employees declined from a peak of 3,335,000 in 1939 to about 350,000.

rsonnel.—The lack of any manpower program as applied to ic employees resulted in a sharp loss of employees to the ary services or to defense industries. This was being met in a oer of cities by adoption of a temporary wartime appoint- s program, as in Detroit and Los Angeles; also in San cisco, subject to state ratification. Pasadena was experi- ing among its employees with the "manning tables," ap- by the War Manpower commission in determining a man's rtance to essential war industries. In New York, Mayor uardia appointed a local manpower commission, to place be- local draft boards requests for deferments of trained city oyees whose loss would endanger essential city services.

essure continued for salary increases due to the rise in the of living. An important government statement issued in mber specified that municipal governments, within certain ations, may adjust salaries and wages upward without prior oval of federal agencies. In-service training programs for cipal employees included full-time courses for finance ad- tration personnel at the University of Kentucky in the sum- of 1942, and preparation by the Bureau of Training of the Service commission of a comprehensive three-year training am for New York city's 32,000 transit employees. All war ng for civilians was being centralized in certain states, nota- New York and Pennsylvania, under their state war councils. ols financed from OCD funds were opened at various uni- ies for firemen, policemen and others to qualify them to instruction in civilian defense training programs in their ctive states and communities. The National War Labor on Dec. 15 decided, in a case arising out of a strike of rk, N.J., city employees, that it was without jurisdiction to ene in disputes between cities and their employees. This tant decision—which also averted a threatened strike for a wage increase by the New York city transit employees— leemed a signal triumph against federal invasion of munici- ome rule, civil service, local budget control, and other safe- s of local self-government.

y Manager Plan; Proportional Representation Elections. neteen additional cities and one county in the United States ed the council-manager plan in 1942, giving a total of 537 cities and 7 such counties in this country as of Dec. 31, Houston, Tex., became the third largest city in the United s to operate under a council-manager charter. One city to abandon the plan, making a total of 28 cities which abandoned the plan during the 34 years since it was first urated. Lowell, Mass., became the tenth proportional repre- ion city in the United States, besides adopting the council- ger plan. Yonkers, N.Y., voted to retain P.R. by a vote o to one, against the combined opposition of both the Re- can and Democratic party organizations.

nning.—One of the most important developments in the ing field was the increased dependence on regional rather municipal planning in connection with such wartime needs cuation programs, traffic relief and transportation plans, war ng, and postwar planning. The regional planning committee in the Detroit defense area, for instance, represented 10 The already famous Uthwatt Committee report from Britain (*Report of the Expert Committee on Compensa- nd Betterment*), dealing with the public control of the use d with a view to safeguarding reconstruction after the war, nvisaging national control over local planning agencies, was tstanding interest to American city planners and public officials.

Postwar Planning.—The shortage of manpower and materials, plus the need to economize, necessitated the wholesale deferment of capital improvements until after the war. Many cities, however, engaged actively in the preparation of plans for postwar construction and reconstruction. Nine states enacted laws authorizing their cities to build up reserves now for postwar improvements so as to absorb the manpower released from war activities without creating large volumes of new indebtedness. The National Resources Planning board continued its activities in this field. Its pamphlet, *Better Cities,* presented some basic ideas for rebuilding the cities after the war on a scale never undertaken heretofore.

Miscellaneous.—The tragic Cocoanut Grove night club fire in Boston in November, which took nearly 500 lives, resulted in the arrest of a number of city officials, including the city building commissioner, city building inspector, a police captain and fire lieutenant, and brought home to all city governments the need to expand the investigation of fire hazards to all large places of public entertainment.

(L. Gu.; A. M. Ds.)

Munitions of War.

As 1943 entered, the United States could look back upon two years of increasing accent upon that whereon depended most directly its continued existence—munitions of war. Men it had, and in numbers sufficient, but the problem of supplying them, and others allied, with the tools of warfare was still paramount. 1941 had been a year of guns *and* butter, with every effort directed toward maintaining production of commodities for civilian consumption at the highest level compatible with the current defense effort. As 1942 came upon the scene, with Pearl Harbor a fresh and bitter memory, the picture changed. Now it was *guns*—butter too, if possible, but guns anyway. But as 1942 drew to a close, it was GUNS! Butter, even in the absence of official rationing, had already become next to unobtainable in many urban areas.

Fantastic production figures set for 1942 were met in some instances, missed by varying margins in others—surpassed in a few. In January, President Roosevelt had called for 60,000 aeroplanes, 45,000 tanks, 20,000 anti-aircraft cannon, and 8,000,000 tons of new merchant shipping before the year's end. Of these, some 85% were produced, viz.: 48,000 aeroplanes, 32,000 tanks and "motor gun carriages"—self-propelled guns called "tank destroyers"—and 8,090,800 tons of cargo vessels. In some instances, quantity figures had been revised downward to permit greater accent on quality (*i.e.,* greater endurance, speed and striking power). By the end of September, United States war expenditures since July 1940, had reached $50,000,000,000; for 1943, were estimated at $90,000,000,000 more. The overall program, spent and to be spent, now called for $240,000,000,000—as against a total of $64,000,000,000 for military purposes, World War I included, during its first 150 years of existence.

The close of 1942 witnessed a world of warring nations, all attempting to develop new and more formidable weapons, but everywhere under conditions of utmost secrecy. Thus the United States refused to release a word descriptive of any innovation in combat matériel until it was known positively that a specimen had actually been captured by enemy forces. Meanwhile, preexisting types continued to perform with varying efficiency. We find, with respect to:

Aircraft, Army.—As in the past, horsepower ratings were increasing, with single motors developing upward of 2,000 h.p. Ceilings were rising toward 50,000 ft. Low-level bombing was becoming increasingly popular, while the problem of how to register hits on "hedge-hoppers" with anti-aircraft guns remained difficult of solution. Bigger bombers and cargo carriers, of sizes predicted to stagger the imagination, some of tail-less construction, and mounting heavy cannon, were on the way. Fighters were heavier and farther ranging.

German fighter planes appeared with pressurized cabins for operations at extremely high altitudes since at above 10,000 ft. the oxygen available becomes too scanty for normal human activity, while above 25,000 ft., auxiliary oxygen equipment is necessary. At above 40,000 ft. life cannot be sustained even in an atmosphere of pure oxygen save in a sealed compartment (cabin) under pressure. But planes were already operating at such heights, and higher, as witnessed by the destruction during the year, at 50,000 ft., of a German Junkers 86 pressure-cabin reconnaissance-photographic plane by a British Spitfire. To perform at these levels, powerful engine superchargers were required. These increased overall weight, but apparently without appreciable detriment to manoeuvrability.

Fighters.—Weights varied from 7,000 lb. (Germany's FW-190) to 14,000 lb. (U.S. P-38). Armament ran from a half-dozen machine guns upward. Highest reported combat speeds were still in the 400 m.p.h. zone, though press reports credited a new speed-dive record of 725 m.p.h. to two American air corps officers in P-47's during November.

The most astonishing innovation in armament concerned the introduction, on Germany's Me-109-F1 and F2, of a new, Mauser-made, automatic cannon in 20 mm. and 15 mm. calibres respectively, with a rate of fire of 900 r.p.m. (rounds per minute) as against 90 r.p.m. for the 20-mm. guns in the wings of the earlier 109-F. Weight of 20-mm. projectiles fired at this rate would total 784 lb. in 60 seconds—several times that of any other cannon-equipped single-seat fighter. But since 200 rounds only were carried, the full advantage of the high fire rate was not exploited. Plastics were figuring heavily in allied plane construction, though lack of these at certain points in Germany's Me-109, where heavy ceramic materials appeared in their stead, suggested a plastic shortage in that country. German pilots were faking "dogfights" among themselves to lure unwary allied pilots to destruction. Russia was using an improved U-2 plane in the Stalingrad area. Largely of fabric construction, it could take off almost anywhere because of its light weight, and land on an open field at night with the aid of a flashlight. Despite its low speed (60–90 m.p.h.) it proved more useful for strafing than the average dive bomber. Germany's reputed best fighter, the (Focke-Wulf) FW-190, and succeeding models, was far inferior to Britain's latest Spitfire at anything over medium altitudes, performing best at 18,000 ft., while the Britisher remained nimble at 40,000 ft. and over. Behind this lay the fact that there was no such thing as an aeroplane capable of performing equally well at low, medium, and high levels, *i.e.*, sea level to 15,000 ft., 15,000 to 25,000, and above 25,000. Thus the FW-190 climbed spectacularly below 10,000 ft., but fell off rapidly as it reached the upper limit of its low-speed supercharger. When its second-phase supercharger was engaged, it regained its earlier rate of climb and held it handily to 18,000 ft., beyond which, however, performance quickly became mediocre. In like manner an engine, such as that of the Spitfire, which developed its maximum at 25,000 ft. and above, showed inferior performance at lower levels. Hence the need for ships of both types if all contingencies were to be met successfully.

Outstanding American fighters of 1942 included the P-38 Lightning, supercharged to operate at 40,000 ft., the P-47 Thunderbolt, and the P-51 Mustang. Some forecasters held that the P-47, some that the P-51, would develop into the finest fighter of 1943.

Britain had brought forth a fighter-bomber to operate at tree-top levels. Its two delay-action bombs, released together, ricocheted along the ground surface to explode after the parent had passed overhead. Instantaneous fuses would have been de to both plane and target, since a 250 lb. bomb creates a ver danger zone of 1,500–2,000 ft. on detonation.

Japan's army fighters included three newer types, viz., "100," army version of the navy Zero (later described), German-designed Messerschmitt 109, with 1,100 h.p. liquid-co engine, service ceiling of 36,000 ft., and a maximum spee 350 m.p.h., and the Nakajima, introduced in 1941, a 400 m twin-motored ship more heavily armed than the other two. R was accenting medium bombers rather than fighters, with information available on 1942 models of the latter. Italy using her Macchis over Africa. An Italian engineer, Cam had produced a jet-propelled aeroplane, probably the first to fly without a propeller. Designed to compensate for the propeller efficiency attainable prevailing in the rarefied at phere of high altitudes, air to effect the jet reaction was pressed by a conventional radial aircraft engine and rele through ports in the tail of the ship.

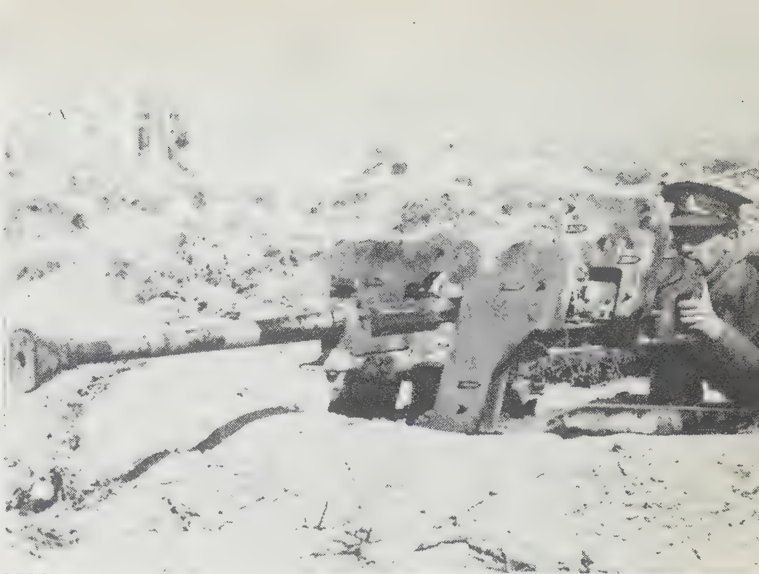
Bombers.—While dive- and torpedo-bombers continued to heavy toll (the United States lost four aircraft carriers, and seaplane tender during the year, chiefly as a result of their act light and medium high-altitude bombers, and the heavy as were constantly being heard from. In April, the American eral Doolittle paid an historic visit to Tokyo with his (medi B-25s. These ships, with a speed of 300 m.p.h. and capab transporting a bomb load of 4,000 lb., were said to outclass of like characteristics, as were their next of kin, the (fa B-26s. Britain had introduced a new reconnaissance bomber "Mosquito." Powered by two Rolls-Royce engines, its arma was estimated at four 20-mm. cannon and four 303-cal. mac guns.

In the low-level attack bomber class was the American A carrying more bombs and flying faster than Britain's prin attack-bomber, the Blenheim. Among Germany's latest bom of various classes were the new Dornier Do-217 multipur ship, a 3-seat Blohm & Voss Bv-141, the Heinkel 4-motor He and the Junkers Ju-91. Its bombers were now being use groups of mixed composition, including the single-motored J and twin-motored Ju-88s, as well as the He-111s. Shortag bombers was compelling the conversion of many transport pla and the use of these vulnerable ships as impromptu bom when command of the air was reasonably assured. Of Ru medium bombers both single and two-engined types were se service. These included the recently introduced MIG-3 single 1,200-h.p. motor, the I-17 of earlier vintage, and the t motored 2KB-26. Japan was using three types of dive bom including the "96," "97," and a new Nakajima 2-seat model.

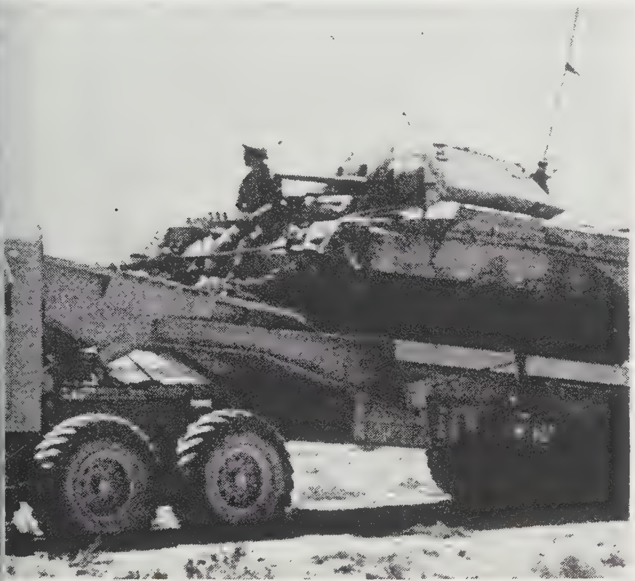
Heavy Bombers.—America's B-17 high-altitude Flying Fort designed eight years earlier, was showing no signs of senesce while the B-24 Liberator was acclaimed by the British as or the finest aircraft in existence. Both carried smaller bomb l (4,000 lb.) than comparable 4-engined heavy British bom but could work at higher altitudes and greater operating ra They were capable of day or night operations, whereas Br heavy bombers (*e.g.*, Lancasters) usually acted only during dark hours when, to insure accuracy, they were forced to f relatively low altitudes—well within the range of anti-air fire. Japan's heavy bombers were all 2-motored, with three t in use. Of these the fastest (280 m.p.h.) was the "98," kn also as the Mikado. With two 1,000-h.p. 18-cylinder Fiat m it had a range of 2,400 mi. carrying a 2,000 lb. bomb load low-wing monoplane construction, its crew numbered seven.

Cargo Carriers.—As the year ended, announcement was of the award of a $200,000,000 contract for the building

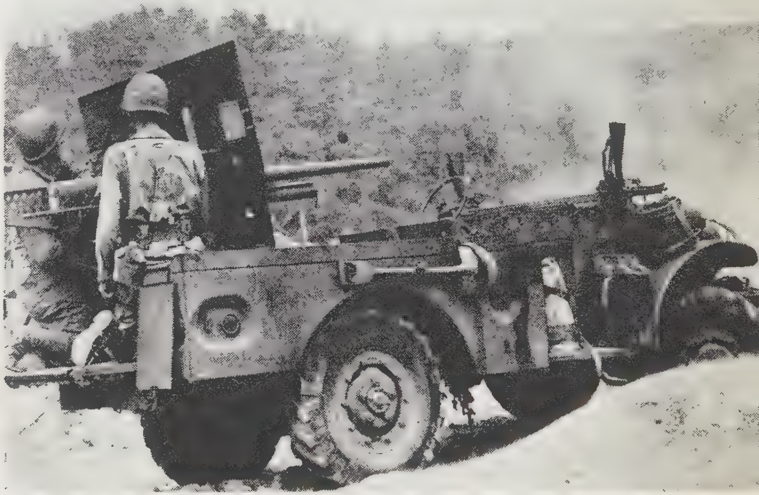
MOST PUBLICIZED GUN OF 1942 was perhaps the German mobile . gun, used with telling effect against British tanks in the Libyan desert summer of 1942



BEST ANTI-TANK GUN OF 1942 was the German 1-in. Guerlich, which by compressing shells in the tapered barrel blows them out at the extremely high velocity of 4,750 ft. per second. A British soldier is demonstrating this captured Guerlich



REPAIR of disabled tanks during battle was achieved by the Germans North African front in 1942. Recovery trucks hauled the tanks from the eld to repair depots, where they were speedily put into serviceable condi- he picture shows a British equivalent of the German recovery truck



A POTENT U.S. ANTI-TANK WEAPON, the tank destroyer, was introduced in 1942. Speedy and lightly armoured, the vehicle pictured carries a 37-mm. gun and depends on "hit-and-run" tactics

"GENERAL LEE" (M-4) tanks with welded hulls replaced the older U.S. "General Grant" (M-3) models in 1942

converted shipyard, of 1,200 U.S. army C-46, 6-engined, 150-ton cargo planes with a wing spread of 300 ft., to be composed largely of nonstrategic materials and capable of transporting 100 tons of freight. First deliveries were scheduled for Oct. 1943. Construction of the shell was to be of plywood in criss-cross layers over reinforced wire mesh. Some 50,000 workers, 80% of them women, were to be employed in the production of these ships. Precious aluminum, 30,000 lb. of which were going into each Flying Fortress, 10,000 into each fighter, would thus be saved for sterner purposes. Another new type of cargo plane, the Caravan, was a high-wing monoplane with 180 ft. wing span—somewhat like the earlier developed Commando; 68 ft. long, it was powered by two 1,200-h.p. motors. The Lockheed Constellation also appeared. It is capable of transporting a tank, and has an operating range of over 3,500 mi. The proportion of transport (cargo) planes to multi-engined bombers then being produced was as 1 to 5; in 1943 it was to be stepped up.

How many cargo carriers of earlier design the army had in use was undisclosed, but it was known that more of the DC-3 type ("Flying Boxcars") had been delivered to it in the seven months following Pearl Harbor than were in service on all the airlines of the world on Dec. 7, 1941.

Trainers.—America welcomed a new trainer plane, the PT-25. Made of bonded plywood, less than 2% of its weight consisted of aluminum alloys. Without forgings, castings, or extrusions in its make-up, and using no critical steels, it was a splendid example of the employment of substitute materials.

Gliders.—Gliders with two sets of wings, and capable of carrying 20 men, met successful tests in the United States. Though these were not yet in official use, the employment of 15-man gliders with a span of 80 ft. and towed two at a time, was already standard practise. One American factory was producing gliders believed to be as large or larger than anything Germany had evolved—able to transport light artillery or small combat cars. But while gliders were rendering excellent service under suitable conditions, night landings by them even in bright moonlight, remained fraught with utmost danger.

Aircraft, General.—The U.S. B-24 Liberator bomber contained 315,000 separate parts and required for the production of its components, the services of 1,400 different manufacturers in the United States and Canada. Prime contractors for aircraft had thus become practically nothing more than "airframe manufacturers," building as a rule only wings and fuselages, almost all other parts being made for, and delivered to them by subcontractors. Planes capable of spending 50 hours in the air—and making a non-stop round trip between the U.S. and Germany, were in being. A new 6-bladed propeller for 2,000-h.p. motors had two sets of 3 blades, rotating in opposite directions, effecting faster and smoother flight than earlier forms. Many of the German fighters brought down in 1942 lacked bullet-proof gasoline tanks, indicating dire shortages in certain important materials. Germany was nevertheless said to have developed two new types of stratosphere fighters, with ceilings of 48,000 ft.—really different versions of the same ship, the Junkers 81-P. Both had pressure cabins and were powered with two, 1,000-h.p. Jumo 207, 6-cylinder, opposed piston, compressed ignition motors with exhaust-driven turbo-superchargers.

To relieve the pilot of a dive bomber of the necessity for flying constantly in the prone position to avoid physiological "blackout" a hinged seat was devised which threw him backward into the supine position as the plane passed from downward to upward flight at the termination of a dive. Another mechanism relieved him of the controls as soon as his bomb was released, the plane operating under gyro-control until danger of blackout had passed. A new German Focke-Wulf plane, still in the experimental stage, was said to carry its whole crew of three in supine position.

Aircraft, Navy.—The U.S. navy's air program called 27,500 ships by early in 1944, this in accord with the presid announced objective of 185,000 aircraft of all types to be duced during 1942 and 1943. To man its new planes, 30 student pilots were to be trained annually. Total naval expe tures for aircraft over the fiscal years 1940–1943 was to over $5,750,000,000. The folding wings of the navy's stan carrier-based fighter, the F-4-F Wildcat, increased slightly weight, but made it possible to enlarge the number assigne each carrier vessel. The new carrier based TBF Avenger tor bomber, powered by a single air-cooled engine, and carrying torpedo, was already commencing to replace the earlier T Devastator, the navy's standard torpedo bomber when the opened. Her standard carrier-based dive bomber, the S Dauntless, though performing admirably, was soon to be repl by an improved model—already in production.

The much-discussed Japanese Zero, so named because its of introduction—1940—fell in the year 2600 on the Japa calendar, was powered with an air-cooled, 14-cylinder, 900 two-row, radial motor with 3-blade, constant-speed, hydra type propeller which gave it a top speed of 340 m.p.h. and operating range of 2,000 mi. or more. 30 ft. 3 in. long, its w spanned 35 ft. 5 in. As on the U.S. navy's F-4-F, they hinged for folding. A single seat monoplane, its armament cluded two 20-mm. low-velocity cannon (one in each wing), 60 rounds of ammunition for these, also two 7.7-mm. mac guns, each with 500 rounds, in the nose, firing through the peller disk. Ready for combat it weighed, without belly t 5,200 lb. Its light weight made it extremely easy to handl to 200 m.p.h. and capable of making a fast roll at 225 m.p.h captured specimen however, tested in dives at speeds appr mating 400 m.p.h., developed marked "flutter" and vibration

Torpedo planes of all nations continued to take heavy among surface vessels. Flying almost at sea level (5 to 30 me above) they launched their deadly missiles at distances of 4,000 metres, and proved extremely difficult to hit with aircraft fire. (*See* also AIR FORCES OF THE WORLD.)

Anti-Aircraft.—Apart from anti-aircraft artillery (*see* bel the barrage balloon continued to constitute one of the major ments of air defense for urban areas and other likely target air assault. Three types were in use, the high altitude, low tude and very low altitude. In size these varied from a lengt 30 ft. for the smaller (very low altitude) to about 120 ft. the largest (high altitude) with diameters roughly averaging third these figures. Two varieties of construction were emplo the "dilatable" and the "ballonet." The former consisted single cell, with an envelope which exhibited four or more lo and was designed to permit increase in its volume as it rose the contained gas (helium or hydrogen) expanded. On desc ing, the process was reversed. The ballonet type embodied separate chambers, one filled with gas, the other with air, s rated by a diaphragm. As it ascended, the lifting gas expa and forced air out of the bottom of the air chamber. Du descent, the opposite occurred.

Anti-Submarine.—The navy "blimp" had proven a better tion of the coastal submarine menace than patrol planes or army bombers, this by reason of its ability to cruise slowly hover over any suspicious spot on the ocean's surface.

Anti-Tank.—*See* "Artillery," below.

Army.—As 1942 ended, the United States had some 5,00 men—70 divisions—under arms, 1,000,000 of these over Estimates called for a 7,500,000-man army with 700,000 offi by the end of 1943, and 2,500,000 more in the navy and c rd. Of the army's 7,500,000, a breakdown showed:

Air forces	2,200,000
Ground forces	3,300,000
Services of supply and related units	2,000,000
	7,500,000

e fighting elements of these 7,500,000 would be assigned to e 100 different divisions of an average strength of 15,000 men, 1 18,000 more required in the supply services back of each to p it functioning—a total of 33,000. Germany by stripping pare essentials was getting along in 1942 on 28,000 combat and ply troops per division.

orecasts for 1943 indicated that before the close of that year, of the 130,000,000 people in the United States would be in orm or in industry.

o train some 250,000 of the nation's youth annually for mili- service, both before and after formal induction (4,500,000 already been inducted since Oct. 16, 1940), the war and y departments had formulated a joint plan to employ the lities of between 200 and 300 colleges and universities. At e, the usual liberal arts courses would be eclipsed for the ation. Earlier in the year (Sept.) there had been announced an for pre-military and pre-industrial training to be open to 0,000 youths in the nation's 28,000 public and private high ools through voluntary enrolment in a "Victory" corps.

o complex had become the nation's fighting machine that 63 of 1 100 men inducted were now assigned to duties requiring ialized training of some kind. And so highly mechanized had ome the armoured forces that they now embraced a vehicle each 5 men—and one armoured vehicle to each ten. Apart n special training for enlisted men, officer candidate schools e producing 12,000 new officers a month, one for each 20 men. duates from preflight schools were being turned out at the of 40,000 a year. By December a squadron of Negro fliers of its kind, was soon to proceed overseas. Earlier in the , a Negro infantry division, the 92nd, had been actuated.

o save military manpower, army, navy and coast guard under- k to recruit women for their auxiliary organizations known as WAACS, WAVES and SPARS. So satisfactory did these ve that they were steadily undergoing enlargement. Thus the ACS, totalling around 10,000 in November (of an authorized 00) received authorization to expand to an ultimate 150,000, 00 of these to be enrolled by July 1943. Some forecasts pre- ed a total of 200,000 WAACS, and 150,000 WAVES and ARS by the end of 1943. Some 83 of America's business and essional leaders, realizing the importance of a close under- ding between army and industry, enrolled at Ft. Leaven- th, Kan., in October for a four-week orientation course in y organization and procedure.

f America's allies and enemies, manpower figures were not too nite. Canada had expanded her prewar army some 89 times, corps 38 times, and navy 27 times. Even pacifist India had 1,000,000 men in arms within her borders, apart from those to various far-off theatres of operations. Ten millions of the S.S.R.'s population of 166,000,000 were in military service. many was thought to have some 7,000,000 men (300 divisions) er armed forces. Four million between 18 and 40, 3,000,000 e between 40 and 50. Despite modern military specialization, which she was largely responsible, 75% of her forces con- ed of plain, old-fashioned infantry. In war work Germany 24,000,000 more, thus:

German males	12,300,000
German females	8,600,000
Foreigners	1,800,000
Prisoners	1,300,000
	24,000,000

Japan, which, in 1935, had introduced premilitary training for the 2,500,000 boys attending its 15,000 schools, was believed to have some 90 divisions in the field.

Army Production.—Though great stress was being laid on production achievements, the United States was not more than half way to a full weekly schedule of 168 hours (three 8-hour shifts for each of the seven days) in most of its factories. But she was commencing to exploit her large reserves of woman power, with over 300,000 women already employed in war department activities by September, and an estimated 250,000 in air craft plants alone as the year closed—against 2,000 in 1941. Early in the year, census records had shown 51,600,000 males and females employed in the United States—an all-time record. In December, almost 900,000 civilians were engaged in activities of the army supply services alone.

On July 1, 3% of skilled workers were women. Two months later (Sept. 1) the figure had risen to 10%, with women furnishing 35% of all the unskilled labour then employed. By way of munitions production, a single firm was turning these out at the rate of $8,000,000 per day. In addition to huge "prime" contractors such as this, 170,000 small industrial concerns were working on subcontracts. Estimated value of the U.S. munitions output for 1942 was $55,000,000,000. Back of each soldier in the lines were 2½ men in industry—not 18, as per some exaggerated estimates. In the fall, production on certain types of munitions having met and even exceeded immediate requirements, projected expansion of various ordnance plants producing these were cancelled to permit diversion of the materials formerly allocated for them (tanks, bombs, shells, etc.) to the fabrication of other items (ships, aircraft) more urgently needed. By late October, U.S. aircraft production was exceeding that of Britain and Germany combined. Under a program announced in December, Philadelphia public schools were scheduled soon to be producing 37-mm. cannon shell at the rate of 25,000 a month.

Machine tool production for 1942 was forecast as 350,000 units of a value of $1,400,000,000, almost double that of 1941. By contrast, during 1929, peak year of post-war expansion, $180,000,000 worth had been marketed.

Artillery—Anti-Aircraft.—Calibres remained relatively stationary, with accent on increased velocities, and greater use of the heavier, longer-ranging, weapons. During the first half of 1942, Germany was employing its high-velocity pieces (as the 88 mm.) against ground targets of opportunity (*e.g.*, British tanks in Africa) with no little success. Her anti-aircraft units of the army proper (as contrasted with those assigned to the independent air forces) which had commenced the war with weapons of 20-mm. and 37-mm. calibres only, had begun to replace these in 1941 with a heavier type (50 mm.). However, this too failed, in 1942, to stop American-made tanks, and was superseded by others of 88 mm. and 105 mm.

Japan was using anti-aircraft guns in calibres from 13.2 and 20 mm. at the lesser end of the scale to 105 mm. on the upper. The 13.2 (Hotchkiss) had seen much use in China. The 20 mm. (Oerlikon) fired a ¼ lb. shell at a muzzle velocity of 2,500 f.s. For home defense Japan was employing mostly 75's, with a vertical range of 6,000–7,000 yd. and a horizontal range of over 10,000 yd. Her model '25, 105 mm. was capable of a rate of fire of 15 r.p.m. Both 75's and 105's had a full (360°) traverse and an elevation of 85°.

Artillery—Anti-Tank.—The problem of how to neutralize the tank by gunfire was being successfully met by the tank destroyer or "motor gun carriage." Developed by the U.S. during and after World War I, then allowed to languish, it was now revived in a new and better form built on the General Grant medium tank chassis. It had been thoroughly tested on an 108,000 ac. proving ground in Texas, and managed as the year closed, to play a decisive part in African operations, where it disposed of the erstwhile fearful 88-mm. anti-aircraft guns which Rommel had been using so successfully as anti-tank weapons. Different calibres developed, the larger mounted on caterpillar "half-tracks" (combination wheeled and tracklaying vehicles) included the 37 mm. on ¾ ton all-wheeled Fargo tracks, 75 mm. and 3 in. high-velocity types, and a 105 mm. In December it was announced that the half-tracks could be replaced with endless treads (tracks) of rubber with steel cables and cross-pieces embedded, at a saving of 200 lbs. of rubber per vehicle (as against tires) and with material reduction of noise and vibration. Meanwhile reports that Germany had a 47 mm. self-propelled anti-tank weapon remained unconfirmed.

Mechanical marvel of the year was a 28/20-mm. German anti-tank gun used in Africa. Firing a skirt-bearing shell of 28 mm. which, passing through a cone-shaped bore, emerged from the muzzle at about 5,000 f.s. with skirts collapsed into its body and its diameter thus reduced to 20 mm., it possessed terrific energy and was consequently capable of great penetration for so small a calibre (about .80). An adaptation of a German principle developed in the Holger rifle of the 1920s and 1930s, it produced effects quite out of proportion to its modest size.

Artillery—Coast, Field, Railway.—Britain having learned a bitter lesson in Africa, was replacing her old 18 pounder (83.7-mm.) field gun with a 25 pounder of 88-mm. calibre as the organic weapon of light field artillery regiments in her infantry divisions. Provided with a circular track to be laid beneath it on the ground selected for its emplacement, and upon which it would speedily be rotated in azimuth when in firing position, it was susceptible of being either horse or tractor drawn.

Germany had introduced a bouncing artillery bomb, fired apparently from a large-calibre field gun. One such was observed to explode five successive times, travelling in a relatively straight line after each graze. Tales of German super-guns, with bores 26-in. or more in diameter, used to reduce Crimean fortresses, were discounted by those familiar with the limited strength of European highway and railway bridges, narrow tunnel clearances, etc., which appeared to make wholly impracticable the transport of such monstrous pieces. Others who recalled the "Paris gun" of 1918, kept open minds on the subject. Russia continued the mechanization of her field artillery, even her 115-mm. guns now having their own motor carriages.

America's new 105 mm. howitzer battery required to operate it only slightly more than one-half as many men as had the old 75 mm. horse-drawn type, and one-tenth as many trucks as the "75" had had horses. With a traverse almost eight times that of the old 75, the 105 though actually lighter than the smaller gun with its limber, fired a shell that was twice as heavy and was drawn by a truck weighing little, if any, more than did the six horses which had pulled the older piece. But it cost twice as much! Russia was using a 203-mm. (8-in.) howitzer, transported in two loads, the carriage on a broad caterpillar track, the tube on a 6-wheeled carriage. Both were drawn by caterpillar tractors on which the crew rode. Russian field artillery included various models in calibres of 76.2, 107, 122 and 152 mm.

American field artillery now embraced organic slow-flying aircraft for short-range spotting purposes. Known as "grasshoppers" and piloted by field artillery personnel, their slow landing speed permitted landing on any short, level space. For long-range spotting, high-speed combat planes were still employed. Various U.S. field artillery units had been converted into armoured units with self-propelled 105-mm. howitzers mounted on medium tank chassis which carried .50-cal. machine guns additionally.

Sensation of the year were the light-weight Japanese rocket-cannon used for the first time in the battle of Singapore. Fr simply constructed and supported frames, shells possessed of gre explosive effect were fired on the rocket principle.

Bombing.—Before 1942 ended, air bombing was being co ducted on the grand scale, as witness Britain's repeated 1,0 plane raids over Germany and her air assaults on various Itali cities with 8,000-lb. "block buster" bombs. While these affect chiefly morale, apart from directly impairing production of matériel, navy bombing had more immediate military results was witnessed by the serious losses as a result of air action combat vessels in almost all categories by each of the ma nations engaged in the conflict.

Communications.—Tests to determine safe methods of "laun ing" carrier pigeons from aircraft showed that these birds co be released at altitudes up to 10,000 ft. without special devi of any kind. Above that height, it was found necessary to encl them in "bombs" of canvas-covered wire, set to open at any sired instant during descent, if their safe arrival at destinati was to be assured.

Ordnance and Motor Transport.—The U.S. Ordnance depa ment was made responsible during 1942 for motor transport p curement and maintenance—formerly functions of the quart master corps. This necessitated considerable expansion of activities. By way of maintenance, for example, it develope mobile maintenance company which composed 26 motor vehic plus a 10-ton wrecker capable of handling the heaviest equipme In addition to the automotive section it included an artillery s tion capable of repairing guns up to and including the 155-m howitzer, and an instrument section, concerned with maintena of watches, field glasses, etc.

By way of new motor transport matériel the U.S. had a 30 truck-trailer comprising three platforms, pyramided for qu loading and unloading and capable of transporting 206 soldi with their individual equipment over 300 mi. a day. In one swoop, the U.S. army purchased (Aug. 1942) 880,000 trucks a trailers of various types under 64 separate contracts with manufacturers, at a total cost of over $1,500,000,000. To conse steel the majority of these were to have wooden bodies (exc for items designed for use in the tropics). Such steel savi which had begun as early as April, were estimated to total 75, tons in 1942, 350,000 in 1943. A new tire with soft crepe rub tread had been designed for use on snow and ice.

Engineer Activities.—Outstanding engineer feat of 1942 the completion, in November, of the 1,600 mi. Alcan highw designed to link the U.S. with Alaska via Canada. Beginning March, and working in temperatures as low as 35° below zero, as high as 90° above, 10,000 engineer soldiers and 2,000 civili had completed an average of 8 mi. daily during good weat working on 10-hour shifts for a full 7-day week. The comple road was 24 ft. wide between ditches and involved the bridg of some 200 streams.

Other of the engineers' manifold duties involved the laying anti-tank mine fields—and destroying those laid by the ene A typical anti-tank mine, Germany's IP-2 was 10½-in. in dia eter, 2¼-in. thick, and weighed 9 lb.—5 lb. of which were c tributed by its charge of TNT. (A large type, the "Tell weighed 19 lb., its TNT filling, 11 lb.) Indicative of the e mous numbers in which such mines were employed, a single fi 400x750 yd. in dimensions, sown with mines 1½ yd. apart, requi 5,000 of these for complete coverage.

A new German device involved the use of a small mine wh exploding, threw a larger one into the air. This then detona distributing lethal fragments to a distance of 100 yd.

Searchers used, to locate these deadly disks, steel rods carry electromagnetic circuits which produced a buzz in earphones w

hem when brought into contact with a hidden mine. In addi-
, the time-tried "poke and dig" method (of prodding the
ınd with a stick for solid objects beneath the surface) was
popular.

lavy.—The United States commenced to launch some of her
rbattleships (45,000 tons) which had been building. The
va" left the ways in August six months ahead of schedule, the
w Jersey" in December. Estimated to displace 52,000 tons
n fully loaded, their calculated speed was 30 knots but an
al speed of 35 was considered not improbable. With crews
,600 officers and men, length of 880 ft., beam of 108 ft. and
ght of 36 ft., armament included nine 16-in. 50-calibre guns;
ty 5-in.; sixteen 1.1-in. (in batteries of four) and 50 machine
. Each ship was said to carry four reconnaissance aeroplanes.
rage building time for U.S. naval vessels had now been
ced as follows:

Type of Ship	Old	New
tleships	42 mos.	36 mos.
riers	45 "	27.3 "
vy Cruisers	36.4 "	22.7 "
nt Cruisers	33.8 "	22.3 "
troyers	27.2 "	11.6 "
marines	21.2 "	11.5 "

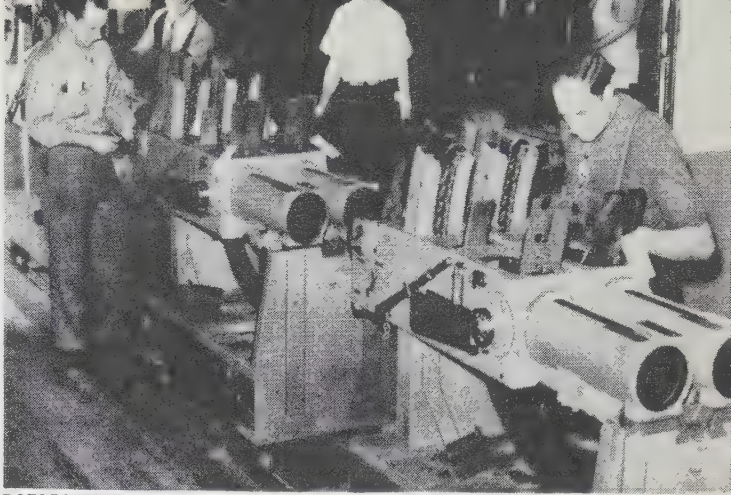
s of Nov. 1942, no less than 3,200 naval vessels (all types)
building for the U.S. navy—several hundred additional for
allies. A new type of escort vessel, the corvette, was begin-
to come into wide use in the North Atlantic. 170 ft. long,
armed with one 4-in. gun and several smaller pieces, plus
h charges, it was of simple design and easily constructed.
ada, which had entered the war with less than 20 naval ves-
all told, now had over 75 corvettes alone. As in the case of
army, naval building was spread among thousands of sub-
ractors. Thus one firm doing naval construction had over
subcontractors and suppliers in 180 communities in 25 states.

o November, Britain had lost 1,207 naval vessels, close to
0,000 tons, in three years of war. Included were 3 battleships,
rriers, 2 battle cruisers, 20 cruisers, 92 destroyers and 44
narines. But during the 30 months then terminating, Britain
turned out over 500 war vessels, and her net naval strength
ained undiminished. Of cargo carriers she had lost 731, but
regularly putting new ones into service within 40 days after
laying.

apan's losses in a year of war were estimated at 20% of the
naval tonnage. But she remained distinctly powerful at sea.
was said to be putting a new type of 7,500-ton carrier into
ice capable of disgorging from its sides 158 small craft, each
sporting a 3-ton tankette with 2-man crew.

aly was believed to have lost over 50% of her fighting fleet
Sept. 1942. Germany's losses were confined mostly to sub-
nes, but these still remained an ever-present danger in the
h and South Atlantic. France had scuttled most of the
aining fleet at Toulon, but a number of the vessels there
ted appeared salvable. Estimates indicated that while some
vere sunk, approximately 15, including 2 battleships, could
aved to Germany. Soon 26 additional French vessels, in vari-
African ports fell to the United Nations. Thus at Dakar
gained a 35,000-ton battleship, 3 cruisers, 1 large and 12
ll destroyers, etc., though in their North African invasion
were forced to damage or destroy various elements of the
ıch fleet which would have been theirs but for the decision of
French high command to offer resistance.

ore scientific stowage of cargo in loading at American ports
resulting in departures with holds 90% full—as against 50%
in 1941. Britain had lost 731 merchant vessels in the first
nonths of the war, but was replacing these steadily with new



BOFORS 40-mm. anti-aircraft guns being manufactured in Detroit for the U.S. navy in 1942

units commissioned on an average of 40 days after keel-laying. Germany's merchant fleet had been swept from the seas. Of Italy's, two-thirds lay at the bottom of the ocean, of Japan's, one-fifth. (*See* also NAVIES OF THE WORLD.)

Supply of Troops (Quartermaster corps, etc.).—As 1942 ended, supply services of the U.S. army found it necessary to accumulate over 700,000 distinct items of supplies and equipment in preparation for the North African invasion, with each U.S. soldier in the field requiring some 40 lb. of supplies daily to keep him in action. By way of furnishing part of the food element of this, the quartermaster corps was sending, in 1942, the dehydrated equivalent of over 400,000,000 lb. of potatoes overseas for American soldiers and sailors and for lend-lease purposes. Of frozen vegetables, U.S. overseas forces were estimated to require some 71,000,000 lb. in 1943. The soldier was, like the civilian, feeling the pinch of coffee rationing, with the ingredients for two of the three cups of that beverage formerly included in his emergency ration now replaced by chocolate and lemon juice. To offset this in part, mechanized and motorized forces were now enjoying a "5-in-1" canned ration which included good old American ham and eggs, each package containing enough of these and other dishes to make three full meals for five men for one day—prepared in five minutes by heating.

For use of sky troops and paratroops the quartermaster department was supplying small individual stoves, weighing under 2 lb., to be strapped to the uniform. These burned gasoline and operated for 2 to 3 hrs. on a single filling. In cold regions, soldiers were being issued paper underwear to use as extra insulation under regular clothing and discarded after one wearing. For hot regions, knee-length trousers of cotton khaki were being supplied, together with knee-length socks, half cotton, half wool, to be worn with these.

Raw Materials (Salvage, etc.).—The United States was still desperate for new rubber, of which her consumption was 600,000 tons annually, but enough for military needs at least appeared to be in sight under the program for the manufacture of synthetic substitutes (and enough for all needs, civil and military, by the end of 1944), with sufficient reclaimed stock to care for civilian requirements throughout 1943 and into 1944. Steel and other important metals were being made available by scrap drives, by the substitution of other materials for these when possible, and by revising manufacturing methods to permit the use of less metal per finished unit. Thus by the use of weldings in place of castings, solid forgings, etc., it was estimated that 7,000,000 tons of steel and 153,000,000 man-hours could be released annually. Revised manufacturing processes, mentioned above, resulted in steadily mounting savings, as did the use of substitute materials. Thus the substitution of plastics for aluminum in trench mortar fuses was estimated as due to effect the saving of 35,000,000 lb.

of that metal by the end of 1943.

A new process for the extraction of vanadium which would assure the United States an adequate supply of this scarce mineral, was announced in September. Electrolytic tin-plate and bonderized black plate for cans were scheduled to replace the former hot-dipped tin plating, since only one-half the amount of tin used for plating cans in 1942 would be available in 1943. Artillery shell cases, so long one of the main sources of brass consumption, were now being made successfully, and in any quantity desired, of steel, with enormous savings in brass resulting.

Infantry Weapons.—Little that was new in infantry armament appeared in 1942. Of pre-existing types, the submachine gun and machine pistols with skeleton stocks proved their worth for close fighting whether in jungle or city street. The Russians were said to be using a "sub"-gun which outclassed that of their German adversaries. This had a 70-round magazine and was effective at 200 yd., as against a German piece with 35-round magazine effective to 100 yd. only.

Submarines.—As the year ended, it was realized that the submarine menace was far from solution. Germany was building these vessels, newer, stronger, deeper-diving than before, and said to be equipped with an improved underwater communication system, at a rate estimated at 25 monthly; her losses were probably not over half as many. Sinkings of United Nations merchant shipping were now approximating the dangerous figure of 1,000,000 tons a month. Within their limited action ranges, blimps could spot and bomb the undersea raiders, while escort vessels in sufficient numbers could fight off attacks on convoys. But sufficient numbers did not exist, and could not for some time to come. (*See* also SUBMARINE WARFARE.)

Tanks and Combat Cars.—Germany's Mark IV tank, the backbone of Rommel's Afrika corps, weighed 22 tons and had a speed of 22 m.p.h. Armed with a short 75-mm. cannon (some with a high-velocity 50-mm. gun), it proved vulnerable to the more powerful 75-mm. gun of the American General Grant, and was markedly inferior to the later General Sherman.

But America's Grants and Shermans while able to penetrate German tank armour were themselves vulnerable to the 88 mm. anti-aircraft, all-purpose gun which Rommel used against them. Hence it became necessary for American tanks to outmaneuvre rather than outfight this piece until the U.S. MVII "tank killer," mounting a 105-mm. howitzer on the standard MIII tank chassis, became available. And since the 88 mm. had to be immobilized for emplacement, such a procedure was sometimes not too difficult. Medium tanks, consuming as they did one gallon of gasoline per mile, constituted a supply problem in themselves, each requiring the individual services of a 1,000-gallon supply truck whenever it undertook long-range desert operations.

Japan was using four classes of tanks, viz.:

1. Tankettes of various types, weight, 3 to 4 tons.
2. Light tanks, weight 5 to 7.7 tons.
3. Medium tanks with 37 mm. and 47 mm. guns; weight (heaviest) 15 tons.
4. Heavy tanks, weight 35 and 36 tons.

Transportation, Railway.—The U.S. activated, in November, a transportation corps to operate her military railroads—formerly one of the tasks of the corps of engineers. Germany's railway prime movers were suffering from attrition due to allied strafing plus inadequate repairs and replacements, as evidenced by the fact that her locomotive factories were now accorded the same priorities on scarce metals as were tank plants.

Lend-Lease.—During the year ending Dec. 1, 1942, the U.S. and Britain sent to Russia, by the northern route alone, over 3,000 aircraft, 4,000 tanks, 30,000 trucks and other motor vehic plus 800,000 tons of ammunition, food and raw materials. C sidering *all* routes, the U.S. alone had sent Russia 2,500,000 t of war materials over this period.

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Murphy, Robert Daniel (1894–   ), U.S. foreign serv official, was born Oct. 28 Milwaukee. He entered the foreign service in 1917 as a cl in the Berne legation and held consular posts in Zurich, Mun and Seville until 1930, when he was transferred to the Pa embassy as consul and later first secretary. After the colla of French armies in June 1940, he followed the Pétain governm to Vichy, there becoming a counsellor in the U.S. embassy a chief U.S. representative in French North Africa. Murphy credited with having played an important role in preparing groundwork for the U.S. invasion of French North Africa Nov. 1942. Because of his wide acquaintance among Vi French officials, he succeeded in getting 40 U.S. vice-cons into North Africa. These consular agents regularly relayed v military and political information to Washington. Murph friendship with French officials of pro-allied sentiments thus hel pave the way for the U.S. occupation at low cost in casualt He sat in with Maj. Gen. Charles W. Ryder during the nego tions that resulted in the surrender of Algiers, Nov. 8, 19 Murphy was given the D.S.M. for his work in North Africa a received the rank of minister from President Roosevelt.

Murray, Philip (1886–   ), U.S. labour leader. A nat of Scotland, he was born in Blantyre May 2 and emigrated to the United States in 1902. Naturalized in 19 he became a member of the international board of the Uni Mine Workers of America the next year, president of the unio fifth district in 1916, and international vice-president in 19 During World War I he was a member of Pennsylvania's regio war labour board and served also on the National Bitumin Coal Production committee. In 1935 he was named to the N tional Industrial Recovery board and to the advisory council the National Recovery administration. Murray was John L. Lew choice for second president of the C.I.O. after Lewis had fulfil his pre-election promise of 1940 to resign if President Roosev was elected for a third term. Lewis, who continued to domin the annual convention of the organization, personally nomina Murray, and the latter was elected unanimously Nov. 22, 19 Murray, however, did not follow Lewis in his bitter opposit to Roosevelt's foreign policy. Although a split between the labour chieftains was evident, Lewis' supporters neverthe joined other C.I.O. factions in re-electing Murray as presid in Nov. 1941. The split became an open break in May 19 when Lewis summarily ousted Murray as vice-president of U.M.W.A. Murray responded by accusing Lewis of trying undermine the C.I.O. Lewis counterattacked in Oct. 1942 marching his United Mine Workers out of the C.I.O. In summer of 1942 Murray meanwhile renewed his efforts to est lish industry councils on which management, labour and gove ment would be equally represented; he frequently criticized "monopoly" of management representatives on federal war p duction agencies.

Museums of Art: *see* ART GALLERIES AND ART MUSEUMS.

sic. A striking fact stands out in the musical events of the year 1942: the big news of that year was a new com- ion by a living composer. Dmitri Shostakovich, with the position of his *Seventh Symphony,* achieved more news space any composer of previous years. Perhaps the composer it find encouragement in this fact, for it revealed a closer act between the creative artist and the public and it also aled the propaganda value of the composer's work. Shos- vich completed this latest symphony Dec. 27, during the siege eningrad. Its first performance in Russia was given by the hoi Theatre orchestra. It was then sent to America on micro- travelling through enemy lines, across Persia, Egypt, and the Atlantic for its first performance in New York city by NBC Symphony orchestra under Arturo Toscanini July 19. r this first performance, the work was heard frequently over radio and on the concert stage performed by most of the r orchestras of the United States. There was some disagree- in America concerning the intrinsic worth of the new com- ion. Some critics found the work undistinguished in its style; s, on the other hand, found the style simple rather than l; most people, however, found the 70 minutes of the work le long. Shostakovich said: "The symphony is devoted to events of 1941—war. This does not mean, of course, that it a naturalistic imitation of the war, but nevertheless, it is an pretation of the war."

usical events of 1941 and 1942 were obviously greatly influ- l in all countries by the global war. All events of 1942 were nated by this conflict. The entry of the United States into war loosed new demands upon the musician, demands that tably arise when a nation is involved in a bitter struggle. The news came from all countries. From England, Stanley er, secretary of the Music Teachers' association wrote:

> re is a widespread demand from workers in our industrial areas for or- al concerts, and the call from the forces is such that each of the dis- commands now has its own divisional orchestra under the conductor- of one or other of our well-known conductors. Male voice choirs and choirs are to be found everywhere in the forces where a practising ian has turned up in uniform.*

y Dickinson Welch, heading the radio and concert programs erned with bond sales from the treasury department in Wash- n, encouraged musical activity of all sorts and in all com- ties throughout the country.

hile the musical activity of England, Russia, France, Ger- and Italy must be considered largely in terms that related e war and the way in which the war affected those nations, rtheless, one must not assume that there was no concert life normal sort. Indeed, the continuing of normal concert life bolster to public morale was the policy of most foreign nments. In Russia and Germany alone did this policy seem ad to the encouragement of new creative personalities. Ger- opera houses continued to be crowded, from all reports, h the musical fare was largely Richard Wagner. It was bered within the reich that if Wagner's music could live igh this period of "forced feeding" he was indeed a great poser. Efforts to create masterworks by propaganda methods not as successful in Germany, however, as in Russia, since ew and striking figures arose from the efforts. Werner Egk ed unable to gain any very great acclaim in the reich or the ory controlled by Germany. A new name, however, emerged ienna—Eugen Suchon, a 28-year-old Slovakian. His work being sponsored by the Universal Edition. In France, Fauré's c was considered by the forces of occupation to be most ex- ive of the French spirit. Alfred Cortot, Arthur Honegger, cis Poulenc, Hoeree, Sauguet, Delannoy, to mention but a names, joined with the Vichy efforts of collaboration.

There were so many composers living and writing in the western hemisphere that no report could cover adequately the events of 1942 in that part of the world. Opera and concert recitals continued with prewar monotony. There were some few exceptions, however. Several new operas were given their first performances: *Solomon and Balkis* by Randall Thompson was heard over the radio and presented April 14 at Harvard university; *A Tree on the Plain* by Ernst Bacon was given May 1 at Converse college. Both of these works were commissioned by the League of Composers. Gian-Carlo Menotti's *Island God* was staged by the Metropolitan Opera company in New York city. *Kabelia* by Eduardo Sanchez de Fuentez was heard June 22 in Havana, Cuba. *Tucuman* by Felipe Boero was presented Jan. 20 at the Theatro Colon in Buenos Aires.

Symphony orchestras, chamber music groups, colleges, schools and the radio were responsible for the largest part of musical activity in the United States. As a result new names appeared more frequently on programs. The hope of Argentine music was young Alberto Ginastera who was awarded a Guggenheim fellowship for work in the United States. The 35-year-old Brazilian composer, Camargo Guarnieri, began to attract the attention of the outside world. The composer of the United States who gained, perhaps, the most stature in 1942 was William Schuman whose *Third Symphony* (Boston) and *Fourth Symphony* (Cleveland) both received marked acclaim. New symphonies were heard by David Diamond (New York Philharmonic), Virgil Thomson (Philadelphia), Pvt. Robert E. Ward (Julliard Publication), Paul

A MEMORABLE MUSICAL EVENT was the NBC Symphony orchestra's broadcast July 19, 1942, of Dmitri Shostakovich's seventh symphony, written during the siege of Leningrad. Shostakovich is shown here (right) as a member of Leningrad's fire fighters

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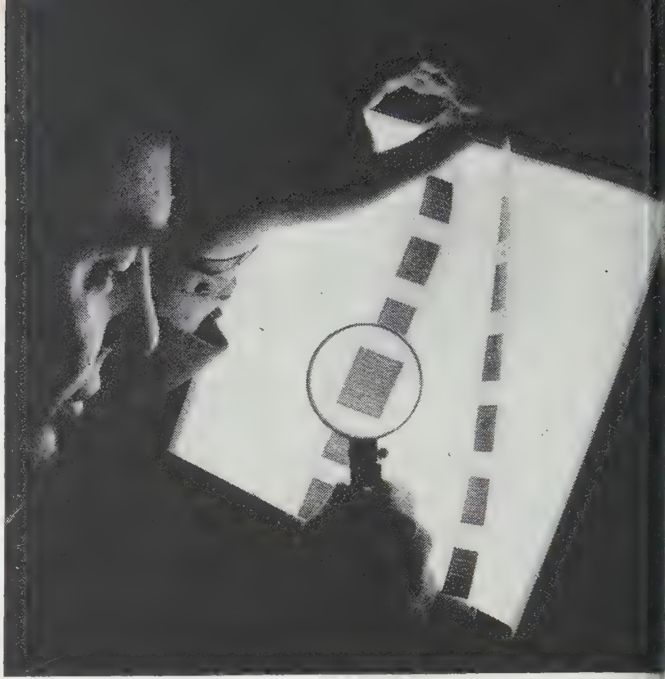
Hindemith's *Symphony in E* (New York Philharmonic), Bohuslav Martinu's *First Symphony* (Boston), Richard Mohaupt (New York Philharmonic) and Alexander Gretchaninoff (New York Philharmonic). Violin concerti by Samuel Barber (Boston) and Nicolai Lopatnikoff (Boston) and piano concerti by Darius Milhaud (Chicago), Carlos Chavez (New York Philharmonic), Stanley Bates, Guggenheim award for 1942 (New York City symphony), Karol Rathaus (I.S.C.M. concerts, Berkeley, Calif.) added interest to symphonic concerts. Many smaller orchestral works were performed, many of which were perhaps more representative of their composers than the larger symphonies. *Bataan* by MacDonald—a tribute to Gen. Douglas MacArthur (Washington) and *Plain-Chant for America* by Wm. Grant Still were works that revealed the efforts of composers to meet the demands for timely scores. Works like Ernst Krenek's *Variations on I Wonder As I Wander* (New York Philharmonic) and Jaromir Weinberger's *Lincoln Symphony* (New York Philharmonic) showed the attempt, perhaps futile, of the newly arrived exile to find American roots. (R. L. Fy.)

Popular Music.—The year 1942 will go down in the history of popular music as Irving Berlin's personal property. His "White Christmas" brought back memories of the old days by selling more than 1,000,000 copies, the first time this had happened in many years. This song also led the Lucky Strike Hit Parade with nine appearances in first place, and was going stronger than ever as the year closed.

Berlin had two other songs in the Hit Parade, "Be Careful, It's My Heart" and "I Left My Heart at the Stage Door Canteen." His entire score of the soldier show, *This Is the Army,* made a real impression, as did that of his film, *Holiday Inn.* In addition, "God Bless America" continued to be recognized as an unofficial national anthem.

OLIVER WALLACE, composer of "Der Fuehrer's Face," which, like "Praise the Lord and Pass the Ammunition," was a popular U.S. war song of 1942



THE SCORE OF DMITRI SHOSTAKOVICH'S seventh symphony, written u fire during the siege of Leningrad, was photographed on microfilm and sent train, motor car and plane to the U.S. for the special NBC broadcast of July 1942, conducted by Arturo Toscanini. When enlarged, the score was 252 p long

There was a great gap between "White Christmas" and its ne est competitor in the sales of sheet music. "The White Cliffs Dover," which had monopolized attention in the closing weeks 1941, reached a sale of close to 600,000 in 1942 and topped *Hit Parade* six times. Third place went to the war nove "Praise the Lord and Pass the Ammunition."

Statistics compiled by *Variety,* the bible of show business, g the obscure hillbilly number, "There's a Star Spangled Bar Waving Somewhere," fourth place in sheet music sales and honour of being the surprise of the year. Fifth place went "When the Lights Go on Again," which carries on the mood the popular "White Cliffs of Dover."

With ASCAP music back on the air, the year as a whole i cated a return to the traditional "plugging" routine, whereb hit could be maintained over a period of perhaps three mo and then allowed to die a natural death. The song appearing n often in the *Hit Parade* was "Sleepy Lagoon," with 17 perfo ances (twice in first place). "Johnny Doughboy Found a F in Ireland" appeared 16 times, with 14 performances each "Jersey Bounce," "One Dozen Roses," "Jingle Jangle Jing "He Wears a Pair of Silver Wings" and "My Devotion."

Popular with the armed forces was "Don't Sit under the A Tree," an adaptation of the old "Long, Long Ago," and this cellent "gang song" topped the *Hit Parade* five times. "Dee the Heart of Texas" made the same score, as did "Jingle Ja Jingle," a burlesque of cowboy ditties which turned out to serious success.

Other songs figuring prominently in the *Hit Parade,* as we in the sale of records and sheet music, were the waltz, "E O'Day" (going back to "Round Her Neck She Wears a Ye Ribbon"); "Blues in the Night," a successful imitation of recognized type of American folk music; "Somebody Els Taking My Place" and "Skylark." A vocal version of the ins mental *Manhattan Serenade* attained popularity toward the c of the year, as did Jerome Kern's "Dearly Beloved" and a j novelty called "Mister Five by Five." (*See* also PERFORM RIGHT SOCIETIES; RADIO.) (S. SP

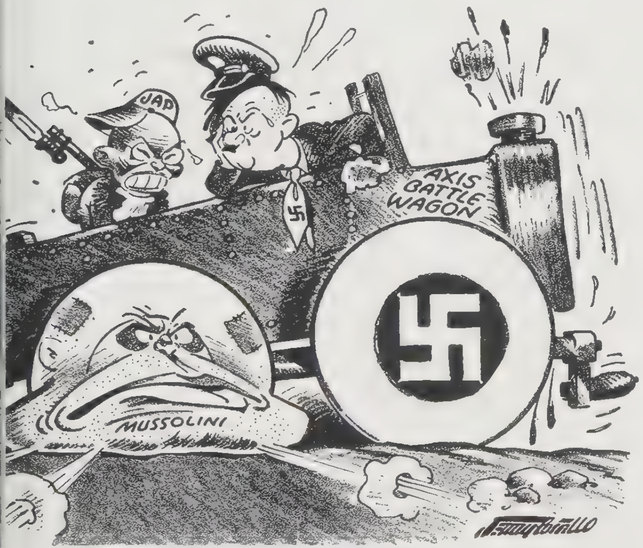
Mussolini, Benito

(1883–), Italian statesman and tator. For his earlier career, see *pædia Britannica.* Il Duce chose June 10, 1940, as the pro- us date for entering World War II, doing so with the declara- that "our conscience is entirely clear." After a few desultory ts at defeated France he consulted with Hitler at Munich 18 on the terms of peace. Italian military activities then ined in relative abeyance until the beginning of the cam- s in North Africa (Sept. 12, 1940) and in Greece (Oct. 28). these operations were soon thrown into reverse, and on Dec. 40, Mussolini reorganized his military command.

e events of Mussolini's career in 1941 fell into the same al pattern first set in 1940: conferences with Hitler; shake- of the army; explanations of defeats; and threats against common enemies of the axis. In June 1941 he assured his e that U.S. intervention would not alter the outcome of the

ter Italy had entered the war against the U.S.S.R., Mussolini a visit to the Russian front where, in late August, he held er five-day conference with Hitler.

ring 1942 Mussolini's prestige and popularity among the n people continued to dwindle. On April 30 he conferred with Hitler near Salzburg, and an announcement said they reached the usual "unity of views and decisions." It was understood, however, that Hitler had reached the "decisions" Il Duce was compelled to agree. After the R.A.F. had cted Milan, Turin and Genoa to their worst bombings, n morale slumped dangerously. Il Duce recognized this ening of spirit in a speech delivered Dec. 2, 1942, when he



"FLAT TIRE" of the axis battlewagon, as pictured in 1942 by Costello of *ickerbocker News* (Albany, N.Y.)

ed Italians for spreading "silly stories and gossip." He also red that if Italy gave up, "it would renounce forever its of being a great nation." (*See* also Italy.)

cotics: *see* Drugs and Drug Traffic.

t, Condé

(1874–1942), U.S. publisher, was born March 26 in New York city. He was a graduate of getown university and received a law degree from Wash- n university, St. Louis, in 1898. He forsook law to become tising director for *Collier's* magazine, and in a few years ok charge of its business administration. Nast ventured into tern business of his own and in 1907 left *Collier's* to ex- his own company. Two years later, he purchased *Vogue* , under his guidance, became a fashion guide for the nation's "smart set." He also published English, French and Argentine versions of this magazine. He subsequently acquired *Vanity Fair,* which he merged with *Vogue* in 1935, and other magazines. Nast died in New York city, Sept. 19.

National Academy of Sciences.

The National Academy of Sciences was incorporated by act of congress in 1863 for the purpose of investigating, examining, experimenting and reporting upon any subject of science or art whenever called upon by any department of the United States government. Reports on such work are made directly to the government department or agency which requested the advice, and the question of whether or not the reports shall be published, and their distribution if published, is entirely in the hands of that department or agency.

Membership in the academy is by election in recognition of outstanding achievements in scientific research, and is limited to 350 active members and 50 foreign associates. Members must be citizens of the United States. New members are elected by the academy on nominations from its 11 sections: mathematics, astronomy, physics, engineering, chemistry, geology, botany, zoology and anatomy, physiology and biochemistry, pathology and bacteriology, and anthropology and psychology.

The academy holds an annual meeting and an autumn meeting each year. In 1942 both meetings were held in the Academy building, Washington, D.C.—the annual meeting on April 27 and 28, and the autumn meeting on Oct. 26. Because of the war, no scientific sessions were held; only business sessions for the consideration of reports of officers and committees, and general business of the academy.

Sixteen new members were elected at the annual meeting: Homer Burton Adkins, Lyman James Briggs, Hans Thacher Clarke, Ralph Erskine Cleland, Charles Haskell Danforth, Albert Einstein, Conrad Arnold Elvehjem, Michael Heidelberger, John Gamble Kirkwood, Paul Dyer Merica, Thomas Midgley, Jr., Francis Dominic Murnaghan, John Torrence Tate, Alfred Marston Tozzer, Ernest Edward Tyzzer, and Selman Abraham Waksman. One additional foreign associate was elected by the academy at the annual meeting: Robert K. S. Lim, of the Peiping Union Medical college, Peiping, China.

The Mary Clark Thompson medal was awarded to Sir Arthur Smith Woodward, distinguished British palaeontologist, in recognition of his services to geology and palaeontology on both sides of the Atlantic.

The academy publishes an annual report, biographical memoirs of its deceased members, occasional scientific memoirs, and monthly *Proceedings.*

The officers of the academy in 1942 were: Frank B. Jewett, president; Isaiah Bowman, vice-president; W. B. Cannon, foreign secretary; F. E. Wright, home secretary; J. C. Hunsaker, treasurer, and Paul Brockett, executive secretary.

The Academy building, at 2101 Constitution avenue, Washington, D.C., was closed to the public for the duration of the war. The scientific exhibits on the first floor, which formerly attracted thousands of visitors to the building annually, were removed some time ago so that the exhibit rooms could be converted to use as offices by various committees working on scientific advice to the government. (P. Bt.)

National Archives: *see* Archives, National.

National Association of Manufacturers.

The N.A.M. was organized in 1895 for the purpose of advancing the industrial and commercial interests of the United States, for promoting and protecting both employer and employee, and for the support of private enterprise politically. Membership, open to organizations and individuals engaged in manufacturing, reached 8,000 during 1942. Dues are based on capitalization and are spent entirely on association projects. In addition to a law department, devoted exclusively to legislative matters pertinent to business interests, the association in 1942 maintained advisory boards and standing committees for the information and assistance of members on such topics as: co-operation with agriculture, church and educational institutions; public and national industrial relations; war and postwar problems; economic stabilization and security; price control; patents and research; and government finance. In 1942 the public relations program was the most extensive ever undertaken by organized industry; it publicized the association through many mediums. F. C. Crawford, president of Thompson Products, Inc., Cleveland, was elected national president at the convention in Dec. 1942. Other officers were: Executive vice-president, Walter B. Weisenburger; secretary, Noel Sargent. Headquarters: 14 West 49th Street, New York city. Branch offices: Investment Building, Washington, D.C.; 111 Sutter Street, San Francisco, California. (N. S.)

National Catholic Rural Life Conference: *see* Catholic Rural Life Conference, National.

National Catholic Welfare Conference: *see* Catholic Welfare Conference, National.

National Debts.

The national debt of a country generally refers to the total financial obligations of the state arising out of the issuance of public securities. It does not include the debt of all governmental units and agencies but only the obligations of the central government. The national debt usually indicates the extent to which the central government has resorted to borrowing over the years to make up the deficit between its outlays for government services and investment and its revenues from taxation and various minor sources. As the manner of keeping official accounts varies from country to country, however, there are many exceptions to this definition. On the one hand, agencies or corporations of the central government are sometimes set up outside the budget so that their debt does not appear in the national debt. On the other hand, obligations are sometimes assumed by the government and included in the official national debt statistics which did not originate in a borrowing operation. The adjusted service bonds issued to veterans are an example of this type of obligation included in the national debt total of the United States.

The course of the national debt in the United States since 1913 is shown in Table I. The debt first reached substantial proportions during World War I, with a peak of over $25,000,000,000 at the end of the fiscal year 1919. During the following decade, about one-third of the debt was liquidated. With the onset of the world-wide depression in 1929 and the subsequent use of government expenditures as a method of fighting economic depression, the debt expanded rapidly throughout the 1930s to reach almost $33,000,000,000 at the end of the fiscal year 1940.

It was after 1933 that various government corporations operating outside the budget first came into prominence. The most important were the Federal Farm Mortgage corporation, the Commodity Credit corporation, the Home Owners' Loan corporation and the Reconstruction Finance corporation. The securities of these corporations were not issued by the treasury and were not included in the statutory public debt, but the obligations were guaranteed by the federal government both as to principal and interest. By the end of the fiscal year 1940 the total securities outstanding guaranteed by the United States were $5,529,000,000.

Table I.—*National Debt of the United States, 1913–43*

June 30	(Millions of dollars)	June 30	(Millions of dollars)
1913	$ 1,193	1929	$ 16,931
1914	1,188	1930	16,185
1915	1,191	1931	16,801
1916	1,225	1932	19,487
1917	2,976	1933	22,539
1918	12,244	1934	27,053
1919	25,482	1935	28,701
1920	24,298	1936	33,545
1921	23,976	1937	36,427
1922	22,964	1938	37,167
1923	22,350	1939	40,445
1924	21,251	1940	42,971
1925	20,516	1941	48,961
1926	19,643	1942	72,422
1927	18,510	1943E	135,000
1928	17,604		

Source: Data from 1913 to 1942 are from U.S. treasury department, daily treasury ment (revised); 1943 estimate reported in budget of the United States g ment for the fiscal year ending June 30, 1944 as presented to the congr President Roosevelt. E=Estimated.

The history of the United States debt entered a new p with the inauguration of the national defense program in middle of 1940. Although new tax measures increased gov ment revenues substantially, the scale of the armament exp tures was soon so vast that tremendous increases in the nat debt were inevitable. Arguments against increasing the ceased in the face of the sheer economic impossibility of finan the huge rearmament program on a pay-as-you-go basis. Du the year and a half of the national defense program, the nat debt rose approximately $15,000,000,000 to a total of $57, 000,000 at the end of the calendar year 1941.

The transformation of the rearmament program to a full effort in the course of 1942 resulted in a further tremen increase in government expenditures. Taxes were raised subs tially but could not keep pace with the flood of expenditure that a much faster increase in the national debt was neces During 1942 the public debt outstanding rose by approxima $50,000,000,000, reaching a figure of $108,170,000,000 at the of the year.

In order to curb the inflationary pressure of the huge vo of government borrowing as the economic system approa closer and closer to capacity operations, the treasury endeavo to increase the savings of the public through the sale of U States savings bonds, a non-marketable type of security. savings bond campaign was considerably expanded after the break of war and an effort was made to get wage and s workers to subscribe 10% of their earnings to war bond chases, the subscriptions to be deducted at the source. By m of this vast campaign an increase of about $9,000,000,000 in savings bonds outstanding was achieved in 1942. The cam received the enthusiastic support of the screen, press and r as well as of organizations and public figures of all sorts.

In his budget message for the fiscal year 1944, President R velt pointed out the necessity for further debt increases to fin the gigantic war program of $100,000,000,000 called for in budget. He further made it clear that he was relying upon ministrative rather than upon fiscal controls to curb infla

Table II.—*United States National Debt and Guaranteed Obligations Outstanding*

(Millions of dollars)

	End of calendar year	
	1941	1942
Public issues	50,469	98,276
Special issues*	6,982	9,032
Total interest-bearing debt	57,451	107,308
Matured debt and debt bearing no interest	487	862
Total public debt outstanding	57,938	108,170
Securities guaranteed by United States	6,324	4,301
Total public debt and guaranteed obligations	64,262	112,471

Source: U.S. treasury department.
*Major items are: Federal Old-Age and Survivors Insurance Trust Fund, Gover Life Insurance Fund, Government Retirement Funds, and Unemployment Trust

hough the two types of controls were interrelated.

The president estimated that the public debt would be $135,0,000,000 at the end of the fiscal year 1943. If his war program the fiscal year 1944 were achieved, the debt by the end of at period would be $210,000,000,000. That estimate was based on existing tax legislation, however, and the president recommended higher taxes which would hold the debt to a somewhat ver figure.

One of the most interesting aspects of public debt financing in orld War II was the successful attempt by the treasury up the close of 1942 to maintain a low interest rate policy. Inest rates were held at a point only moderately higher than ring the depression of the 1930s, the highest rate for long term rket issues in 1942 being 2.5%. The average rate of interest the outstanding debt in 1942 was 2.09% whereas the average e in 1919 was 4.17%. Firm control over the financial system de it possible to finance the war more cheaply than any preus war in United States history.

Due to the huge increase in the national debt, however, total erest charges were rising sharply. Interest on the public debt reased from slightly more than $1,000,000,000 in the fiscal ar 1940 to $1,260,000,000 in 1942. It was estimated that inest charges would rise to $1,850,000,000 in the fiscal year 13 and to $3,000,000,000 the following year.

State and Local Government Debt.—The figures on the debt state and local governments, 1929–42, are shown in Table III. cause of the many government subdivisions in the United tes and the many functions of government which remain in hands of local government units, the state and local government debt in the United States has always been an important nponent of total government debt. It arose largely from the ancing of the various types of public works, although during period of declining economic activity from 1929–33 the ing-off of revenues and increasing expenditures for relief led to the debt total. From 1933 on state and local debt ied little, as the federal government took over the major rden of relief and also financed much of the public works of te and local governments. During 1941 and 1942 state and al debt declined slightly as government revenues increased h the rising tide of national income and as scarcity of maials has tended to limit public works expenditures.

Other Countries.—Latest figures available for the national ot of the leading countries are given in Table IV. It should kept in mind that these debt figures are not comparable with h other because of differences in the division of responsibility ween national and local governments from country to country, ause of differences in size, wealth and population, and because differences in services rendered or investments made by government.

Insofar as changes in national debts are known, it is evident t war was causing large increases in debts as it had throughout history. The debt of the United Kingdom rose from £8,301,100,000 on March 31, 1939, to £14,070,000,000 at the end of the fiscal year 1942. Similar increases occurred in other British empire countries: Canada's debt increased from $3,638,300,000 in 1939 to $5,866,000,000 in 1942, while the Australian debt rose from £1,295,000,000 to £1,629,000,000 over the same period. National debts of the axis powers showed even greater increases. From 1939 to 1942 the debt of Germany increased from r.m.30,737,000,000 to r.m.142,000,000,000. The debt of Japan increased from 30,894,800,000 yen to 40,470,000,000 yen during the fiscal year 1942. At the end of the fiscal year 1939 the Japanese debt was 17,837,100,000 yen. (*See* also BUDGETS, NATIONAL; GREAT BRITAIN; NATIONAL INCOME AND NATIONAL PRODUCT.)

(M. GT.)

Table III.—*Debts of State and Local Governments, United States*

(Millions of dollars)

End of fiscal year	Total	State	County	Municipal	School district and Special district
29	17,234	2,300	2,270	9,259	3,405
30	18,459	2,444	2,434	9,929	3,652
31	19,534	2,666	2,564	10,458	3,846
32	19,804	2,896	2,565	10,483	3,860
33	19,985	3,018	2,521	10,577	3,869
34	19,286	3,201	2,477	9,730	3,878
35	19,429	3,331	2,433	9,778	3,887
36	19,662	3,318	2,389	10,058	3,897
37	19,594	3,276	2,345	10,067	3,906
38	19,576	3,309	2,282	9,923	4,062
39	19,996	3,343	2,219	10,215	4,219
40	20,246	3,526	2,156	10,189	4,375
41	20,183	3,370	2,046	10,210	4,557
42	19,643	3,163	1,846	10,079	4,554

ource: U.S. department of commerce.

Table IV.—*National Debt of Various Countries*

Country	Date of Latest Comparable Debt Figures	Total Debt in Local Currency* (000,000)
Africa		
Egypt	4/30/39	95.0 pounds
Union of South Africa	6/30/42	394.4 pounds
America, North		
Canada	3/31/42	5,866.0 dollars
Mexico	12/31/36	1,326.0 pesos
United States	12/31/42	72,422.0 dollars
America, South		
Argentina	12/31/38	4,398.6 pesos
Brazil	12/31/37	16,841.2 milreis
Chile	12/31/39	3,980.1 pesos
Colombia	12/31/38	206.6 pesos
Peru	6/30/39	807.5 soles
Asia		
India	3/31/42	11,222.9 rupees
Japan	3/31/42	40,470.0 yen
Europe		
Belgium	6/30/41	78,659.0 francs
Bulgaria	8/31/41	28,311.0 leva
Czechoslovakia	12/31/38	52,950.0 koruny
Denmark	3/31/39	1,237.7 kroner
Finland	12/31/38	3,554.0 markkas
France	8/31/39	352,210.0 francs
Germany	3/31/42	142,000.0 reichsmarks
Greece	1/31/40	52,874.7 drachmas
Hungary	6/30/38	1,597.7 pengos
Italy	9/30/35	108,636.6 lire
Netherlands	6/30/39	3,911.9 guilders
Norway	6/30/39	1,528.4 kroner
Poland	9/30/38	4,973.2 zlotys
Portugal	12/31/38	7,192.1 escudos
Rumania	3/31/38	117,874.3 lei
Spain	12/31/35	21,779.0 pesetas
Sweden	9/30/41	5,845.0 kroner
Switzerland	12/31/39	2,725.1 francs
Turkey	5/31/39	619.4 pounds
United Kingdom	4/30/42	14,070.3 pounds
Yugoslavia	3/31/39	24,620.0 dinars
Oceania		
Australia	6/30/42	1,629.0 pounds
New Zealand	3/31/42	385.4 pounds

Sources: Statistical yearbook and monthly statistical bulletins of the League of Nations; Federal Reserve bulletin; official government reports.

*For approximate value of various currencies *see* EXCHANGE CONTROL AND EXCHANGE RATES.

National Defense: *see* AIR FORCES OF THE WORLD; NAVIES OF THE WORLD; WAR PRODUCTION, U.S.; *see* also under individual countries.

National Defense Mediation Board: *see* WAR LABOR BOARD, NATIONAL.

National Defense Research Committee: *see* SCIENTIFIC RESEARCH AND DEVELOPMENT, OFFICE OF.

National Education Association of the United States gave much attention during 1942 to the adjustment of the schools to new conditions created by the war. In co-operation with the U.S. Office of Education and other agencies it had committees at work on many phases of war effort and was in active contact with various branches of the government. Its educational policies commission issued a number of important statements including *A War Policy for American Schools* and *The Support of Education in Wartime.* Its commission on the defense of democracy through education held conferences throughout the United States in co-operation with the National Manufacturers association to bring about a better understanding between industry and the schools. Because of the war emergency the legislative commission intensified its campaign for federal aid for elementary and high schools. The association was instrumental in obtaining a three-cent flat postage rate on books and also an amendment to the Hatch act to remove an increasing threat to the freedom of teaching. American Education week was observed Nov. 8–14, 1942, around the theme, "Education for Free Men," and brought 10,000,000 citizens into their schools.

The association was organized in Philadelphia in 1857. It had, in 1942, a membership of 217,943 and its affiliated state associations had a membership of 804,684. The association's winter convention was held at San Francisco Feb. 21–26, 1942; its general convention in Denver June 27–July 2, 1942. The 1943 conventions were scheduled to be held in St. Louis in February and in Indianapolis in July.

The official organ is the *Journal of the NEA,* edited by Joy Elmer Morgan, and issued to all members monthly except June, July and August. The president for 1942–43 was A. C. Flora, superintendent of schools, Columbia, S.C.; executive secretary, Willard E. Givens. (*See* also EDUCATION.) (J. E. Mo.)

National Foundation for Infantile Paralysis: *see* INFANTILE PARALYSIS.

National Gallery of Art: *see* SMITHSONIAN INSTITUTION.

National Geographic Society.

Organized in 1888 by a small group of professional geographers resident in Washington, D.C., this society's purpose was set forth in its charter as that of "increasing and diffusing geographic knowledge." Gilbert Grosvenor, the president in 1942, assumed the direction of the organization's activities in 1899 and broadened the scope of its researches to appeal to the layman interested in scientific accomplishments. The membership of the society grew from fewer than 1,000 in 1899 to 1,250,000 in 1942.

In 1942 the society made a grant to Dr. Philip Drucker, Smithsonian institution, to continue his studies of the shards collected by the series of National Geographic Society-Smithsonian Institution archaeological expeditions at La Venta, state of Tabasco, Mexico. The expedition uncovered a large cache of jade artifacts of the La Venta culture. The society, in collaboration with the National Museum of Mexico, had a cast made of one of the giant human heads, sculptured in basalt, unearthed in Mexico in 1940 under the direction of Matthew W. Stirling. The heads, too large to be moved, were re-covered with earth to preserve them. A grant of $6,000 was made to Stirling to continue the excavations in 1943.

Foreign field trips made by members of the society's staff during 1942 included those of Dr. Maynard Owen Williams in India and Afghanistan, Howell Walker in Australia, W. Robert Moore in South America and the West Indies, and Frederick Simpich in Baja California.

Detailed surveys in the United States during 1942 included Leo A. Borah's careful study of the state of Kentucky, Gerard Hubbard's investigations of the Lake George-Lake Champlain area, Frederick Simpich's travels in the Pacific Northwest, La Verne Bradley's examination of the San Francisco bay region, and Albert W. Atwood's journey up the Connecticut river valley.

"American Industries Geared for War," a series of paintings made especially for the society and reproduced in colour in the *National Geographic Magazine,* accompanied Albert W. Atwood's study of "The Miracle of War Production." Metals, glass for war and peace, and shipbuilding were surveyed intensively during the year. The quartermaster corps, the coast guard, the navy's aircraft carriers, the blimps at the U.S. Naval station at Lakehur N.J., and the U.S. merchant marine were studied by staff me bers. Arthur Beaumont's paintings of the "Army on Maneuvers shown in colour in the *Geographic,* portrayed phases of mode warfare from ski troops to mounted cavalry.

Endeavouring to give every possible assistance to the gover ment in furthering the war effort, the society made available representatives of the armed forces and official agencies its c lection of more than 300,000 informative photographs, coveri every country in the world; its hundreds of unpublished man scripts; its library of reference works, and its storehouse cartographic data. One staff member, only American to acco pany the Citroën-Haardt expedition across Asia, from the Medit ranean to the Yellow sea by motor, supplied valuable data on po sible air and motor routes to China. Other staff men gave co parable advice to military planners.

The society prepared and issued as supplements to its offic publication, the *National Geographic Magazine,* five large-sca ten-colour maps, including the "Theatre of War in the Paci Ocean," "North America," "South America," "Theatre of War Europe, Africa and Western Asia," and "Asia and Adjace Areas." Made at the request of army air forces personnel, t "Theatre of War in Europe" was drawn to a scale of 237 m the approximate cruising speed of the average bomber, to o inch. The society's maps, enlarged to ceiling height, were plac in the navy's operational centres to show the location of eve unit in the fleets.

In addition to the large maps, the society published 37 c tailed black-and-white maps in the magazine during the year.

The society's news bulletin service, supplied upon their reque to some 550 newspapers, furnished geographic, historic and ec nomic backgrounds of the place names mentioned in war ne dispatches. A series of articles, each accompanied by an esp cially compiled newspaper map, surveyed the neighbour republ in Central and South America.

The *Geographic School Bulletin* was mailed to 30,000 teache each week of the school year to supplement geography textboo (G. GR.)

National Guard.

The opening of the year 1942 found t entire national guard of 52 states and t ritories in the federal service and merged into the army of t United States fulfilling their assigned missions. Many chang were made in types of national guard organizations remodell to conform to the more effective and modern pattern adopted the army. For example, national guard cavalry regiments we mechanized; anti-tank elements were withdrawn from artille units, and formed into tank destroyer battalions. Regimen bands were reassigned to posts and stations. Divisions were co verted from the so-called "square" divisions to the "triangula divisions. Air squadrons were reorganized and national gua pilots who were older and among the most skilled, due to civili experience, were transferred to more important positions.

Details of reorganization, or of assignments, cannot be pu lished for military reasons. Guardsmen were serving in every pa of the world on every battlefront. They distinguished themsel in the Philippines where the youngest of the U.S. coast artille units, the 200th coast artillery from New Mexico, earned t distinction of being the first national guard regiment cited as organization for exceptional service in battle.

The flag of the United States was first raised by Americ combat troops on the soil of Australia by a national guard re ment. These organizations were so padded with volunteers, floo ed with drafted increments, and supplemented with officer repla ments while the original personnel had been withdrawn to t k of training selectees and forming new task forces, that it was ficult to identify them as the national guard which entered into service beginning Sept. 15, 1940.

More than 20,000 promotions were earned by national guard cers, nearly 30 new brigadier generals being made from its sonnel, and two major generals commanding new divisions be- promoted from their officers. For the first time in history ervice command of the army was headed by a national guard cer (Major General Milton A. Reckord), and, also for the first ie, an important division of the general staff of the army was ded by a national guard officer (Brigadier General Miller G. iite), and many other highly important assignments were en- sted to these citizen soldiers.

n more than two-thirds of the states, the state adjutant gen- ls were directors of selective service activities, and approxi- tely 90% of the state selective service staffs were former guard cers who were trained for this specific assignment.

tate Guard.—With the induction into the federal military vice of the last units of the national guard on Oct. 6, 1941, the te guards, organized under a congressional amendment to tion 61 of the National Defense act, assumed far greater im- tance. The national guard bureau, as the war department's ad- iistrative agency for state guards, devoted practically all of its ention to the organization, equipment and training of these e guard units now existing in all states except Arizona, Mon- a, Nevada and Oklahoma. The number of state guards prac- lly doubled. There was considerable turn-over in both officers men because membership in these units did not exclude them n selective service and, in fact, in many cases enrollees in e guards joined their local units in order to get preliminary ning which might hasten their advancement upon induction.

Many of the officers were reserve officers awaiting order into ive service. This turn-over of personnel necessitated an in- se training program. Special schools were established in prac- lly all of the service commands. Many states set up officer ools in which instruction was given by army officers in the lat- tactical methods employed and in guerrilla warfare.

he state guards not only were in 1942 a strong defensive e, but contributed much to their states during domestic emer- cies and sudden disasters due to natural causes.

he probable employment of state guards was clarified by the department's announced statement of principles covering ning and missions on April 30, 1942, as follows:

> tate guards remain state forces for use within the boundaries of their states, but their functions have been fitted into a broad pattern for home defense of the nation, and service commanders are asked to arrange hey may be assigned appropriate emergency missions.
>
> he mission of state guards is to provide an adequate, trained force for loyment within the boundaries and jurisdiction of their states, as di- ed by the state executive and legislature. The state guards are expected, er normal circumstances, to be used for the benefit of the state to meet estic emergencies from war or other causes, and to guard and protect l industries, installations, communications and facilities when local ce and civil guards are deemed inadequate. In addition, the state rds may be expected to assist military police and other units of the army, uppress the efforts of enemy agents, such as organized fifth column ips and parachute troops, and to co-operate with federal military iorities in extreme emergencies especially in the evacuation of civilians in information and observation duty at, or near frontiers.
>
> he war department, through the national guard bureau and service manders, has circulated to the various state guard authorities suggested iing programs to standardize progressive and balanced training.

(J. F. Ws.)

tional Housing Agency. The National Housing agency was created by the sident on Feb. 24, 1942. Employing the powers vested in him the First War Powers act, 1941, the president issued Execu- Order 9070 consolidating into the National Housing agency housing functions and activities formerly carried on by the owing agencies: the Federal Housing administration, the Federal Home Loan Bank board, the Federal Home Loan Bank system, the Federal Savings and Loan Insurance corporation, the United States Housing authority, the Defense Homes corporation, the Federal Works agency, the Public Buildings administration, the Division of Defense Housing and the Mutual Ownership Defense Housing division in the Federal Works agency, the War and Navy departments (except for buildings on military reservations), the defense housing and non-farm public housing of the Farm Security administration, and the Division of Defense Housing Co-ordination.

The executive order established three principal constituent units within the NHA: the Federal Housing administration, the Federal Home Loan Bank administration, and the Federal Public Housing authority.

In addition to supervising and directing the activities of the three constituent units, the NHA administrator and his staff in 1942 performed a special function arising out of the war effort. In co-operation with the War Production board, the War Manpower commission, and other federal agencies, the office of the administrator determined the need for housing for war workers in areas where a shortage of housing existed or impended, which threatened to impede the war program, and devised ways and means of supplying such need.

The National Housing agency in 1942 established regional offices in Boston, New York city, Washington, Atlanta, Cleveland, Chicago, Kansas City, Dallas, Seattle and San Francisco.

(J. B. Bl.)

Federal Housing Administration.—The Federal Housing administration (one of the three major units of the National Housing agency) geared all its activities to the national war effort in 1942. Under its program, private investment funds totalling around $1,136,487,000 were mobilized to finance war housing projects, essential repairs and remodelling for war workers, and amortized financing of sound existing home properties. Its field offices processed private war housing priority requests on behalf of the War Production board. Its technical facilities were used to the utmost to further sound housing construction under war restrictions and shortages of critical war materials. Commissioner in 1942 was Abner H. Ferguson.

Congress amended title VI (War Housing insurance) of the National Housing act, under which the FHA operated in 1942, by increasing from $300,000,000 to $800,000,000 the aggregate amount of mortgages insurable under this title, extending the expiration date of the insurance authority from July 1, 1942 to July 1, 1943, raising the maximum amount of mortgages on one-to-four family houses eligible under section 603 and extending their maximum maturity from 20 to 25 years, and adding section 608, which made mortgages on large-scale war housing rental projects eligible for insurance.

Also, congress amended title I of the act to provide that loans not to exceed $5,000 might run for as long as seven years, if made for the purpose of financing the alteration or repair of existing structures to provide additional living accommodations for war workers.

Insurance of all types written during 1942 amounted to $1,136,487,237, compared with the high record of $1,185,852,709 written in 1941. This brought the total insurance written from June 1934 through Dec. 1942 to $6,398,604,623. These funds were advanced by private financial institutions. The FHA loaned no money. Income for 1942 was $27,298,702, of which $11,107,041 went to FHA operating expenses and $16,191,661 to the various insurance funds.

New dwelling units started in 1942 under FHA inspection totalled 159,575, compared with the previous high record of 220,300 started in 1940. Approximately 156,000 of the units started in 1942 were in the officially designated critical war housing areas.

Under section 203 of title II during 1942 the FHA insured 149,635 small-home mortgages for $691,445,427, compared with 198,799 for $876,707,384 in 1941. This amount brought the net total as of Dec. 31, 1942 to 982,457 mortgages insured for $4,274,505,550. These mortgages were protected by the Mutual Mortgage Insurance fund, which as of Dec. 31, 1942, had net resources of $50,398,753.

Under section 207 of title II, large-scale housing mortgages for $5,715,000 were insured in 1942, financing projects providing 1,539 dwelling units, compared with 27 for $12,997,841 in 1941. As of Dec. 31, 1942, mortgages insured numbered 355 and amounted to $145,665,516, with firm commitments to insure 3 more for $1,755,000. A total of 39,162 dwelling units were provided by the 358 projects. The Housing Insurance fund protecting these mortgages, as of Dec. 31, 1942, had net resources of $2,378,522.

Under section 603 of title VI, 68,706 war housing mortgages on one-to-four family dwellings for $267,015,578 were insured in 1942, compared with 3,778 for $13,431,250 insured from March 1941, when title VI became effective, through Dec. 31, 1941. As of Dec. 31, 1942, mortgages insured numbered 72,484 and amounted to $280,446,828.

Under section 608, which became effective May 26, 1942, mortgages on 31 large-scale war housing projects totalling $16,760,200 had been insured as of Dec. 31, 1942, with firm commitments outstanding to insure 15 more for $2,352,500. A total of 4,947 dwelling units was provided by the 46 projects.

The War Housing Insurance fund protecting mortgages insured under sections 603 and 608, as of Dec. 31, 1942, had net resources of $5,322,725.

Debentures issued in exchange for properties securing foreclosed mortgages insured under titles II and VI of the National Housing act, in addition to the protection of the funds, are guaranteed unconditionally as to principal and interest by the United States.

Under title I, a total of 432,755 property improvement loans for $155,551,032 was reported for insurance in 1942, compared with 687,837 for $282,716,234 reported in 1941, bringing the grand total to 4,129,816 loans for $1,681,226,529. (A. H. F.)

Federal Home Loan Bank Administration.—This agency directs the home financing and related activities of agencies formerly under the supervision of the Federal Home Loan Bank board. These are the Federal Home Loan Bank system, the Federal Savings and Loan Insurance corporation and the Home Owners' Loan corporation. In addition, the United States Housing corporation was transferred to the bank administration to complete its liquidation.

The presidential order of Feb. 24, 1942, consolidating the urban housing activities of the government under the newly established National Housing agency, designated John H. Fahey, former chairman of the Federal Home Loan Bank board, to direct the Federal Home Loan Bank administration with the title of commissioner. The offices of the other members of the board were vacated.

Federal Home Loan Bank System.—The Federal Home Loan Bank system was created by act of congress approved July 22, 1932, to provide reserve credit facilities for thrift and home-financing institutions—namely, savings and loan associations, and institutions of similar type, and savings banks and insurance companies. The system in 1942 functioned through 12 regional Federal Home Loan banks, established in Boston, New York city, Pittsburgh, Winston-Salem, Cincinnati, Indianapolis, Chicago, Des Moines, Little Rock, Topeka, Portland and Los Angeles.

Institutions approved for membership are required to invest in the capital stock of their respective regional banks. Of th aggregate stock of the banks, about 73% was held by the gov ernment in 1942. Beyond their capital stock, the regional bank obtained their funds from the sale of debentures and by accep ing deposits from member institutions.

The funds of each bank were used mainly in 1942 to mak advances to member institutions for the purpose of providin additional accommodations to local home loan borrowers and in vestors. Under certain conditions, advances for a short term might be obtained without the deposit of collateral. Long-term advances had to be secured by approved home mortgages o other acceptable collateral.

The bank system experienced steady and rapid growth. O Jan. 1, 1933, it had but 101 members, with estimated assets o $217,000,000. By June 30, 1942, membership had increased t 3,815, of which 2,308 were state-chartered home-financing inst tutions, 1,464 federal savings and loan associations, 26 insuranc companies and 17 savings banks; their combined assets were ap proximately $5,640,000,000. On the same date the paid-in cap ital stock of the regional banks amounted to $175,532,650 an their consolidated assets totalled $309,981,715. During 1941, in stitutions which were members of the bank system made abou 40% of the new mortgage loans on urban homes made by a institutional lenders throughout the United States.

Under the leadership of the regional Home Loan banks, th member institutions of the system in 1942 took an active part i the financing of homes for workers in the areas of war industrie where such dwellings could be safely financed by private capita

Federal Savings and Loan Insurance Corporation.—Th Federal Savings and Loan Insurance corporation, a permanen instrumentality of the U.S. government, was created by congres in 1934. It was established to insure the safety of investment up to $5,000 per investor, in each federal savings and loan asso ciation and in each state-chartered institution of the savings an loan type which applied and was approved for this protectio As of June 30, 1942, 2,374 associations with total assets of $3 461,000,000 had become insured, of which 1,464 were federal sav ings and loan associations and 910 were state-chartered institu tions. On June 30, 1942, the corporation had accumulated re serves amounting to nearly $33,000,000.

Home Owners' Loan Corporation.—The Home Owner Loan corporation was created by congress in 1933 to make loan directly to distressed urban home owners over a three-year peri by taking over their delinquent mortgages. After its lendin operations ceased in 1936, the corporation was engaged principall in the collection of the funds it loaned and in the sale and rent of the properties it was forced to acquire.

Loans were made at an interest rate of 5%, later accepte at 4½%, and were to run for a period not over 15 years and b retired through monthly payments covering principal and interes The act was amended to permit the corporation to extend i loans to a maximum of 25 years, where the borrower's circum stances and the condition of the security justified such extensio

Provided with $200,000,000 initial capital, HOLC was a thorized to issue U.S. guaranteed bonds in an amount not to e ceed $4,750,000,000, of which $3,489,453,550 were issued. total of $2,119,317,750 in bonds was outstanding as of June 3 1942. The corporation lent more than $3,093,000,000 to abo 1,018,000 home owners located in almost all the counties in th United States. Its average loan was slightly more than $3,00 As of June 30, 1942, only 5% of HOLC's 808,219 active accoun were in default. More than 160,000 loans amounting to $40 500,000 were paid off in full and the mortgages cancelled. Fro the beginning of its operations through June 30, 1942, HOLC a quired about 190,000 properties, of which it had sold abo

0,000. Of the unsold properties available for rental income, % were rented.

United States Housing Corporation.—The United States ousing corporation was created May 16, 1918, to provide hous- for war workers, during World War I. Congress made avail- le $100,000,000 to carry out this purpose and before it ceased ive operations the corporation had acquired approximately 000 houses and several hotels in 26 states and the District of lumbia. The corporation in 1942 held an interest in 445 houses d 54 vacant lots in 7 states, with an approximate value of ,000,000. Originally under supervision of the secretary of labor, corporation was transferred to the secretary of the treasury 1937, to the Federal Works agency in 1939 and then to the deral Home Loan Bank administration. The Federal Home an Bank administration was in 1942 liquidating the last of the ets of the United States Housing corporation. (J. H. Fa.)

ederal Public Housing Authority.—The Federal Public using Authority was established on Feb. 24, 1942 as one of constituent units of the National Housing agency. It was de responsible for all the public housing activities of the NHA, luding the public war housing program and the low-rent and m clearance program.

The authority in 1942 was providing public housing for in- grant war workers in localities with acute housing shortages ere private enterprise was unable to fill the need. Congress horized the expenditure of approximately $2,000,000,000 der various acts for such war housing. As far as possible, al housing authorities were used by the FPHA in the construc- n and management of war housing; where they were not avail- e, the FPHA built and operated directly. In the earlier phases the war housing program, permanent housing was built; but reasing shortages of material and labour and the need for speed l, by the end of 1942, limited the program almost exclusively temporary construction. Dormitories were being built for gle workers, both men and women; small apartments for ples; and group houses or apartments for families. Where jects were located in isolated communities, restaurants, recrea- n facilities and infirmaries were provided.

The public war housing program on Dec. 15, 1942, comprised 0 projects, including dormitory accommodations for 112,000 sons, 39,000 accommodations for couples, 377,000 dwellings larger families, and 24,000 trailers. It was estimated that se projects would house upwards of 1,500,000 persons. Ap- ximately 34% of this program was completed and the balance in planning and construction stages at the end of 1942.

The low-rent housing program of the federal government was horized by congress in 1937 and was administered by the ited States Housing Authority until Feb. 24, 1942, when its ctions were transferred to the Federal Public Housing Au- rity. As a result of World War II, the further construction housing for low-income families was suspended and, where sible, projects not yet occupied were being used during the ergency for the housing of essential war workers. The low- t and slum clearance program in 1942 was carried out en- ly by local housing authorities set up for this purpose by local governments pursuant to state legislation. These local au- rities could borrow from the FPHA up to 90% of the cost of -rent and slum clearance projects. For the purpose of making h loans, the FPHA was authorized to borrow $800,000,000. loans made to local authorities were repayable to the FPHA, ether with interest, over terms running up to 60 years. The HA was also authorized to make annual contributions to the l authorities in order to assist them in achieving rents within means of families in the lowest income group. In order to ure slum clearance, the law provided that for every new dwelling built, at least one slum dwelling should be eliminated either on the site of the project or elsewhere within the locality.

The low-rent housing program in 1942 (exclusive of projects converted to use for war workers) included 465 projects with 117,000 dwellings, substantially all of which had been completed. The average monthly rent charged for these dwellings, including heat and utilities, was $17.71 per month in April 1942, and the estimated average family income of the tenants was $815 per year at time of admission to the projects. (*See* also Housing.) (H. Eh.)

National Income and National Product.

Under the necessity of mobilizing the nation's economic resources for an all-out war effort, the national income of the United States in 1942 again rose to a new high record. Despite the high level of income that was achieved in 1941, there was no slackening in the pace of the expansion in 1942. From the total of $77,200,000,000 in 1940, the national income rose to $94,800,000,000 in 1941 and to the preliminary estimate of $117,400,000,000 in 1942. Thus, the figure of $100,000,000,000 of national income, which only a few years ago was considered an almost unobtainable ideal, was exceeded under the pressure of war. Against the 1942 national income total, the $69,800,000,000 peak of World War I or the $83,365,000,000 total for 1929 lost their significance as symbols of the nation's productive power.

Because of its great usefulness in following the economic changes wrought by the war, the department of commerce during 1942 placed increasing emphasis upon measurement of the gross national product. The preliminary estimate of this aggregate for 1942 was $152,000,000,000. This compares with the 1941 total of $119,500,000,000 and the figure of $97,100,000,000 for 1940.

Meaning of National Income and Gross National Product.—Proper use and interpretation of national income and product statistics require an understanding of the concepts upon which their compilation is based. The national income represents a summation of the net earnings of the various factors of production derived from their association in current economic production. Both money income and income in kind are included, so long as they are derived from participation in current production. Such income receipts as relief, unemployment benefits, pensions, gifts, capital gains or losses, and gains from illegal activities are excluded since they do not represent earnings derived from current productive activity. The incomes included in the compilation are net incomes; that is, in the case of business enterprises, the incomes are counted after deduction of costs of doing business and after allowance for depreciation and business taxes. In the case of corporations the income is taken after allowance for income and excess profits taxes. The estimates are limited to those incomes which are ordinarily derived from the market economy. Thus, the value of the services of housewives are not included whereas the income derived from government employment or government obligations are included. It is well to emphasize that the national income is not simply the sum of money incomes of all persons in the nation, such as might be reported for income tax purposes. In the first place, it includes the income of corporations, apart from capital gains and losses, that is not distributed to individuals. In the second place, it includes only such receipts of individuals as are derived from currently rendered services, with receipts of both money and commodities being taken into account.

The gross national product, as measured by the department of commerce, represents a summation of three major components: (1) the market value of goods and services flowing to consumers,

(2) the value of the gross output of capital goods retained by private business, and (3) the cost value of the goods and services produced or purchased by government. The gross national product differs from the national income in that no allowance is made for depreciation and other reserves (which constitute business expenses in the computation of income) or for taxes paid by business (which while they must be covered in the sales value of business output are not considered to be the earnings of any of the factors of production). One may best conceive of the meaning and utility of these two aggregates by considering the gross national product as the market value of the finished goods and services of private enterprise (inclusive of capital goods) plus the cost of government output, and considering the national income as the net earnings of the factors of production derived from that product.

Changes in National Income Since 1919.—Estimates of national income from 1919 to 1942 are shown in Table I. It will be noted that the economic boom associated with World War I reached its high point in 1920. There followed a sharp and short liquidation in 1921 and then an almost continuous upsurge of economic activity during the prosperous '20s, with a new high for national income in 1929 that was not to be surpassed until 1941. The magnitude of the disastrous depression of the early '30s may be seen in the fact that the national income was more than halved between 1929 and 1932. From this low level, substantial progress was made in raising the national income to a total of almost $71,000,000,000 in 1939, a mark well below the average for 1926–29 in dollar terms. The period of economic recovery from the bottom of the depression to the last year of peace in Europe was marked by recession in 1938.

This brief account of the movement of national income in the United States between the two great wars is in current dollar terms. The estimates, consequently, are affected by the general level of prices as well as by the physical quantity of goods and services produced. Since for many purposes the physical quantity of national production, or real national income, is required, a series depicting this volume is also shown in Table I, average prices of 1935–39 being used as a base. Entirely adequate price information for adjusting the national income in current dollar terms is not available, but the estimates in Table I are sufficiently accurate for most purposes. There are two interesting points to be observed in connection with these estimates of real national income.

Table I.—*National Income in Current and Average 1935–39 Dollars*

Year	Current dollars	1935–39 dollars*	
	Total (In 000,000,000s of dollars)	Total (In 000,000,000s of dollars)	Per capita ($)
1919	67.6	47.8	455
1920	69.7	44.1	414
1921	52.6	40.8	377
1922	60.4	49.5	451
1923	70.0	56.7	508
1924	70.0	56.4	499
1925	74.6	59.5	518
1926	76.8	60.7	521
1927	76.2	61.9	524
1928	80.1	64.8	541
1929	83.3	68.1	566
1930	68.9	58.0	471
1931	54.5	51.0	411
1932	40.0	41.6	334
1933	42.3	45.7	364
1934	49.5	50.6	400
1935	55.7	56.1	440
1936	64.9	65.2	509
1937	71.5	69.0	536
1938	64.2	64.2	494
1939	70.8	71.9	549
1940	77.3	78.0	591
1941	94.8	87.9	660
1942†	117.4	102.3	758

Source: U.S. department of commerce.

*Adjusted for price changes by use of a combination of cost of living indexes of urban workers and farmers and price index of capital goods.

†Preliminary.

The first is that the year-to-year changes in the total are co siderably less violent than in the estimates of national income current dollars. The depression of 1921, for example, was large accounted for by a drop in prices rather than by a decline physical output. The depression of the early '30s was also part a result of price movements, although in this instance the decli in real income was very substantial. On the other hand, the rece sion of 1938 was to a lesser degree accounted for by a decline prices. It may be noted, however, that the volume of net outp after adjustment for price changes was higher in 1939 than 1937, whereas the reverse was true of national income in curre dollars.

The second is that the comparison between the general level national income in the '30s as against the '20s is more favourab to the latter decade if real output is used than if the money val is used. In other words, the lower level of the national incom in the '30s is partly accounted for by the lower prices prevaili in that period. It is most striking, for example, that the re national income in both 1937 and 1939 exceeded that of 192 Furthermore, the real national income in 1939 was 50% abo 1919, whereas the current dollar value showed less than a 5 increase. This large rise in real income is a reflection of the i crease in the capital and labour resources being utilized in t productive process and also of the tremendous advances in pr ductive efficiency occasioned by technological development. far as the importance of the latter factor is concerned, it is si nificant that the larger quantity in 1939 over 1919 was achiev with a smaller percentage utilization of the available producti capacity of both men and machines.

In assessing the importance of the rise in national income ov time, it is also essential to take account of the increase in pop lation. As population rises, there are, of course, more persons share in the goods being produced for present and future co sumption and also more hands available for contributing to tot output. The changes in income produced per capita after adju ment for fluctuating prices are shown in Table I. Real income p capita in 1937 and 1939 was about equal to the per capita re income in 1927 and 1928. It did not exceed the level reached 1929 although the difference between 1929 and 1939 was re tively small. In comparing the change from 1919 to 1939, it m be noted that about half of the 60% rise in aggregate real inco represented a gain in per capita income.

Rise in National Income after 1939.—The outbreak of Wor War II marks 1939 as the end of a definite phase in the econom life of the nation. For, as the dramatic and swift invasion of t Low Countries and the conquest of France revealed the unp paredness of the United States in the face of possible aggressi a huge rearmament program was undertaken. This was to hav powerful influence on the level of economic activity and, con quently, upon the size of the national income. The stimulus p vided by the defense effort was already evident in 1940 when t national income rose more than $6,000,000,000, even though t program was not inaugurated until the middle of that year. was not until 1941, however, that the full impact of the rearm ment program became apparent. For in that year, as previou noted, the national income rose by $17,000,000,000.

With the actual outbreak of war at the end of 1941 the effo to obtain the maximum output of armaments in the U were intensified, leading to an ever greater use of available e nomic resources. As a consequence, the national income cont ued to expand in 1942, with a gain for the year of almost $2 000,000,000. The data in Table I show that rising prices w not without their influence on the national income in 1941 1942, though the larger part of the rise represented an increase real output.

Table II.—*U.S. National Income by Distributive Shares*

(In 000,000,000s of dollars)

Item	1929	1932	1939	1940	1941	1942*
tal National Income	$83.3	$40.0	$70.8	$77.3	$94.8	$117.4
Total Compensation of Employees	53.1	31.7	48.2	52.7	65.0	83.5
Salaries and Wages	52.6	31.0	44.4	49.1	61.3	80.1
Supplements to Salaries and Wages	.5	.6	3.8	3.7	3.6	3.4
Net Income of Corporations	7.2	—3.6	4.2	5.5	7.2	6.8
Net Dividends	5.9	2.7	3.8	4.3	4.6	4.3
Corporate Savings	1.3	—6.4	.4	1.3	2.6	2.5
Net Income of Noncorporate Business	13.6	4.8	11.1	11.5	14.7	18.8
Agriculture	5.2	1.5	4.3	4.4	6.2	9.3
Other	8.5	3.4	6.8	7.2	8.5	9.5
Net Interest	5.9	5.6	5.1	5.2	5.3	5.3
Net Rents and Royalties	3.6	1.5	2.3	2.3	2.6	3.1

e: U.S. department of commerce. *Preliminary.

espite the tremendous income total achieved in 1942 it was lent at the end of the year that the nation's economy had not reached its maximum productive power under wartime condi- s. The secretary of commerce stated that he expected the onal income in 1943 to reach $135,000,000,000, apart from influence of a rise in prices in the course of that year.

istributive Shares of the National Income.—An analysis of national income in terms of the shares distributed or accru- to the various factors of production is presented in Table II. previously mentioned, the shares representing business earn- are all net of any expenses or taxes incurred in the operation usiness.

1942 total salaries and wages rose to over $80,000,000,000, pared with a total of under $50,000,000,000 in the relatively perous year of 1940. Although the salary and wage total was ted by rising wage rates over this two-year period, the rd-breaking expansion represents mostly the fact that new ions of persons were put to work and that the employed popu- n as a whole was working considerably longer hours than the case two years earlier. Another factor of importance in ing up the salary and wage total was the fact that the poorer industries tended to shrink relative to the higher paid heavy ls industries, the latter having expanded so tremendously to t the requirements of total war.

he largest percentage gain among the distributive shares since occurred in the net income of agricultural entrepreneurs. arily because of a substantial rise in prices, this component he national income more than doubled over the two-year od. Nonetheless, agricultural production was expanded most ificantly as the farmers of America made their contribution rd the winning of the war with a record-breaking output of and other farm products. In 1942 alone, it is estimated that cultural production was increased by about 12%.

Table III.—*U.S. National Income by Industrial Origin*

(In 000,000,000s of dollars)

Industry	1929	1932	1939	1940	1941	1942*
al National Income	$83.3	$40.0	$70.8	$77.2	$94.7	$117.4
griculture	6.8	2.4	5.2	5.3	7.6	11.0
Mining	1.9	.5	1.4	1.7	2.1	2.5
Manufacturing	20.9	6.2	16.9	20.1	27.2	35.5
ontract Construction	3.5	.9	2.1	2.5	3.7	4.6
ransportation	7.0	3.6	4.9	5.4	6.5	8.0
ower and Gas	1.4	1.1	1.5	1.5	1.5	1.5
ommunication	1.0	.7	.9	1.0	1.1	1.2
rade	11.9	5.6	10.9	11.6	13.5	14.7
inance	10.1	5.3	6.8	7.0	7.5	7.9
overnment	6.4	6.6	10.0	10.3	11.8	16.7
ervice	8.3	4.7	6.9	7.4	8.0	8.9
Miscellaneous	4.0	2.4	3.2	3.4	4.3	4.9

e: U.S. department of commerce. *Preliminary.

Table IV.—*Gross National Product or Expenditure*

(In 000,000,000s of dollars)

Item	1939	1940	1941	1942*
Gross national product or expenditure	88·1	97·1	119.5	152.0
Government expenditures for goods and services	15·1	16·3	24·6	62·2
Federal government	6·8	8·0	16·4	54·3
War	1·4	2·8	11·2	50·0
Other federal government	5·4	5·2	5·2	4·3
State and local government	8·3	8·3	8·2	7·9
Output available for private use	73·0	80·8	94·9	89·8
Private gross capital formation	11·0	14·6	19·1	8·3
Construction	3·9	4·5	5·5	2·9
Producers' durable equipment	5·4	6·6	8·9	5·4
Net change in business inventories	·8	1·8	3·6	·0
Net export of goods and services	·8	1·4	·9	—·1
Domestic output of monetary gold and silver	·1	·3	·2	·1
Consumers' goods and services	62·0	66·2	75·8	81·5
Durable goods	7·1	8·3	10·3	6·7
Nondurable goods and services	54·9	57·9	65·5	74·8
MEMO: Consumers' expenditures in average 1941 dollars	66·2	70·3	75·8	74·3

Source: U. S. department of commerce. *Preliminary.

et income of corporations usually shows the largest percent- change during periods of rising or falling national income. much as this component of the national income is included he total after allowance for income taxes, however, the substantial increase in tax liabilities of the past two years has severely limited the rise. As a matter of fact, from the data available at the close of 1942 it would appear that corporate net income for 1942 was slightly under the 1941 total.

Industrial Origin of National Income.—An analysis of the industrial origin of the national income is presented in Table III. The figures for each industry represent the net earnings of the factors of production employed in that industry.

Considering that the impetus to the expansion of the national income after 1939 came from outlays for armaments and armament-producing facilities, it is not surprising that the income originating in the manufacturing and contract construction industries increased more substantially than in most other areas of the economy. As against an increase in total national income from 1939 to 1942 of little over 65%, the net value of manufacturing output and of contract construction rose more than 100%. In this regard, the armaments boom was similar to the durable goods investment booms of earlier periods. Agriculture was the only other industry to match this rate of gain. It is also evident from Table III that the war continued the upward trend of the net output of government that had been one of the major characteristics of the economy after 1930. This continuance was primarily due to the expansion of the armed forces of the nation.

Utilization of Gross National Product.—As previously mentioned, the gross national product consists of the value of currently produced goods and services utilized by government, of gross additions to private capital, and of goods and services purchased by consumers. It is, therefore, the appropriate aggregate for showing the apportionment of current output between war and nonwar uses. The national income, on the other hand, is not readily adapted to this purpose, since it measures only the earnings of the factors of production whereas government expenditures for war are expressed in terms of the market prices paid.

The major components of the gross national product from 1939 to 1942 are shown in Table IV. Perhaps the most striking thing in the table is the spectacular increase in the total gross national product in both 1941 and 1942. Over that two-year period the value of total output rose by more than 50%, most of which is accounted for by an increase in the physical flow of goods and services. This unprecedented rate of expansion continued undiminished throughout the year 1942 so that by the final quarter of that year the gross national product had attained an annual rate in excess of $165,000,000,000.

The driving force behind the expansion was, of course, federal government expenditures for goods and services required in the rearmament and war efforts. (The figures shown in the table for war expenditures are not the same as total government outlays for war purposes since some of these outlays may not be for currently produced goods and services.) While there was a significant increase in war output during 1940, owing to the inauguration of the defense program in the middle of that year, the real results of the defense program became fully evident in 1941 when war expenditures exceeded $11,000,000,000. Pearl Harbor brought an intensification of the war effort and the setting of new and previously unheard of goals for war production, which in 1942 carried war expenditures to the spectacular total of approximately $50,000,000,000, a figure constituting about one-third of the gross national product. During the fourth quarter of the year war expenditures were at an annual rate exceeding $70,000,000,000. These figures tell their own story about the nation's success in economic mobilization for war.

It may be observed that both in 1940 and 1941 the expansion of war production did not require any curtailment of goods and services available for private use. As a matter of fact, in both those years nonwar production was steadily increased. This was the case with both capital formation and consumers' goods and services, and was made possible because at the beginning of the rearmament program the nation had available a huge pool of unemployed economic resources, both men and machines. In 1942, however, this situation came to an end, the value of war output increasing more than the total gross national product. What this means is that the huge total of war goods made available in that year was achieved in part by reducing various types of nonwar output. Both federal nonwar and state and local government utilization of current production were decreased. The major cut, however, came in the field of private capital formation where the record-breaking 1941 total of over $19,000,000,000 was reduced to a little over $8,000,000,000. Both private construction and private purchases of machinery and equipment were drastically curtailed while, in addition, a halt was called to the substantial increase in inventories which was recorded in 1941.

In terms of actual dollars spent, consumers' purchases of goods and services actually increased in 1942. This rise, however, merely reflected the influence of rising prices; in terms of dollars of constant purchasing power, the goods and services received by consumers was slightly less in 1942 than in 1941. That it proved to be possible to maintain consumers' goods and services at so high a level in the face of the tremendous requirements of the war program was due to two important factors. In the first place, the total of consumers' purchases was larger than current production by virtue of the drawing down of business inventories of consumers' goods. In the second place, the fact that the United States did not reach an overall manpower shortage in 1942 meant that the restrictions of consumers' goods were due entirely to shortages of raw materials and imported commodities. Because the war program consisted mostly of munitions and munitions' manufacturing facilities, the material shortages were largely confined to durable goods. It may be seen that consumers' durable goods declined fairly sharply and this decline would have been very much greater had it not been for previously accumulated inventories. While there were isolated shortages among the nondurable goods, on the other hand, many of these commodities as well as virtually all consumers' services were able to be increased. The decline in consumers' durable goods, therefore, was almost entirely offset by increases in nondurable goods and services. This does not mean that the consumer situation would be equally favourable in 1943, for, in the course of that year, a manpower shortage was expected to develop and this might require curtailment in the output of nondurable goods and services. Furthermore, the food and clothing requirements of both the U.S. armed forces and the allies were certain to be larger, thereby leaving a smaller total for the U.S. civilian population.

Consumer Income and Saving.—In Table V is shown a bre down of the national income by use of funds. These data are p ticularly interesting in time of war since they demonstrate basic character of the inflationary problem. Because of the en mous requirements of the war, the total use of economic resour increased substantially, leading to the expansion of the natio income that has been previously pointed out. Most of this inco flows to individuals although part of it is syphoned off in the fo of taxes either before or after it reaches the individual. As m be seen, both employment and personal taxes increased fa substantially from 1941 to 1942. Nonetheless, there occurre much greater increase in the disposable income of individua that is, their income after payment of taxes. In 1942 this posable income was almost $108,000,000,000, as contrasted w less than $74,000,000,000 two years earlier. Inasmuch as it not possible under wartime conditions to produce all the go and services that consumers might want to buy with this larged income, there was an inevitable pressure upon the pri of these goods.

Table V.—*U.S. National Income by Use of Funds*
(In 000,000,000s of dollars)

Item	1939	1940	1941	194*
National income	70·8	77·3	94·8	117
Add: Transfer payments	2·4	2·6	2·5	2
Less: Corporate savings	·4	1·2	2·6	2
Employment taxes	2·0	2·1	2·6	3
Personal taxes	2·9	3·0	3·8	6
Federal	1·2	1·3	2·1	4
State and local	1·7	1·7	1·7	1
Equals: Disposable income of individuals	67·9	73·6	88·3	107
Less: Consumers' expenditures	62·0	66·2	75·8	81
Equals: Net savings of individuals	5·9	7·4	12·5	26

Source: U. S. Department of Commerce. *Preliminary.

As may be seen in Table V, savings of individuals rose en mously after 1940 and particularly so in 1942. This increase savings was, of course, a powerful anti-inflationary factor. S ings increased for a number of reasons: they always do when come increases; the government placed restrictions on the use consumer credit installment sales, charge accounts, etc.; ma goods that consumers would have bought were not available; the government stimulated savings through the sale of war bo and stamps. In addition, however, savings rose simply beca the dollar volume of consumer spending was limited thro price controls and rationing. This means that a substantial p of the increased savings does not constitute an infallible brake inflation for, if the price control and rationing machinery were weaken, savings would stop increasing or decline and consum as a whole would spend a larger volume of money on a gi supply of goods and services. With consumers' income still rap ly rising and with shortages of consumers' goods becoming m and more widespread, the inflationary problem was certain to b serious one. (*See* also BUDGETS, NATIONAL; GREAT BRIT AND NORTHERN IRELAND, UNITED KINGDOM OF; NATIONAL DEB WEALTH AND INCOME, DISTRIBUTION OF.) (M. GT.

National Labor Relations Board.

The activities the National La Relations board, shaped as they were to meet the exigencies the U.S. defense preparation period, found in the first full year of 1942 direct application to the problems of labour re tionship under the high pressure of war production.

Methods were further advanced for giving priority of hand to cases involving war plants. Liaison was perfected with ot federal agencies in the interest of effecting a speedy resolut of questions concerning representation, or to advance action charges of unfair practice lodged against war producers. Wh

r consonant with the rights of employees under the National
or Relations act, the board welcomed the co-operation of
er agencies in adjusting cases by informal methods.

uring 1942 there were four times as many workers organized
unions as during the first year of World War I. The activi-
of unions during the year to settle grievances and to win
e adjustments were at least four times as extensive. This
to be represented in collective bargaining negotiations over
time wages and conditions, still further accentuated by
our's agreement to abandon the strike as a means to assert its
ms, resulted in a sharp rise in the number of representation
s brought to the board. Thus, of the 9,358 total cases re-
ed in 1942, 5,352 were representation petitions, the highest
o of such cases to unfair labour practice cases in the history
he board.

he orderly determination of majority representation under
ernment supervision took place in 3,886 board elections in
ch 1,020,504 valid votes were cast. They were held in muni-
plants, at pitheads, in shipyards, in logging camps and on
s ready to sail. The majority of the elections were conducted
the consent of both the employer and the employees, and
roximately three-quarters of the ballotings were held not as
ntest between competing unions but as the attempt of a single
n to establish its right to a majority representation.

he largest single election held in a war industry during 1942
that in the plants of the Carnegie-Illinois Steel company,
re 50,205 valid votes were cast. Other large elections were
e conducted at Wright Aeronautical corporation, in which
55 votes were counted, Tennessee Coal, Iron and Railroad
pany, with 10,744, and Sperry Gyroscope, in which 9,427
d votes were cast.

f 3,803 secret ballot elections conducted, 1,702 were won by
ates of the Congress of Industrial Organizations, 1,225 by
erican Federation of Labor unions and 345 by unaffiliated
ur organizations. In 531 elections a majority of votes was
received by any of the organizations appearing on the ballot.

s was the case in previous years, the board carried out its
of preventing and remedying unfair labour practices by in-
nal methods in its field offices and without the necessity of
ing public hearings in a great majority of these cases. In the
ndar year 1942, the board disposed informally of 90% of
e cases, 4,554 as a result of obtaining agreements between
parties, dismissing cases of no merit, and successfully re-
ting the withdrawal of unfounded charges against employers.
nly 8% of all the unfair labour practice cases handled was
cessary for the board to issue decisions and orders.

istinction must be drawn between the basic functions of the
ional Labor Relations board and of the War Labor board
.). The former was entrusted by congress with the duty of
enting and remedying unfair labour practices and determin-
representatives for collective bargaining. The War Labor
d was established on Jan. 12, 1942, to settle wartime dis-
s involving wages, union security, grievances and other sub-
tive provisions of labour agreements. The NLRB co-operated
ely with the WLB in 1942 by exchange of information and a
integration of their efforts. Typically, determination by the
RB of bargaining representation in many cases was a first
ssary step to the settlement by WLB of disputes of wages
conditions of employment.

he view of full enforcement of the National Labor Relations
as necessary in wartime to provide a basis for good morale
sound labour relations in war plants, particularly in view of a
petitive and divided labour movement and labour's pledge
to resort to strikes, was firmly held by the board in 1942,
was accepted in general by the courts.

The board's litigation record for the calendar year 1942 was as follows: The supreme court enforced 9 board orders in full or with modification; in 18 instances the supreme court denied petitions by employers for review of circuit courts of appeals decisions favourable to the board as against 1 petition by the board for review of a lower court decision unfavourable to it; the circuit courts of appeals enforced in full or modified 79 board orders and denied enforcement to 2. Cumulatively for the first seven calendar years, 1936–42, the board's record in the court was as follows: Board orders enforced in full or with modification by the supreme court, 41; board orders denied enforcement by the supreme court, 2; supreme court cases involving other questions: 6 decided favourably to the board, 1 decided unfavourably; petitions by employers for review of circuit courts of appeals decisions favourable to the board: 69 denied by the supreme court; petitions by the board for review of circuit courts of appeals decisions unfavourable to the board: 4 denied by the supreme court. During the seven years, the circuit courts of appeals enforced in full or with modification 321 board orders and denied enforcement of 58 board orders. (*See* also LABOUR UNIONS; LAW; STRIKES AND LOCK-OUTS.)

(H. A. Ms.)

National Lawyers Guild.

The guild program was entirely devoted to assisting the successful prosecution of the war in 1942. These activities included voluntary, free legal assistance to members of the U.S. armed forces and their dependents and to war agencies of the government. The national executive board presented a plan to the Office of Price Administration for utilizing the voluntary services of U.S. attorneys in the enforcement of price and rent ceilings and as legal advisers to rationing boards. The OPA accepted this plan. The Committee on Civil Rights drafted memoranda for congress in support of constitutionality of legislation to outlaw payment of poll taxes as a prerequisite for voting in federal elections. The executive board submitted to congress an analysis of the activities of the Dies committee together with a statement opposing continuation of this committee. The Committee on Taxation prepared an analysis for congress in opposition to the Ruml plan to forgive one year's payment of federal income tax. The national president of the guild, Robert W. Kenny was elected attorney-general of California. (M. PR.)

National Monuments: *see* NATIONAL PARKS AND MONUMENTS.

National Parks and Monuments.

In 1942 many peacetime activities of the National Park service such as travel promotion, road construction and development of facilities for visitors were halted so that all possible aid might be given to the prosecution of the war. But the basic activity of the National Park service—that of preserving inviolate, so far as possible, America's great scenic and historic heritage as exemplified in the national parks, monuments, and historic areas—was carried on as vigorously as in previous years.

Two national monuments—Cabrillo in California and Fort Pulaski in Georgia—were placed under military jurisdiction for the duration of the war. Sections of other National Park service areas were being use for military camps, manoeuvre grounds, bombing ranges and training centres. In fact, every area in the National Park system was making some contribution to the war program.

Protection of forests in national park areas is a major responsibility of the service in wartime. The vast mountain and plateau regions in the National Park system are the sources of rivers which supply many industrial areas with water for domestic use, navigation, irrigation, power and recreation. Liquidation of the Civilian Conservation corps and the release of employees to the armed forces and war agencies reduced available manpower and necessitated the training of every available service employee in protection activities and essential elements of combating forest fires.

One area—the Andrew Johnson National Monument, Greeneville, Tennessee—was added to the National Park system. This monument, established by Act of Congress of April 27, 1942, includes the Andrew Johnson tailor shop, his residence, and the cemetery in which he is buried.

Because of the war and the need to conserve gasoline, tires and public transportation facilities, the number of visitors to the National Park system during the travel year ended Sept. 30, 1942, was reduced to 10,620,265, a 50% decrease compared with the all-time high travel experienced in 1941. Of this total 887,000 were members of the armed forces. (N. B. D.)

National War Labor Board: *see* WAR LABOR BOARD, NATIONAL.

National Youth Administration.

The National Youth administration provided training to youth between the ages of 16 and 24 who were out of school, to qualify them for jobs in war industries in which there was a present or potential shortage of labour.

Students in secondary schools and colleges were given part-time employment for small wages to enable them to continue their education.

The National Youth administration operated war production training projects through which out-of-school youth were employed in workshops to learn mechanical unit skills under conditions similar to those which are found in industry. NYA shops were operated on a multiple-shift basis, and provided training in metal and machine shop work, forge and foundry work, aviation mechanics, radio and electrical work, welding and similar occupations vital to the war effort.

The War Manpower commission, under whose jurisdiction the NYA operated in 1942, determined the types of training to be provided; the U.S. Employment service registered all NYA youth as an aid to their placement in industry. During the fiscal year ending June 30, 1942, more than 342,000 NYA-trained youth obtained jobs in industries directly or indirectly concerned with war production.

The NYA program for needy students attending non-profit making, tax-exempt schools, colleges and universities provided monthly wages ranging from $3 to $6 in secondary schools, and $10 to $25 in colleges and universities, in return for useful work performed under the direction of the school officials. Employment was given on the basis of scholastic merit and proved need. Both programs were administered by the NYA through 11 regional offices co-ordinated through the national office in Washington, D.C. The National Youth administration was established by executive order of the president on June 25, 1935. Originally set up within the Works Progress administration, the NYA was transferred to the Federal Security agency in 1939, and came under the jurisdiction of the War Manpower commission Sept. 17, 1942. After its inception through June 30, 1942 the NYA provided jobs for almost 2,500,000 youths on the out-of-school program and more than 2,000,000 youths on the student work program.

The National Youth administrator in 1942 was Aubrey Williams. (A. Ws.)

Natural Gas: *see* GAS, NATURAL.

Nauru: *see* MANDATES; PACIFIC ISLANDS, MANDATED.

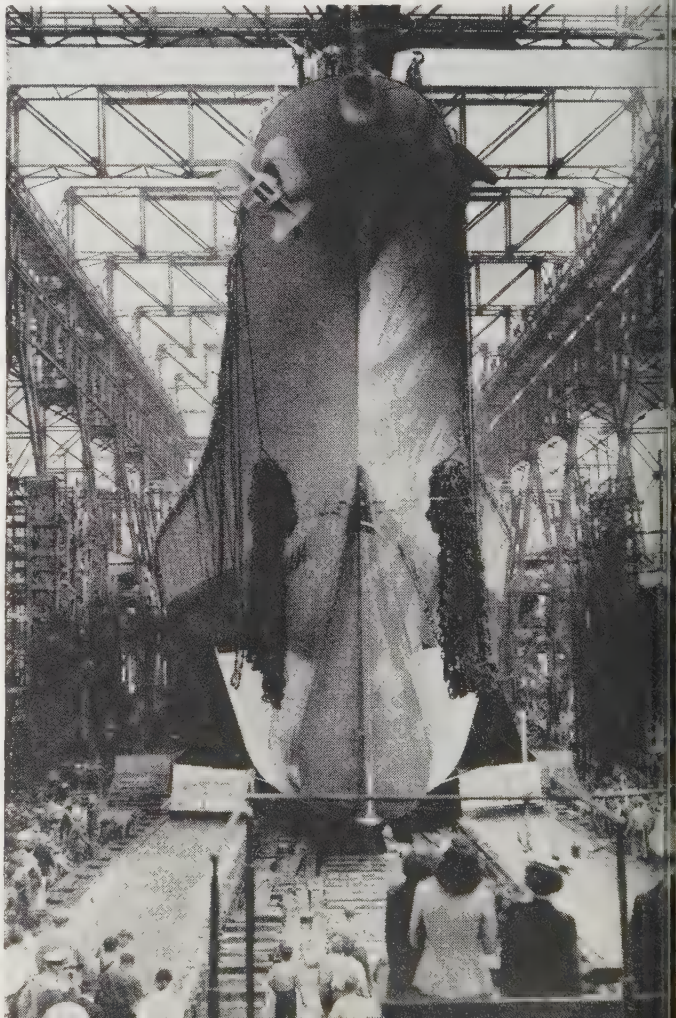
Navies of the World.

An inevitable result of the wid spread war at sea was to give impetus to the development of new tactics, new types of shi new weapons and new methods of using them.

So severe were German submarine losses in the early part the war through the efficiency of the British "asdic" method detection, that fresh tactics were subsequently followed by t U-boats. Instead of attacking in submerged condition duri daylight, most of their depredations were subsequently carri out on the surface at night, when their low silhouette was n easily spotted. To meet this fresh menace, the star-shell, or inally devised to light up destroyers attacking a fleet under cov of darkness, was used extensively to reveal submarines trying torpedo merchant vessels sailing in convoy.

New types of warships included the corvette, the earlier desi of which incorporated some of the features of the fast patr vessels known in World War I as "P-boats," together wi the hull form of the whale-catcher. Corvettes were turned out hundreds for the royal navy and royal Canadian navy, provi themselves invaluable for the work of escorting convoys acro the Atlantic. In 1942 it was reported that 50 such vessels of improved type were being built for the U.S. navy. Another ty which was developed considerably in scope and design was t motor torpedo boat and its offspring, the motor gunboat. The were referred to by the British admiralty by the comprehensi term "light coastal craft." During 1942 craft of this type op erated with increasing success against German coastal traffic

LAUNCHING OF THE U.S. BATTLESHIP "Iowa" Aug. 27, 1942. It was heaviest ship, and the largest battleship, ever built to that date



JAPANESE AIRCRAFT CARRIER "Ryukaku" aflame and about to sink after an attack by U.S. dive bombers and torpedo planes May 8, 1942, during the battle of the Coral sea

English channel and North sea. Germany's own craft of this were known as *schnell-boote,* or high-speed boats. Unfortely the British official practice of referring to them as oats" tended to puzzle the public, who imagined them to be h more formidable than they had proved to be. Italian vessels is category, officially classed as M.A.S. (*motoscafi anti-somgibili*) accomplished singularly little in war, losing heavily on lry occasions without accomplishing anything of note. Another an device, a torpedo in a light framework attached to a tiny with an outboard motor which could be steered towards its et by one man, also proved ineffective. Japan's contribution the midget submarine, manned by two or three men. This may be written off as a failure, five having been lost at Pearl oor and quite as many in an abortive attack on Sydney har. Yet another type which underwent development was the ircraft ship. The highly successful British cruisers of the lo" class were primarily designed for antiaircraft duties, and mber of obsolescent destroyers underwent rearmament for same purpose. Frequent mention was made of German "flak" s, trawlers and other small vessels of mercantile type armed high-angle guns.

ew weapons included the magnetic and acoustic mine, both of h were laid extensively by aircraft. Originally an enemy on, the air-borne mine laid by the R.A.F. became a serious ce of trouble to the Germans in the Baltic in 1942.

rpedo attack from the air underwent the greatest developt, though it was in the experimental stage before 1918. Outding allied successes gained by this means included the disg of the Italian fleet at Taranto in Nov. 1940, the crippling e German battleship "Bismarck" in the Atlantic in 1941. and sinking of Japanese aircraft carriers and other ships in the fic in 1942. On the enemy side can be cited the destruction ght at Pearl Harbor, the sinking of H.M.S. "Prince of Wales" "Repulse" in the China sea, and sundry U.S. warships sunk e Pacific.

the tactics of night fighting, the technique developed by iral Sir Andrew Cunningham's fleet at the battle of Matapan imitated by the Japanese in the Solomons in Aug. 1942, when .A.S. "Canberra" and three U.S. cruisers were sunk. In the wing November the tables were turned by Admiral Halsey, inflicted a heavy defeat on the Japanese in a series of night ons.

During 1942 two British battleships of 35,000 tons passed into service, bringing the total of capital ships in the royal navy up to 15, the same number as at the start of the war. It may be assumed that three new American battleships of 35,000 tons were also completed by the end of that year.

Aircraft carriers continued to prove their value, particularly in connection with torpedo attack from the air. In the Pacific they were in the forefront of the battle until casualties compelled both sides to husband their resources in this category. Fortunately the United States was in a far better position to replace losses than was Japan. Many more auxiliary aircraft carriers, classed in the U.S. navy as "aircraft escort vessels," were launched and commissioned in 1942. Converted from mercantile hulls, they proved extremely useful in the protection of convoys from air attack, though their speed was not sufficient to enable them to operate with a fleet. Neither Germany nor Italy had any aircraft carriers in service.

Both allied and enemy navies incurred numerous cruiser casualties, but the latter lagged far behind in replacement of such losses. Good progress would appear to have been made with the large U.S. program of cruiser construction. Certain units not too far advanced were ordered to be completed as aircraft carriers, one of them being the U.S.S. "Independence," ex-"Providence," of 10,000 tons. There was reason to suppose that the large ships of the "Alaska" class, designed as battle cruisers, would instead be built as additional aircraft carriers.

How far the Japanese navy had gone towards replacing its numerous losses was not revealed. Construction in that country had latterly been slow, but it is possible that a couple of new battleships were completed in 1942. Destroyers and submarines were being turned out at the rate of at least 20 of each per annum.

Russian naval operations in 1942 continued to be on a small scale in both the Baltic and Black seas, being mainly confined to submarine attacks on German transports and merchant vessels, though some small warships were also claimed to have been sunk.

A soviet estimate of the number of German submarines in service put the total in 1942 at over 300, though probably not more than from one-quarter to one-third of these would be operating at sea at the same time. Italian submarine strength almost certainly declined during 1942. Japan managed to send a submarine or two

THE U.S. AIRCRAFT CARRIER "LEXINGTON" shortly before it sank May 8, 1942, during the battle of the Coral sea

into the Atlantic as a token of solidarity with its allies.

British submarine construction was still a secret, but from the activity displayed in the Mediterranean and elsewhere during 1942 it was plain that the number in service remained considerable. Submarines of the U.S. navy accomplished valuable work in destroying Japanese mercantile tonnage in the Pacific, and undoubtedly increased considerably in number in the year.

British Naval Strength.—Before summing up the strength of the royal navy in ships at the end of 1942, a survey should be made of losses incurred since war began in Sept. 1939. These amounted to 5 capital ships; 5 aircraft carriers; 25 cruisers, including 4 rearmed for antiaircraft duties; 1 fast minelayer; 88 destroyers; 42 submarines; 11 sloops; 7 fleet minesweepers; 1 monitor; 9 river gunboats; 15 corvettes and patrol vessels; 14 armed merchant cruisers; 8 auxiliary minesweepers; 14 armed yachts; 148 trawlers and whalers; 16 drifters; 1 coastal minelayer; 14 light coastal craft; 2 fleet tugs; and 21 miscellaneous auxiliaries.

After allowing for these losses, and for such new ships as were believed to have been due for completion by the end of 1942, the strength of the royal navy at that date might be reckoned at 15 battleships (including one battle cruiser); 8 first-line aircraft carriers; 60 cruisers; 4 minelayers; 280 destroyers; 50 submarines; 44 sloops; 150 minesweepers; 300 corvettes; 3 aircraft tenders; 2 netlayers; 2 monitors; 9 river gunboats; 6 coastal minelayers; and a very large number of light coastal craft, comprising motor gunboats, motor torpedo boats and motor launches. Trawlers, drifters, armed yachts and mercantile auxiliaries of every description were too numerous for an estimate to be possible.

Of ships on order at the outbreak of war there were still in hand 4 battleships and possibly 2 aircraft carriers, though the latter were scheduled for completion by the end of 1942. Naturally a great many more ships of various categories must have been put in hand since 1939.

Naval forces of the dominions, including the royal Indian, royal Australian, royal Canadian and royal New Zealand navies, as well as the Newfoundland, South African, Burmese, Ceylon and Kenya naval forces, are included in the above figures. Their personnel is known to have been increased greatly since war began, amounting in 1942 to 25,000 for the R.A.N. and to 28,000 for the R.C.N. The latter expected to reach a total of 44,000 by March 1943, so rapidly was the force expanding. Canada was building small warships, such as corvettes, minesweepers and patrol vessels, in very large numbers, not only for its own service but also in some measure for the royal navy and United States navy. Austra besides providing for its own needs in the way of destroyers a minesweepers, was constructing sloops for the royal Indian na

United States Naval Strength.—The largest program of na construction in the history of the United States, designed to p duce a "two-ocean" navy, was in full swing. Ships in service the end of 1942 were estimated to be, at least: 16 battleshi 3 aircraft carriers; 36 cruisers; 224 destroyers; 126 submarin 14 gunboats; about 50 patrol vessels (ex-yachts); about 350 su marine chasers; more than 14 aircraft escort vessels; 22 seapla tenders; 14 minelayers; about 150 motor torpedo boats; a more than 400 minesweepers, besides numerous fleet auxiliaries all kinds.

Under construction or on order were 14 battleships (though construction of 5 of these had been suspended temporarily) battle cruisers (which may be completed as aircraft carriers); aircraft carriers, not including 500,000 tons authorized withd number of ships being stated; 42 cruisers, not including 500,c tons more authorized; 100 destroyers, not including 900,000 to of "destroyers and escort vessels" authorized; 180 submarin and large but indefinite numbers of other warships of every ca gory. Authorized personnel of the navy was 500,000, and of marine corps 104,000.

Japan.—Allowing for the intense secrecy which had been p served concerning Japanese naval construction, it was proba that at the end of 1942 there were in service 10 or 11 batt ships; 4 aircraft carriers; 15 to 20 cruisers; 90 to 100 destroye between 80 and 90 submarines, excluding the midget type; ab 15 seaplane carriers; 5 coast defense ships; and an uncert number of ancillary vessels, such as minelayers, minesweepe submarine chasers and gunboats. Under construction were 2 3 battleships; 1 or 2 armoured ships of a design believed to semble the German "pocket battleships"; and an unknown nu ber of aircraft carriers, cruisers, destroyers, submarines, seapla carriers, etc.

France.—Of the French fleet only a few small craft remai under the orders of the Vichy government, as nearly every ves of importance was scuttled at Toulon on Nov. 27, 1942, to av seizure by the Germans. In ports outside its authority there w 2 modern battleships (both disabled) and 2 old ones, with cruisers and a number of destroyers and submarines, all of wh would presumably be thrown into the struggle against the a A solitary aircraft carrier was immobilized in the West Indi together with a couple of cruisers. Laid up at Alexandria were battleship, 4 cruisers, 3 destroyers and a submarine; while wh last heard of a fifth cruiser was lying at Saigon, in Indo-Chi under Japanese control. Several destroyers, seagoing torpe boats and submarines appeared to have been damaged and p sibly reduced to wrecks in resisting the allied occupation French North Africa. A cruiser, a few destroyers and submari and 4 patrol vessels were all the new ships in hand in Fren shipyards at the end of 1942, and their construction was p ceeding very slowly.

Italy.—After allowing for losses, Italy's effective streng amounted to 6 or 7 battleships; 12 cruisers, excluding 2 vessels of insignificant value; 90 destroyers and seagoing torpe boats; perhaps 60 submarines, though without knowing the nu ber lost this is a very doubtful figure; 2 sloops; 1 aircraft tend 30 or 40 minelayers and minesweepers; and sundry smaller cr such as motor torpedo boats and trawlers. A dozen small cruis were under construction, but it was doubtful if any had pas into service.

Germany.—Germany's strength at sea amounted to 3 bat ships, 1 being under reconstruction; 2 armoured ships, kno popularly as "pocket battleships"; 1 aircraft carrier, incompl nfit for service; 6 cruisers; about 40 destroyers and seagoing do boats; 1 sloop; 2 coast defense ships; and an unknown er of submarines, motor torpedo boats and minesweepers, categories being the ones on which Germany was principally ng for carrying on the war afloat.

S.S.R.—Little more was known of Russian naval strength before its entry into the war. It included 3 obsolete battle-, 2 in the Baltic and 1 in the Black sea; 1 small aircraft car- 7 cruisers, of which 2 were in the Baltic and 5 in the Black about 90 destroyers and seagoing torpedo boats; 200 or more arines; and more than 100 motor torpedo boats. Vessels in ast three categories were divided between the Baltic, Black nd far east.

her European Countries.—The government of the Nether- had at its disposal at the end of 1942 a total strength of 3 ers, 3 destroyers, 3 old torpedo boats, 12 submarines, 3 s, 4 minelayers, 2 minesweepers, 5 motor torpedo boats and marine chaser.

rway retained under the control of its government in Lon- 2 seagoing torpedo boats, 2 submarines, 8 motor torpedo , 4 motor launches and a number of patrol vessels and mine- pers. Four destroyers and 5 corvettes of the British fleet manned by officers and men of the royal Norwegian navy.

e Danish fleet was entirely under German control. It in- d 2 coast defense ships, 2 destroyers, 17 torpedo boats and bmarines.

eden had been engaged in expanding its fleet, which com- l 2 cruisers, 7 coast defense ships, 16 destroyers, 6 seagoing do boats, 24 submarines, 1 minelayer, 42 minesweepers, 14 r torpedo boats, and sundry patrol vessels, etc. Under construction were 2 cruisers, 3 destroyers and 4 submarines. There was believed to be no prospect of the construction being undertaken of 2 coast defense ships which were projected.

There remained in the Finnish navy, so far as could be ascertained, a coast defense ship, 5 submarines, 10 minelayers, 7 motor torpedo boats and some gunboats and other small craft.

Poland, with the addition of new ships built in England, had 6 destroyers, 6 submarines (3 of them interned) and 3 patrol vessels.

Spain could dispose of 6 cruisers, 16 destroyers, 6 submarines, 6 old torpedo boats, 6 minelayers and 2 sloops. Under construction were 2 destroyers and 3 submarines.

Portugal possessed 5 destroyers, 3 submarines, 1 seagoing torpedo boat and 7 sloops. Turkey had an old battle cruiser, 8 destroyers, 12 submarines, 2 old cruisers used for training purposes, 5 minelayers and 3 motor torpedo boats.

With fresh ships built in England, the royal Hellenic navy had on active service 1 cruiser, 10 destroyers, 3 old torpedo boats, 4 submarines and 4 corvettes.

Rumania had 2 destroyers, 3 submarines, 2 minelayers, 3 motor torpedo boats, and sundry old vessels of minor importance, all of which were under German control.

In the Yugoslav fleet there were 3 destroyers, 4 submarines, 9 motor torpedo boats, an aircraft tender, a patrol vessel and sundry old craft of little value. All of these if still afloat were under Italian control.

South America.—Though the war suspended all construction in Europe of warships for South American states, Argentina, Brazil and Chile built some vessels in their own dockyards. The Argentine navy included 2 old battleships, 3 cruisers, 14 destroyers, 3 submarines, 4 old coast defense ships and 14 minesweepers. Two sloops were under construction. In the Brazilian fleet there

U.S. AIRCRAFT CARRIER sunk during World War II was the "Wasp," oed Sept. 15, 1942, off the Solomon Islands

Navies of the World as of Dec. 1942

Country	Battle-ships and battle cruisers	Aircraft carriers	Cruisers	Coast defense ships	Destroyers and seagoing torpedo boats	Sub-marines
British Empire	15	8	60	2	280	50
U.S.A.	16	3	36	..	224	126
Japan	10	4	20(?)	5	90	75
Italy	6	..	12	..	90	60
Germany	3	..	8	2	40(?)	300(?)
Russia	3	1(?)	7	..	90	200
France	5	1	7	..	25(?)	12(?)
Turkey	1	1	2	..	8	12
Greece	..	..	1	..	2	4
Spain	..	..	6	..	16	6
Sweden	..	..	2	7	22	24
Netherlands	..	..	3	..	3	12
Norway	..	..	..	..	6	2
Denmark	..	..	..	2	19	12
Finland	..	..	..	1	..	5
Poland	..	..	..	..	6	5
Portugal	..	..	..	..	5	3
Rumania	..	..	..	..	2	3
Yugoslavia	..	..	..	..	3	4
Argentina	2	..	3	4	14	3
Brazil	2	..	2	..	9	4
Chile	1	..	3	..	8	9
Peru	..	..	2	..	2	4
Colombia	..	..	..	..	2	..
Thailand	..	..	..	4	11	3

Owing to the war, the figures relating to the first seven countries named above cannot all be taken as exact. The navies of Denmark, Finland, Rumania, Yugoslavia and Thailand were under enemy control. Old torpedo boats no longer in seagoing condition and motor torpedo boats (coastal craft) are not included in the above table. The two German "pocket battleships" are counted under the head of cruisers. French ships scuttled at Toulon have been omitted, for though they were lying in shallow water, they could not be made serviceable for a long time to come.

were 2 old battleships, 2 cruisers, 9 destroyers and seagoing torpedo boats, 4 submarines, 6 corvettes, 8 minelayers and 2 minesweepers. Seven destroyers were building at Rio de Janeiro. Chile had 1 battleship, 3 cruisers, 8 destroyers and 9 submarines. A sloop was being built and was probably completed.

Other South American navies underwent little change. Peru possessed 2 cruisers, 2 destroyers and 4 submarines. Colombia had 2 destroyers and 3 gunboats. Mexico could muster 5 sloops and some small patrol craft; Cuba, 2 sloops and some small gunboats; Uruguay, a sloop and 3 patrol vessels; Venezuela, 4 gunboats. Paraguay had 3 river gunboats. The Dominican Republic, Haiti and Nicaragua disposed respectively of 3, 2 and 1 patrol vessels.

Asia.—China had its navy almost extinguished as the result of Japanese aggression, but retained 4 river gunboats, 3 of which were presented by the British government and 1 by that of the United States. The Japanese set up a Quisling government under Wang Ching-wei and presented it with 2 cruisers, a sloop and 7 gunboats as the nucleus of a navy.

The Siamese Navy, completely dominated by Japan, included 4 coast defense ships, 1 destroyer, 10 torpedo boats, 3 submarines, 2 sloops and 8 motor torpedo boats. Two cruisers were ordered in Italy before the war, but had not been finished.

SINKING OF THE "YORKTOWN," second great U.S. aircraft carrier lost in 1942. Disabled June 2 by Japanese bombers during the battle of Midway, the carrier was fatally hit two days later by a Jap submarine

Iran possessed 2 sloops and 4 gunboats; Manchuria had an destroyer discarded by Japan and about 30 river gunboats patrol vessels. Iraq had 4 river patrol boats. (*See* also AIR FOR OF THE WORLD; BLOCKADE; MUNITIONS OF WAR; SHIPBUILDI STRATEGIC MINERAL SUPPLIES; SUBMARINE WARFARE; UNI STATES; WORLD WAR II.) (F. E. McM.

Navy, U.S. Department of: *see* GOVERNMENT DEPARTME AND BUREAUS.

Naylor, William Keith

(1874–1942), U.S. army offi was born Nov. 24, in Blooming Ill. He was graduated from Michigan Military academy, 18 and from the University of Minnesota, 1898. A veteran of Spanish-American War, he served as chief of staff of the 33rd vision on the western front in World War I. After the war held a number of important posts in the army intelligence, plans and war college departments until his appointment in 1 as professor of military science and tactics at the Universit Illinois. He was made a brigadier general in the same year retired from service in 1938. His book, *Principles of Stra* (1922), was used as an official textbook on strategy by the Ja nese army. He died in his summer home near Uniontown, Aug. 3.

Nazis: *see* ANTI-SEMITISM; FASCISM; GERMANY.
NDMB: *see* WAR LABOR BOARD, NATIONAL.
N.E.A.: *see* NATIONAL EDUCATION ASSOCIATION.

Nebraska.

One of the states formed from the territory of Louisiana Purchase, Nebraska lies in the lo Missouri valley in the west north central part of the Un States; admitted to the union in 1867; area, 76,653 sq.mi.; p (1940) 1,315,834, a decrease of 62,129 from 1930; capital, coln (81,984). In 1940, 39.1% of the population was ur About 1% of the total population is Negro and about 8% fore born.

History.—Dwight Griswold, Republican, was re-elected go nor of Nebraska Nov. 3, 1942, for the term 1943–45. Other s officers elected for 1943–45 were: lieutenant governor, Roy Johnson; auditor, Ray C. Johnson; secretary of state, Fr Marsh; treasurer, Carl G. Swanson; chief justice, Robert G. mons. Alone among the 48 states, Nebraska has a one-house islature, the 43 members of which are chosen biennially on a partisan ballot.

Education.—Elementary and secondary education is lar under the control of local school districts, of which there more than 7,000 in 1942, with but slight supervision by a s intendent of public instruction. The total enrolment in ele- ary and secondary schools in 1941 was 267,103 and the teach- aff numbered 13,619. Expenditures amounted to $20,505,- Higher education is supported by the state at the University braska and in four teachers' colleges. The appropriation for ate university for the biennium 1941–43 was $7,733,454 and e teachers' colleges $1,370,410.

lic Welfare, Charities, Correction.—The state appro- on for public assistance for 1941–43 was $20,285,362. Dur- e year ending June 30, 1942, the average monthly number rsons receiving general relief was 6,882 and average ly payments were $100,557; persons employed on WPA ts averaged 11,739 per month and received during the year 1,273; during the same year recipients of aid to dependent en numbered 12,731 and received $2,032,637, while moth- ensions, paid by the counties, amounted to $138,518; 737 persons received $187,490. The state maintained 7 correc- institutions with a total of 1,173 inmates in June 1942 and hers for dependents with a population of 6,648; 2,894 in- were on parole at the same date. The total appropriation e 17 institutions for the period 1941–43 was $4,692,374.

mmunications.—The total highway mileage of the state in was 100,987. Of this 11,320 mi. had been designated as part state system of highways and 9,157 mi. had been marked ere maintained by the state. Of this latter figure, 3,984 mi. hard surfaced, 4,915 gravelled and 258 of earth. The total bligated for new construction during 1940 and 1941 was 34,243, from both state and federal sources. As of Nov. 1, there were 22 airports in the state, 20 of which were man- by municipalities, in addition to an undisclosed number of lly-maintained auxiliary landing fields. Total railway mile- the state in 1942 was 8,502. Thirteen radio stations oper- rom points within the state in Nov. 1942, six of which were d in Omaha and Lincoln.

king and Finance.—State banks numbered 279, a decrease from 1941. Total assets in 1942 were $107,497,766. There lso 47 building and loan associations with assets of $56,611,- 11 industrial loan and investment companies with resources ,761,176; and 176 co-operative credit associations with as- f $3,929,356. National banks at the same date numbered ith resources of $388,673,000.

total assessed value of the state in 1942 was $2,042,442,- The tax rate for state purposes was set at 2.39 mills, calcu- to produce $4,881,437. The biennial budget for 1941–43 d appropriations of $60,909,869 of which $15,600,600 comes federal funds. There is no state tax on personal or corpo- ncomes, or on sales. The state has no bonded debt, though f the local subdivisions in 1941 amounted to $77,926,000. figure does not include the indebtedness of the many public districts, which is estimated to amount to more than 0,000.

riculture.—The total acreage harvested for the crops listed ble I in 1941 was 13,608,000. In addition, an undetermined er of acres of wild hay was exploited. The total farm income same year was $306,407,000, divided as follows: crops, 52,000; livestock, $222,046,000; government payments, $15,- 0. A large annual deficiency in rainfall during the period 41 was reflected in a sharp decline in the cash incomes of cers. Better growing conditions in 1942 resulted in much yields.

nufacturing.—The value of all manufactured products in —the last year for which complete figures were available in —was $273,524,500. In that year, 1,161 establishments em- d 3,642 salaried persons and 18,810 wage earners and paid es and wages amounting to $28,135,500. World War II greatly increased manufacturing activity in the state, but no figures were available in 1942 as to the value of products or wages paid.

Table I.—*Leading Agricultural Products of Nebraska, 1942 and 1941*

Crop	1942	1941
Corn	242,984,000 bu.	157,638,000 bu.
Wheat	69,828,000 bu.	36,194,000 bu.
Oats	56,794,000 bu.	54,280,000 bu.
Barley	38,268,000 bu.	48,832,000 bu.
Potatoes	11,988,000 bu.	9,620,000 bu.
Sugar beets	1,078,000 tons	927,000 tons
Alfalfa hay	...	1,106,000 tons

Table II.—*Principal Industries of Nebraska, 1939 and 1937*

Industry	Value of products	
	1939	1937
Meat packing	$117,743,576	$112,708,382
Creamery butter	21,133,891	23,291,846
Flour and mill products	17,485,317	25,524,100
Poultry dressing and packing	8,807,209	5,949,969

Mineral Production.—The state has no mineral wealth of consequence. Petroleum was discovered late in 1939 and by June 30, 1942, 85 wells had produced 3,900,000 bbl. This, however, is not a significant part of the national output. (L. W. L.)

Necrology: *see* OBITUARIES.

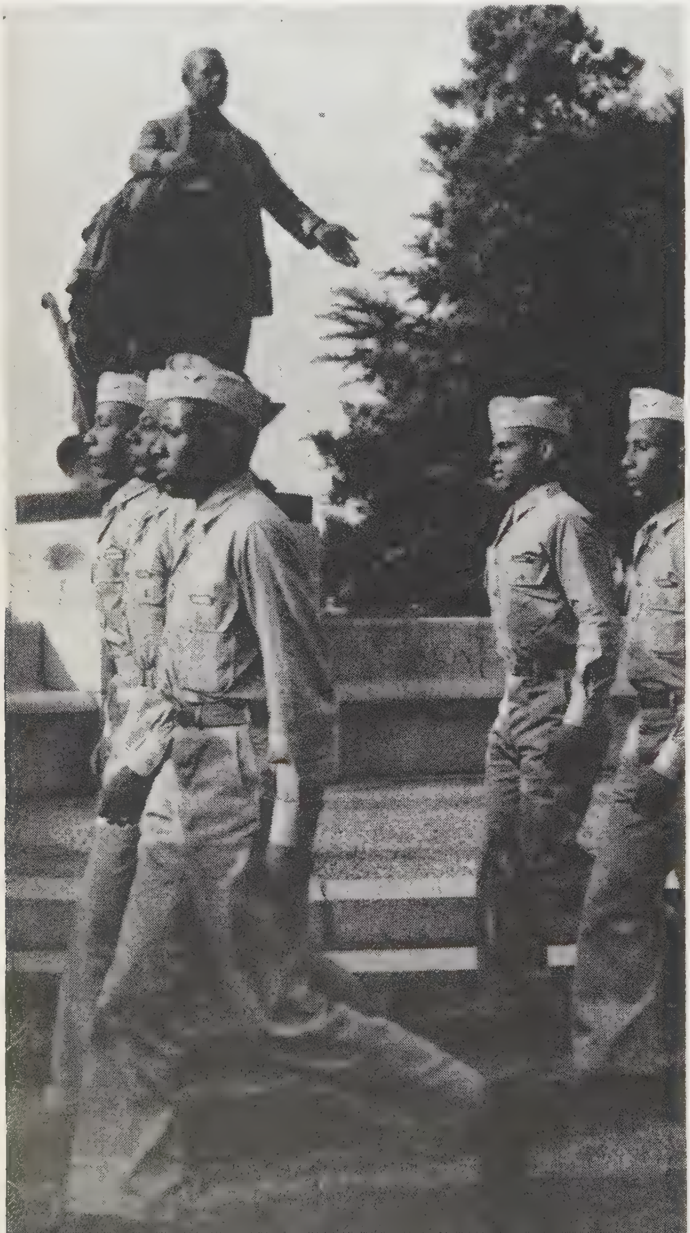
Negroes (American).

After a slow start because of a policy of separate service units, Negro selectees during 1942 attained their proportional representation in the armed services. Despite initial exclusion from the navy except as messmen and from the marine corps, policies dropped under public pressure in April 1942, Negro volunteers were 16.1% of the national total, with the Negro population ratio only 9.8%. An all-Negro division (93rd) was activated at Fort Huachuca, Ariz., and more recently another, (92nd) at Fort McClellan, Ala. National guard units and early selectees formed the basis for a number of expeditionary units of Negro soldiers serving overseas, according to O.W.I. in Great Britain, Ireland, North and West Africa (including Liberia), Australia, New Guinea, Hawaii, Alaska and the West Indies. A few crack units of guard and anti-aircraft detachments were assigned to guard duty in New England and the Middle Atlantic seaboard states. Concentration of Negro trainees in southern camps, as well as their wide dispersal abroad in areas like Australia and England particularly, raised unusual tensions for which the separate unit policy of the armed forces was itself mainly responsible. The domestic issues were met after some instances of threat and violence by unofficial pressure of the military authorities on recalcitrant elements in these communities and by the belated appointment of larger numbers of Negro military police. Abroad, the problems were raised mainly through the conflict of local social customs with American caste traditions, which even in Australia were settled generally in favour of nondiscrimination for the Negro soldiers. The new policy of training Negro officer candidates at common centres without discrimination was successful, even in southern camps, which augmented the public demand for dropping all differentials in the armed services. Petitions and mass meetings advocating volunteer mixed battalions and also for eliminating limited air cadet quotas and limited service and advancement policies in the navy and marine corps, announced when their exclusion policy was relaxed, increased. The initial naval training centre, Camp Robert Smalls, at Great Lakes, the navy technical training centre at Hampton, Va., and the first Negro marine corps unit all progressed successfully with full volunteer quotas. Negro tank troop units were trained at

Fort Knox, where the parade ground was named for Pvt. Robert H. Brooks, Negro tank corps soldier, first American casualty of the Philippine campaign. Dorie Miller, the mess attendant who heroically manned an anti-aircraft gun on a battleship during the Pearl Harbor attack, was decorated June 20 by Admiral Nimitz with the navy cross, after considerable agitation for his recognition. Precedents were thus set, if only in some instances by token recognition, for a much wider and more democratic participation of the Negro in the armed services.

Gains similarly were made, principally under the pressure of the Fair Employment Practices committee, but also from that of liberal and Negro public opinion, toward the fuller integration of the Negro in civilian war defense efforts, particularly war industry. Numerous companies and plants were cited in the committee's regional hearings for noncompliance with the presidential order against racial discrimination in war industry. But very substantial gains in numbers and upgraded types of employment occurred, especially in concerns controlled by the C.I.O. union organizations. The A.F. of L. unions dropped discriminatory clauses in compliance with the same order and were gradually curtailing skilled craft exclusion policies. The National Maritime union brought Negro merchant marine quotas to 10% vindicated a policy of mixed crews. One of the liberty s named for Booker T. Washington and christened by M Anderson, was placed in charge of a Negro captain, Hug Mulzac, and successfully completed its maiden voyage wi mixed crew.

NEGRO FLIERS in training on the campus of Tuskegee institute, Ala., first U.S. army air school for Negroes. Members of the first graduating class—five young lieutenants—received their wings March 7, 1942. In the background is a statue of Booker T. Washington, founder of Tuskegee institute



Civil and Economic.—Several states, after the lead of York, passed nondiscrimination legislation for war defense porations and contracts (the Schwartzwald bill), and the Production board and the War Manpower commission annou policies to the same effect. Protests from reactionary sourc Georgia, Florida and Alabama were only able to slow down trends, but such efforts were successful in their campaig defeat the anti-poll tax bill by a senate filibuster afte passage by a considerable majority of the house. The move for the equalization of teachers' pay extended to eight s with the Florida case favourably decided by court action. residence restriction cases were reversed in St. Louis and District of Columbia, and the U.S. supreme court declared Georgia Contract Labor law unconstitutional and govern prosecutions were started on several cases of peonage. Southern Conference on Race Relations promulgated a program of full Negro rights and full participation in the effort at Durham, N.C., Oct. 20, which focused liberal sou opinion and objectives.

Educational and Cultural.—The *Crisis* annual surve vealed 34,834 Negro college students enrolled, with 4,353 g ates and 350 higher and professional degrees taken. The R wald fund announced, along with its usual quota of fellow the unusual record of its former recipients including electi three to faculty posts at the University of Chicago, H College and the College of the City of New York.

On the literary scene a significant new prose writer, J. Sau Redding, appeared with his critique of contemporary Negro *No Day of Triumph* and Margaret Walker, a young woman was awarded the Yale University Younger Generation P Prize with the publication of her *For My People.* Joe L prior to army service, ended a sensational sports career championship bout in which he donated his share of the pro to the Navy Relief fund. (*See* also LYNCHING.)

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(A. LeR.

Nehru, Jawaharlal

(1889–), Indian statesman born of wealthy parents and was cated in England at Harrow and Old Trinity college, Camb Nehru learned to speak several Indian tongues fluently, an his return to India he immediately took up the cause of I independence. He became a member of the All-India Con committee in 1918, was arrested repeatedly for political off and was associated with the various civil disobedience moven in India after 1921. He was twice president of the I National congress, 1929 and 1936. In Aug. 1940, Nehru dec that India would throw her full weight into a struggle ag the axis only if Britain would grant her complete independenc Nehru came out for the Allied cause after the Japanese a on Pearl Harbor. Although he rejected the compromise posals brought to India by Sir Stafford Cripps in March he opposed Gandhi's refusal to consider a scorched earth in the event of invasion. Nehru was arrested along with high Indian leaders shortly after the launching of the civi obedience movement in Aug. 1942.

elson, Donald Marr (1888–), U.S. business executive, was born Nov. 17 at annibal, Mo., and was graduated from the University of Mis- ouri in 1911. The next year he was employed by Sears, Roe- ick and company as a chemical engineer. In 1927 he was ap- ointed general merchandise manager of the company, in 1930 ce president in charge of merchandising, and in 1939 executive ce-president and chairman of the executive committee.

He served with the National Defense Advisory commission uring 1940. In the Office of Production Management, created n. 7, 1941 by President Roosevelt, Nelson was appointed di- ctor of the division of purchases and thus assumed responsi- lity for buying billions of dollars of material for the defense ogram. On Aug. 28, 1941 he was named executive director of e Supply Priorities and Allocations board and priorities director the OPM.

On Jan. 13, 1942, President Roosevelt announced creation of e War Production board to supplant the SPAB, and appoint- ent of Nelson as chairman of the board, with supervision over e war procurement and production program. He was given thority to determine the policies, plans, procedures, and meth- s of the several federal departments, establishments and agen- es in respect to war procurement and production, including rchasing, contracting, specifications and construction; and in- uding conversion, requisitioning, plant expansion and the financ- g thereof.

Nelson thus received executive powers equivalent to those of rnard Baruch in World War I.

The first phase of the immense task given Mr. Nelson was at of converting the nation's industrial economy from a peace a war basis. This task he tackled energetically and swiftly; tween January and June 1942, he halted the manufacture of s essential civilian goods, speeded plant conversion, and facili- ted the flow of raw materials to the war plants. As the size of e war production program continued to grow, the materials oblem became more and more acute, making imperative the eation of a balanced program and rendering the old priorities stem nearly obsolete; to meet this situation the Controlled aterials plan was instituted late in 1942, allocating the most tical raw materials direct to war plants, and the WPB Re- irements committee was set up to pass on all claims for critical aterials made by any government agency in the war program.

As 1942 ended, it became apparent that the war program was tering a second phase. The work of expansion and conversion s largely finished; necessary now was a period of intensive ltivation, in which the most effective possible use should be ade of the materials, machines and plant capacity available. bring WPB into proper alignment to meet this new problem, r. Nelson on Nov. 11 revamped the organization, concentrating power over the allocation and distribution of materials in the nds of Vice Chairman Ferdinand Eberstadt, and giving to ce Chairman Charles E. Wilson responsibility for the produc- on of war goods. After extensive discussion with the heads of e armed services, it was announced on Dec. 4 that Mr. Wilson ould assume general responsibility for the scheduling of all mili- ry production and would concern himself specifically, immedi- ely, with production programs for aeroplanes, escort vessels d radio equipment.

At the close of his first year as chairman of the War Pro- ction board, therefore, Mr. Nelson had performed the bulk of e spade work incident to putting the economy on a full war sis, had realigned his own organization so that it could handle new tasks efficiently, and had set up the machinery by which ntrol of production and control over the flow of materials uld be properly integrated and synchronized.

Nepal. An independent kingdom (area *c.* 54,000 sq.mi., est. pop. 5,600,000) lying between India and Tibet—and including Mt. Everest—ruled in fact in 1942 by the prime minister, Maharaja Sir Joodha Shumshere Jung Bahadur Rana. In 1942 no news of any change in the personnel or methods of government was received. The prime minister and *de facto* ruler remained, as before, a firm friend of Britain. The active assistance which the Nepal government gave to the British arms was substantial.

It assented readily to its Gurkha regiments being sent overseas if necessary, and it raised 20 additional battalions for the Indian army, recruiting 14 times as many men as in ordinary years. The maharaja also contributed generously to various war funds and charities.

In Feb. 1942 Gen. Chiang Kai-shek in India took the salute at a review of troops which included a Nepalese contingent.

The British envoy in 1942, Lt. Col. Geoffrey Lawrence Betham, presided at the capital, Katmandu (pop. *c.* 80,000).

Nervous System. In 1942 certain advances were made regarding the diseases of the brain, spinal cord, peripheral and sympathetic nervous system. These were:

Poliomyelitis.—An additional concept regarding the source of the infection in infantile paralysis (anterior poliomyelitis) was developed. The almost constant involvement of the alimentary tract and the central nervous system along which the initial invasion of the virus probably occurs calls for a reinvestigation of the pathogenesis of poliomyelitis. This may result in a method of preventing poliomyelitis. The National Foundation for Infantile Paralysis will contribute financial support to such studies. In clinics throughout the United States the new Kenny treatment was tried. This type of management was found to be helpful in relieving pain and spasms and preventing contractures. (*See* also ENDOCRINOLOGY; INFANTILE PARALYSIS; MEDICINE; VITAMINS.)

Shock Therapy.—Electric shock therapy was used more often than either insulin or metrazol. It was applied easily and caused practically no complications. Fractures and dislocations occurred rarely. There were no deaths reported from its use. Schizophrenia and mental depressions were the two most common diseases treated. (*See* also PSYCHIATRY.)

Selective Service.—There were less mentally involved conscripts inducted into the armed forces in 1942 than in 1941. This was due to more careful inventories and examinations on the part of the physician in the induction centre as well as the special neuropsychiatric consultants.

Intracranial Arterial Aneurysms.—A new operation was developed for the removal of aneurysms within the cranial cavity. The treatment of aneurysms of the internal carotid artery is relatively simple. It is necessary only to isolate the aneurysms when they lie within the cranial cavity. These new procedures have resulted in total cures.

Trigeminal Neuralgia.—A new surgical approach tractotomy was developed for trigeminal neuralgia because it prevented the development of pin and needle sensations. Touch sensation was completely preserved.

Epilepsy.—Studies of the specific gravity of the blood and blood serum of epileptic patients revealed that it is difficult to induce hydration by excessive oral fluid intake supplemented by antidiuretic measures. Epileptic patients may drink all the water they wish.

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(T. T. S.)

Netherlands.

A kingdom of northwest Europe. Bounded N. by the North sea, E. by Germany, S. by Belgium, and W. by the North sea. Occupied by German armed forces in May 1940. National flag, red, white and blue, in equal horizontal stripes. Area 13,440 sq.mi.; pop. (est. Dec. 7, 1941) 9,000,000. Chief towns (pop. Dec. 31, 1938): Amsterdam (cap. 793,526); Rotterdam (612,372); The Hague (pre-war seat of the government 495,518). Language: Dutch; religion: Christian (1930 census, Dutch Reformed Church 2,732,333; Roman Catholic, 2,890,022). Ruler: Queen Wilhelmina; president of the council of ministers, Prof. P. S. Gerbrandy.

History.—Throughout 1942 the Germans intensified their efforts to make use of the resources and manpower of the Netherlands, but the spirit of resistance remained immovable and consequently the German rule became more oppressive. In the spring it was announced that all labour organizations were to be rearranged in the *Arbeidsfront,* and unsuccessful attempts were made to induce former trade-union leaders to join this body, of which the main purpose was to make industrial discipline more severe. A new series of anti-Semitic measures began with the compulsory wearing of the Jewish star and was soon seen to be preparatory to the forcible deportations of Jews to work in Germany or further to the east which were carried out from August onwards. In June came the first announcements of the "Netherlands East Company" and other related schemes. In these the leading figure was Rost van Tonningen, the intruded head of the Netherlands Bank. His plan was to form a company, with capital compulsorily diverted from other undertakings, and so to finance Dutch settlement on a vast scale in the occupied countries to the east of Germany. Industrial as well as agricultural plant and personnel were to be transferred, the whole scheme being in the interests of the German war effort but supported by propaganda representing it as providing a new outlet for Dutch colonial enterprise.

These plans aroused no response among the people as a whole and alienated some of the Dutch National Socialists. Anton Mussert, their "Leader," already jealous of Rost van Tonningen, made a show of standing up for some shred of Dutch independence against extreme Germanizing tendencies; though his followers had been bound by a new oath more closely to him and to the Germans. On several occasions during the year it was announced that patriots had been shot for various offenses such as circulating clandestine pamphlets. In May there was an incident of this kind on a greater scale than ever before: 96 victims, including a number of army officers were shot. All the officers of the army who had been at liberty were taken into custody as prisoners of war, and, after a visit of Reinhard Heydrich shortly before his death, more than a thousand persons, selected from all walks of life, were seized as hostages. Five of these hostages were shot in August after the bombing of a troop-train near Rotterdam.

The Netherlands government in London announced that these crimes would in due course be punished, and that the death penalty would be exacted for treason. The year was one of strenuous activity for the government, two notable events being the requisitioning of all Dutch shipping and the appointment of Pangeran (Prince) Ario Soeyons as minister without portfolio, the first Indonesian to hold cabinet rank. The visit of Queen Wilhelmina (*q.v.*) to Canada and the United States made a deep impression.

(G. N. C.)

Education.—In 1938: elementary schools, 7,812; scholars, 1,242,778; secondary schools, 288; scholars, 62,301; high schools (1937–38), 4; scholars, 3,037; universities (1937–38), 6; scholars, 9,471.

Finance.—Revenue, ordinary (est. 1940) 741,096,000 florins; expenditure, ordinary (est. 1940), 740,548,189 florins; public de (May 31, 1942), 7,449,000,000 florins; notes in circulation (Oc 10, 1942), 2,724,143,000; gold reserve (Oct. 10, 1942), 917,809 474 florins; exchange rate (average 1940), 1 florin=53.19 U. cents.

Trade and Communication.—Trade (merchandise) import 1938: 1,414,768,000 florins; 1939: 1,516,651,000 florins; expor 1938: 4,039,156,000 florins; 1939: 966,215,000 florins. Commun cations and transport, 1938: roads, suitable for motor traffic, 8,53 mi.; railways, open to traffic, 2,278 mi.; rivers and canals, nav gable, 4,817 mi.; airways, distance flown, 6,629,000 mi.; shippi (June 30), 2,855,400 gross tons; launched (July 1938–June 1939 246,400 gross tons; entered with cargoes, 27,606,524 net ton cleared with cargoes, 23,151,428 net tons. Motor vehicles licens (Aug. 1, 1938): cars, 94,000; buses, 4,088; trucks, 50,988; cycle 55,140; wireless (June 30, 1939): registered receiving sets, 83 542; connections with radio-distributing systems, 368,710.

Agriculture, Manufactures, Mineral Production.—In metr tons (1939 actual figures): wheat, 416,523; rye, 603,532; barle 146,041; oats, 449,241; pulse, 185,891; sugar beet, 1,716,05 flax, 152,487; cotton goods (1938), 136,565,000 guilders; machi ery (1938), 99,821,000 guilders; coal, 12,861,000; salt, 199,80 pig iron and ferro-alloys (1938), 276,600; zinc, 20,500. (*See* al CURAÇAO; DUTCH EAST INDIES; NETHERLANDS COLONIAL E PIRE; SURINAM.)

Netherlands Colonial Empire.

Total area excludi mother countr (approx.) 789,700 sq.mi.; total pop. excluding Netherlands, (es Dec. 31, 1940) 70,760,000.

The table on p. 495 lists the colonial possessions of the Nethe lands, together with statistics appropriate to each of them.

History.—Except for the most easterly district of Dutch Ne Guinea, the whole of the Dutch East Indies was in Japanese han by the summer of 1942. Only a handful of Europeans escape and some 230,000 remained, among them the governor gener who, with practically the whole of the civil service, stuck to h post. After a vain attempt to use them for their own purposes, t Japanese towards the end of June interned, at least in Java, a most all European men between 16 and 60. The women and ch

A NATIVE OF JAVA mourning the loss of his home in Surabaya after first Japanese raids on the city Feb. 3, 1942

Overseas Territories of the Netherlands and Essential Statistics

Country and Area, sq. miles (approx.)	Population est. Dec. 31, 1940 (000's omitted)	Capital	Status	Governors, Premiers, etc.
ASIA				
ETHERLANDS INDIES, including Java and Madura, Sumatra, Celebes, Borneo (D.), New Guinea (D.), Timor (D.), etc. 735,300	70,476	Batavia	colony	*Governor-General:* Jonkheer Dr. A. W. L. Tjarda van Starkenborgh-Stachouwer.
AMERICA				
URAÇAO 403	106	Willemstad	colony	*Governor:* G. J. J. Wouters.
JRINAM (Dutch Guiana) etc. . . . 54,000	178	Paramaribo	colony	*Governor:* Dr. J. C. Kielstra.

n were apparently not molested, though they were much im- verished and were able to live only by organizing mutual help. tle was known of the behaviour of the Japanese towards indi- ual Europeans, but in June the aged Roman Catholic Arch- hop Aerts, of the island of Kai, was murdered.

The Japanese occupation, by cutting off foreign trade, de- oyed the delicate economic balance on which the Dutch policy welfare depended, and put an end to the progress of industrial- tion and resettlement, by which alone the population-problem Java could be met. There was very little trustworthy news m any part of the Dutch Indies, and the Japanese made claims ich were certainly false in regard to the starting-up of the oil ustry and of mining in places where plants were destroyed dur- the invasion. Although details were scanty, it was clear that re was universal shortage, in places even a shortage of rice, and at industrial depression. The standard of living of the natives fered severely, where there was already too little to spare. ance appeared to be completely disorganized, and earnings re cut down. There was evidence of confiscations of land from ives for Japanese purposes.

The indigenous population was subjected to much Japanese paganda, but did not respond, and did not imagine that Japan uld countenance the national aspirations which were moving vards realization under Dutch rule. Japanese attempts to set puppet governments failed completely.

In the Netherlands West Indies there were no changes of ater moment than the arrival of a new governor and the visit Prince Bernhard. (*See* also CURAÇAO; DUTCH EAST INDIES; ORLD WAR II.) (G. N. C.)

utrality: *see* INTERNATIONAL LAW.

evada. A western state, popularly known as the "Sagebrush" or "Silver" state was admitted into the union on t. 31, 1864. Area, 110,540 sq.mi.; pop. (1940) 110,247. Of population 39.3% were urban; 93,431 were native white, only 599 were foreign-born white. Capital, Carson City (2,478); ner cities: Reno (21,317); Las Vegas (8,422); Sparks (5,318); y (4,140); Elko (4,094); Winnemucca (2,485); and Fallon ,911).

History.—Nevada in 1942 geared itself to war. The naval oject at Hawthorne, the Reno air base at Lemmon Valley and $100,000,000 magnesium plant at Las Vegas caused great tivity and increase in population. A curtailment in precious tal mining caused a serious setback in many sections.

The democratic party made a clean sweep in the general elec- n of Nov. 3, re-electing E. P. Carville governor; other officials cted were: lieutenant governor, Vail Pittman; secretary of ate, Malcolm McEachin; attorney general, Alan H. Bible; state asurer, Dan W. Franks; state controller, Henry C. Schmidt; perintendent of public instruction, Mildred Bray; U.S. sena- rs, Pat McCarran and J. G. Scrugham. Representative in ngress, Maurice J. Sullivan; chief justice of the state was illiam E. Orr.

Education.—In 1942 there were 234 elementary schools with a total enrolment of 19,432 pupils, staffed by 701 teachers. On Jan. 1, 1943 there were 41 high schools with a total enrolment of 6,277 pupils staffed by 298 teachers. On Jan. 1, 1943 the total school enrolment was 26,710, including 1,001 kindergarten pupils.

Public Welfare, Charities, Correction.—The amount spent for public assistance for the fiscal year ending June 30, 1942, was $29,375.51; for social security and old-age assistance, $839,340.83. On Jan. 1, 1943 the state prison had 218 inmates; total expenditures of the fiscal year ending June 30, 1942 were $130,913.92. The state industrial home had 43 inmates, expenditures, $20,107.52; the state hospital for mental diseases had 347 patients, expenditures were $106,868.51; the orphans' home had 39 inmates on Jan. 1, 1943 and expended $30,105.60 during the fiscal year.

Communications.—On Jan. 1, 1943 there were 5,518 mi. of roads in the state-designated highway system, 3,064 mi. of which were hard surfaced and 2,454 mi. improved but not paved. Expenditures were $4,411,860.39 for the fiscal year ending June 30, 1942. On Jan. 1, 1943 there were 1,830.28 mi. of railroad trackage in the state. On the same date there were 11 standard airports and 24 secondary airports in Nevada.

Banking and Finance.—On Jan. 1, 1943 there were six state banks; their deposits as of Dec. 31, 1942, were $8,579,091.10, total resources $9,190,379.78. On Jan. 1, 1943 there were six national banks. The First National bank of Nevada had nine branches throughout the state and the Ely national had one branch at McGill. These banks had total deposits as of June 30, 1942 of $50,738,257.98 and total resources of $54,831,479.56. On Jan. 1, 1943 there were two savings and loan associations with resources of $282,670.20.

State receipts for the fiscal year 1941–42 were $8,797,892.32; disbursements $8,180,455.90.

Agriculture.—The total value of agricultural production in 1940 (U.S. Census) was $12,132,935, and total acreage harvested was 451,688. The cash income from crops and livestock was $15,334,158. During 1942 the livestock and agricultural industries showed greatly increased activity and, enjoying plentiful rains, recorded large increases to meet the war demand. According to 1942 census release, land acreage in farms was 3,624,536 and the value of irrigated farms was $46,392,883. Irrigated farms totalled 3,264 and nonirrigated farms 309.

Manufacturing.—The total value of manufactures, according to the U.S. biennial census of 1939, was $32,309,219. The average number of employees was 1,169, and the total wages paid $2,151,292. The number of manufacturing establishments was 105 and the principal manufactures were printing products, brick, clay, iron and steel products and automobile parts.

Mineral Production.—The total value of gold, silver, copper, lead and zinc production in 1941 was $38,873,169. Gold produc-

Table I.—*Leading Agricultural Products of Nevada, 1942 and 1941*

Crop	1942 (est.)	1941
Corn, bu.	120,000	112,000
Oats, bu.	228,000	205,000
Wheat, bu.	521,000	491,000
Barley, bu.	836,000	663,000
Hay, tons	642,000	664,000
Potatoes, bu.	380,000	306,000
Pears, bu.	2,000	4,000
Peaches, bu.	2,000	5,000
Grapes, tons	160	150

Table II.—Principal Mineral Products of Nevada, 1941 and 1940

Mineral	Value, 1941	Value, 1940
Gold	$13,030,500	$13,437,655
Silver	4,114,489	3,680,660
Copper	18,441,540	17,730,004
Lead	1,062,880	749,900
Zinc	2,223,760	1,490,958

tion declined 3% but increases over 1940 were recorded in both quantity and value of each of the other four metals, the production of strategic lead and zinc showed an increase of over $1,000,000. Nevada produced a large tonnage of magnesite and brucite.

During 1942 the production of war metals showed a further increase. Tungsten and vanadium mining was active, the tungsten plant at the Getchell mine aiding materially. Mercury production was also upped. (E. C. D. M.)

Newbery Medal: *see* American Library Association.

New Brunswick.

One of the three maritime provinces of the dominion of Canada (*q.v.*), admitted to the union in 1867; area 27,985 sq.mi.; pop. (1941) 457,401, of whom 97% were native born. Capital, Fredericton (9,905). Other cities are Saint John (50,084) and Moncton (22,411). The lieutenant governor in 1942 was W. G. Clark and the premier was J. B. McNair.

Education.—The number of students in provincially controlled public schools in 1942 was 96,470; in private schools, 3,015; in institutions of university standard, 1,297.

Communications.—The mileage of surfaced highways in 1942 was 8,455; earth highways 3,840; provincial expenditure on highways, $1,193,404. The railroad mileage was 1,848 in 1942; the number of telephones, 35,798.

Finance.—The ordinary receipts in 1942 were $12,459,611; expenditure, $11,921,467. The direct debt (less sinking funds) was $97,043,223; indirect liabilities (less sinking funds) $2,741,509.

Agriculture.—The acreage of field crops in 1942 was 878,800; gross values of field products, $24,315,000; gross value of all crops, $31,090,000.

Leading Agricultural Products of New Brunswick, 1941 and 1940

Crop	1941	1940
Oats, bu.	6,200,000	6,507,000
Potatoes, cwt.	5,736,000	6,896,000
Turnips, cwt.	2,921,000	3,340,000
Hay and clover, tons	896,000	944,000

Manufacturing.—The gross value of manufactured products in 1940 was $89,281,008; net value, $38,253,475; number of employees, 16,859; salaries and wages, $17,639,789.

Bibliography.—*Royal Gazette;* Department of Federal and Munic Relations Report; *Canada Year Book,* 1942. (J. C. He

New Caledonia: *see* French Colonial Empire.
New Deal: *see* Budgets, National; United States.

Newfoundland and Labrador.

A British colony North America, w suspended constitution. Area: Newfoundland 42,000 sq.mi.; L rador 110,000 sq.mi.; total 152,000 sq.mi.; pop. (est. Dec. 1938): Newfoundland, 290,660; Labrador, 4,780. Chief town capital: St. John's (pop. 1941: 39,886). Governor (1942): Humphrey Walwyn; language: English; religion (1935 censu Roman Catholic, 93,925; Church of England, 92,732; Un Church, 76,100; Salvation Army, 18,054.

History.—During 1942 the membership of the commission government for Newfoundland remained unchanged, but the t of office of the governor, Vice-Admiral Sir Humphrey Walw was again extended, to 1943.

The financial year ended June 30, 1942 was the most succes in the island's history. Revenue reached the record figure $23,294,300 and the budget surplus amounted to more t $7,000,000. The financial year was changed to run from Apr to March 31. The estimate for the period July 1, 1942 to Ma 31, 1943 provided for a surplus of $848,500, taking into acco the probable shrinkage in customs revenue due to the world sh age of supplies and shipping, but indications were that the plus should considerably exceed the original estimate. The m factor in Newfoundland's prosperity was that the labour nee for defense works undertaken by the U.S.A. and Canada mean total absence of any able-bodied unemployment. As a result Newfoundland government and people not only did without fin cial assistance from the British government, but also made ge ous contributions to the united war effort. The sum of $6,100, had been advanced to the United Kingdom exchequer as n interest bearing loans, while further similar loans amounting $700,000 were made from the proceeds from the sale of savi certificates. More than 10,000 Newfoundlanders had voluntee for service abroad with the fighting services, the mercantile rine and the Newfoundland forestry unit.

Clement R. Attlee, British secretary of state for domin affairs, visited Newfoundland in September.

Legislation to effect the adoption of a system of compuls and free elementary education for children up to the age of years was enacted during the year.

Education.—In 1940: schools, 1,898; scholars on rolls, 66,508; ave attendance, 70.2%.

Banking and Finance.—Revenue, ordinary: 1940–41 $16,187,505, 1941 $23,294,300; expenditure: 1940–41 $15,490,974, 1941–42 $15,500,0 public debt (June 30, 1941), $2,412,773 and £19,980,012; notes in culation (June 30, 1941), $13,535; exchange rate same as Canadian do

Trade and Communication.—Overseas trade 1940–41 (merchandise):

FORT PEPPERELL barracks rose from the barren wastes of Newfoundland in 1942 to quarter U.S. soldiers stationed there

:s, $35,484,323; exports, $36,723,352; re-exports, $606,463. Com- iications Dec. 31, 1938): roads, main 1,150 mi.; secondary and local, ›o mi.; railways, open to traffic, 747 mi.; motor vehicles licensed 40): cars, 4,429; trucks and buses, 1,340; cycles, 154; telephones 40) 10,588.

ineral Production and Fisheries.—Fisheries 1940: cod (inshore, deep sea Labrador), 87,549 metric tons; seal, $205,030; salmon (export), 0,336 lb.; lobster (export), 2,477,289 lb.; fish oils (export), 1,826-, lb. In metric tons (1940): wood pulp (1938), 242,000; iron ore tal content), 797,000; lead ore (metal content), 25,500; silver, 46.5; , 678 kg.

w Guinea: *see* Dutch East Indies; Mandates; Pacific ands, Mandated; Japan; World War II.

w Hampshire.

One of the New England group of states and one of the original states of the on, popularly known as the "Granite state"; area, 9,304 sq.mi.; . (1940) 491,524. Of the total population, 283,225 or 57.6% e urban, and 208,299 rural. Capital, Concord (27,171). Other es: Manchester (77,685), Nashua (32,927), Berlin (19,084), ver (14,990) and Portsmouth (14,821).

listory.—The general court was not in session during 1942. the November election of 1942, Robert O. Blood (Repub- n), was re-elected governor by a vote of 83,766 over 76,782 William J. Neal (Democrat). H. Styles Bridges (Repub- n) was re-elected U.S. senator by a vote of 88,601 over 73,656 Francis P. Murphy (Democrat). In the same election the ers approved the amending of the state constitution so as to nit the reduction of the house of representatives from 443 nbers to a number between 375 and 400.

uring 1942 the activities of the state council of defense created 941 were greatly extended, and an increase of the New Hamp- e state guard to four battalions was authorized.

ducation.—In 1941–42 there were 1,854 public schools. The l number of elementary pupils was 51,771, with 2,060 hers; the number of high school pupils, 20,744, with 991 hers. Total payments for public education during year end- June 30, 1942, $7,856,373.

ublic Welfare, Charities, Correction.—In Jan. 1942 there 5,884 cases on general relief, with an expenditure of $156,- as compared with 4,259 cases in the following September, 1 an expenditure of $107,112. Expenditures for public assist- under the Social Security act tended to increase somewhat, ough the peak of old-age assistance appeared to have been hed in July with an expenditure of $176,158. Monthly aid to endent children steadily increased, amounting to $41,586 in tember. During the fiscal year ending June 30, 1941, there disbursed from the New Hampshire unemployment compen- on fund $6,211,865.28.

n Jan. 1, 1939, there were 269 persons in prisons and re- natories in New Hampshire. The appropriation for the state on at Concord for the fiscal year ending June 30, 1942, was 5,540.

ommunication.—Rural highways and urban extensions unted in 1939 to 3,613 mi. State highway funds disbursed in totalled $8,386,000. In 1939 there were 1,003 mi. of steam roads in the state.

anking and Finance.—As of June 30, 1942, there were in Hampshire 52 national banks with deposits of $93,734,000 resources of $108,971,000. Forty-three savings banks and savings departments of 8 trust companies reported deposits of $206,645,049 as of June 30, 1942. The combined resources of 43 savings banks and 12 trust companies on June 30, 1942, were $241,675,814. There were 25 building and loan associations with resources of $13,778,162.

ble I.—*Leading Agricultural Products of New Hampshire, 1942 and 1941*

Product	1942 (est.)	1941
n, bu.	630,000	630,000
s, bu.	240,000	240,000
atoes, bu.	1,207,000	1,023,000
ples, bu.	994,000	659,000
y, tons	446,000	360,000
ple sugar, lb.	. . .	26,000
ple syrup, gal.	. . .	58,000

Table II.—*Principal Industries of New Hampshire, 1939*

Industry	Value	Industry	Value
Boot and shoe cut stock and findings	$12,709,283	Woollen and worsted	$25,881,985
Cotton broad woven goods	20,267,109	Paper and allied products	17,095,136
Footwear (except rubber)	63,464,629	Machinery (except electrical)	8,150,154
Paper and paperboard mills	16,293,358	Machinery (electrical)	429,952

Table III.—*Principal Mineral Products of New Hampshire, 1939 and 1938*

Mineral	Value, 1939	Value, 1938	Mineral	Value, 1939	Value, 1938
Clay products	$321,751	$278,206	Sand and gravel	$219,296	$243,040
Feldspar	161,968	135,760	Stone	437,342	444,537
Mica	5,330	(unavailable)			

Cash receipts of the state treasury department for the fiscal year ending June 30, 1942, $32,181,057.51; cash disbursements, $31,218,074.56; cash balance, $5,403,857.33. Gross fixed bond and note debt, June 30, 1942, $15,652,000; total net bonded debt, $12,700,913.12.

Agriculture.—Gross farm income for 1940 was estimated at $25,000,000, as compared with $26,000,000 for 1939.

Manufacturing.—Total estimated value of manufactures (1939), $237,396,015. Salaried personnel, including officers and employees, 4,593; salaries, $10,483,983. Wage earners, 55,781; wages paid, $52,735,240.

During 1939–42 population shifts caused by the expansion of war industry led to many new problems of housing, health, etc., particularly in the vicinity of the Portsmouth navy yard.

Mineral Production.—Total value of minerals produced in 1939 was $1,187,339. Efforts were being made in 1942 to open additional mica mines, to help meet war demands. Twenty-five mines were in operation and it was proposed to double the number. (W. E. Ss.)

New Hebrides: *see* Pacific Islands, British; French Colonial Empire.

New Jersey.

Sometimes called the "Garden state," New Jersey is one of the three middle Atlantic states. Area, 8,224 sq.mi.; pop. (1940) 4,160,165. Capital, Trenton (124,697). The largest city is Newark (429,760); second is Jersey City (301,173).

History.—The year 1942 witnessed a resurgence of the Republican party in New Jersey which culminated in the election of Albert W. Hawkes to the United States senate. He defeated the incumbent Democrat, William H. Smathers of Margate City, by more than 84,000 votes in a bitterly fought contest. Smathers had the support of Mayor Frank Hague, Democratic leader, and based his plea for re-election on his unswerving loyalty to the New Deal and the Roosevelt administration. Despite a majority of 115,000 rolled up by the Hague machine in Hudson county, Smathers succeeded in capturing only two other counties, Camden and Middlesex, by slight majorities.

Smathers had the endorsement of many leaders of organized labour, both C.I.O. and A.F. of L., and directed his attack on Hawkes as a former president of the United States chamber of commerce. The Democratic nominee did not, however, have the support of Democratic Governor Charles Edison, who refused to endorse his candidacy despite the appeals of party leaders outside Hudson county. The governor's aloofness from the Smathers campaign had its origin in his bitter feud with Mayor Hague.

Smathers had sponsored the nomination in the senate of Thomas

F. Meaney as a judge of the United States district court in New Jersey but Edison had fought Meaney's confirmation before a committee of the senate. The nomination eventually was confirmed, but Gov. Edison thereafter parted political company with Smathers. This division in the party largely accounted for the Democratic defeat in the election. The Republicans picked up another seat in the house of representatives, thereby making the state's congressional delegation 11 Republicans and 3 Democrats, and won overwhelming control of the state legislature. The 1943 assembly became Republican, 46 to 14, and the senate Republican, 18 to 3.

Throughout 1942 Gov. Edison had striven unsuccessfully to advance the cause of constitutional revision. In public speeches and in direct appeals to the legislature, the governor had sought to obtain first a convention and then a referendum on revision of the constitution. The governor maintained that New Jersey's constitution, adopted in 1844 and amended little during its nearly 100 years, was outmoded and that it deprived the governor of necessary executive authority, was responsible for an unwieldy superstructure of boards and bureaus, none of them responsive to the chief executive, and fostered an antique court system resulting in needless litigation, delay and expense.

The constitutional crusade was generally supported by the state press. Speakers' bureaus were organized, and many civic organizations endorsed the movement. Mayor Hague's organizations opposed the plan, but the chief opposition originated in the state senate. Many rural senators believed their counties, numerically inferior, would lose their senate representation if a new constitution were submitted for popular vote.

Differences between Gov. Edison and Mayor Hague on the constitution marked only one aspect of their intraparty conflict. The governor early in 1942 ousted the Hudson county tax board, an important cog in the Hague machine. Edison, after a hearing lasting several weeks, appointed a new board which began immediately to reduce Hudson county assessments, particularly Jersey City assessments, on the score they were inflated and did not represent equitable valuations. Mayor Hague responded with renewed attacks on the governor as being instrumental in compromising railroad taxes long overdue, with accumulated penalties amounting to more than $20,000,000. The attorney general, David T. Wilentz, brought suit in the court of chancery to outlaw the compromise settlement, which had been ratified by the legislature.

New Jersey's great factories and plants, operating around the clock, were interrupted spasmodically and briefly, or not at all, by labour disputes. The war, however, left its imprint on resort communities along the New Jersey coast. Boardwalks, streets and amusement piers were dimmed out, and many of the large hotels in such resorts as Atlantic City and Asbury Park were taken over as quarters for the armed forces.

Education.—For the fiscal year 1941–42, total enrolment of day students in public schools was 719,623, a decrease of 13,326. Teachers numbered 29,513. Total salaries were $61,673,907, averaging $2,123 a year. Total school buildings numbered 2,090. There were 19,345 adults given instruction in various war training programs by 451 teachers. Total cost of the public school system was $108,607,744.

Public Welfare, Charities, Correction.—Direct relief declined as employment rose in war industries during 1942, reversing the trend of the previous year, when 26,973 cases were reported (March 1941).

The 1941 appropriation for the state prison at Concord was $126,540; for the Industrial School for Committed Minors at Manchester, $91,600.

Communication.—Although highway construction was curtailed because of the war, the state had at the end of 1942 mo than 1,680 mi. of paved roads, many of six lanes. In the 25 yea of its existence, celebrated March 30, 1942, the department h expended approximately $572,000,000 in the development of elaborate system of roads, bridges, viaducts and grade crossing In 1939 there were 2,123 mi. of steam railways in New Jersey.

Leading Agricultural Products of New Jersey, 1942 and 1941

Crop	1942 (est.)	1941
Wheat, bu.	1,150,000	1,210,000
Corn, bu.	8,272,000	7,421,000
Oats, bu.	1,380,000	1,428,000
Barley, bu.	261,000	216,000
Potatoes, bu.	10,320,000	10,360,000
Apples, bu.	3,397,000	2,632,000
Tame hay, tons	383,000	342,000

Banking and Finance.—The 158 financial institutions und jurisdiction of the state department of banking and insurance r ported total assets, at the close of the state's fiscal year June 3 1942, of $1,589,811,958—a decline from the preceding Decemb (1941) figures of $2,834,833. The report was made by 108 tru companies, 25 state banks, 23 savings banks and 2 savings asso ations.

Agriculture.—Harvests in 1942 broke all previous recor surpassing the goals set for wartime production. The total acr age harvested was 793,200 ac.; crops had an estimated value $33,328,000.

Manufacturing. — Employment in New Jersey industr reached a record high in 1942. More than 800,000 were gainfu employed, according to preliminary reports to the state depa ment of labour from 1,785 plants. The figures indicated an i crease of 19% over 1941. Average weekly earnings ran to a re ord high of $43.79, and more than 5,000 plants were engaged war production.

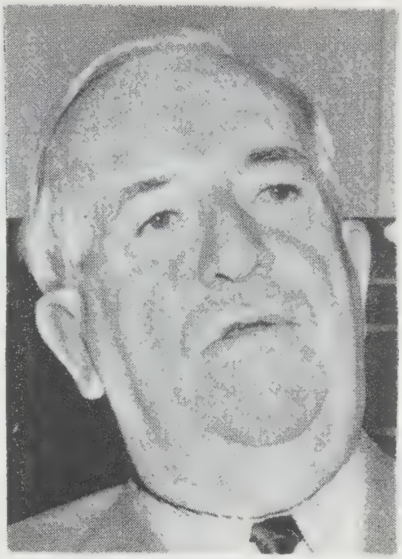
Mineral Production.—The total value of New Jersey's mi eral production in 1939—the latest year for which federal figu were available in 1942—was $30,271,293. The leading produc in order of value, were zinc, clay, sand and gravel, stone and ir ore. (W. R. Ck.)

Newkirk, John Van Kuren ("Scarsdale Jack") (191 1942), U.S. flier, was bo Oct. 15 and studied at the Rensselaer Polytechnic institute Troy, N.Y. He enlisted as a navy flier in 1938 and joined t American Volunteer group, a band of U.S. airmen who foug with Chiang Kai-shek's armies in China, in 1941. He soon w promoted to squadron leader and won the rank of ace for havi shot down 25 enemy craft in battles over the Burma road. the early part of 1942, his squadron had bagged 136 planes, a counting for 300 Japanese airmen. In March 1942, the Briti government awarded him the D.S.O. for his feats. He was sh down and killed during an A.V.G. raid over the Chieng Mai aer drome in Thailand, on March 24.

New Mexico. Fourth largest state in the southwestern Unit States, popularly known as the "Sunshi state"; admitted to the union in 1912. Total area, 121,666 sq.m pop. (1940) 531,818 (25·6% increase since 1930), divided amo rural, 355,417; urban, 176,401 (33·2%); native white, 477,06 Negro, 4,672; foreign born, 15,247.

History.—The administration, legislature and congressio representation were Democratic in 1942. The chief officers the state elected on Nov. 3, 1942, were: governor John Dempsey; lieutenant governor, James B. (Jawbone) Jon secretary of state, Cecilia Tafoya Cleveland; auditor, J. Hannah; treasurer, Guy Shepard; attorney-general, Edward Chase; superintendent of public instruction, Georgia L. Lus missioner of public ls, H. R. (Ray) Rod-. U.S. senators were A. Hatch and Dennis vez; representatives, ton P. Anderson and onio M. Fernandez.

ducation.—For the ol year 1941–42, 710 l schools, with 58,253 ils and 1,754 teach- cost $4,118,476.33; municipal schools, 73,089 pupils and 9 teachers, cost $5,- 214.28.



JOHN J. DEMPSEY, Democrat, elected governor of New Mexico Nov. 3, 1942

blic Welfare, Char-, Correction.—For fiscal year ending 30, 1942, the WPA t $10,216,935.75 for ur and material, and NYA spent $354,520.82 (1941). During calendar year 1942, $500,880.04 was paid out for unemploy-t benefits. On June 30, 1942, $168,000 had been spent for age and survivors insurance.

he penitentiary appropriation was $130,480 for 610 inmates t. 1, 1942), including 84 on the prison farm; insane asylum, ,280, 854 inmates; School for Mental Defectives, $47,480, mates; Industrial school, $39,000, 113 inmates (Nov. 1942); s' Welfare home, $47,000, 110 inmates (Dec. 1942).

ommunication.—New Mexico had an estimated 62,833 mi. oads in 1942; 9,349 constituted the state highway system. the fiscal year ending June 30, 1942, the state highway rtment expended $7,600,808.02. Steam railway companies ated 2,692 mi. of main track (1941).

here were 45 airports, and approximately 1,302 mi. of air-s operated by three scheduled air carriers in 1941. There about 45,000 telephones.

anking and Finance.—On June 30, 1942, there were 22 na-al banks with deposits of $60,058,000; loans, $18,963,000; stments, $20,927,000; and 19 state banks with deposits of 363,000; loans, $6,205,000; investments, $4,317,000. Total urces of 12 building and loan associations in 1941 were 21,129.49 and of 7 federal savings and loan associations, 60,514. Total of all state receipts for the fiscal year ending 30, 1942, were $32,230,374.91; expenditures, $32,868,697.47. gross and net debt were respectively $24,915,500 and 620,595.27.

able I.—*Leading Agricultural Products of New Mexico, 1942 and 1941*

Crop	1942 (est.)	1941
in sorghums, bu.	4,060,000	8,348,000
eat, bu.	4,813,000	2,735,000
n, bu.	3,792,000	3,315,000
ns, bags	1,079,000	1,078,000
ton, bales	122,000	115,000

griculture.—The total value of agricultural production in 2 was estimated at $44,648,000; acreage harvested, 1,692,100. estock was valued at $88,239,000, Jan. 1, 1942.

anufacturing.—Manufactured products were valued at $25,-,641 in 1939; an average of 3,250 employees received $2,912,- in wages.

ineral Production.—As in preceding years, copper was New xico's chief mineral in 1942. The total value of minerals pro-ed was $43,913,937.

Table II.—*Principal Industries of New Mexico, 1939 and 1937*

Industry	Value of products	
	1939	1937
Petroleum refining	$3,538,753	$3,431,417
Lumber and timber	2,757,424	4,945,151
Bakery products	1,756,121	1,606,226
Newspapers	1,456,759	1,211,859
Nonalcoholic beverages	1,208,823	870,213
Cottonseed oil, etc.	1,164,676	1,436,751

Table III.—*Principal Mineral Products of New Mexico, 1942 and 1941*
(year ending Oct. 31)

Mineral	Value, 1942	Value, 1941
Copper	$19,245,964	$16,734,457
Potash	10,303,317	7,026,609
Zinc	6,767,425	6,156,326
Coal	4,929,458	3,580,201
Silver	408,963	940,629
Lead	535,952	563,236
Gold	338,924	500,206

(F. D. R.)

New South Wales.

A state of the Australian commonwealth, lying in the southeast and occupying 309,432 sq.mi.; pop. (est. Dec. 31, 1941) 2,812,321. Chief cities (pop. est. Dec. 31, 1939): Sydney, capital (1,302,890); Newcastle (117,050). Governor (1942): Captain the Rt. Hon. Lord Wakehurst.

History.—The labour administration under the premiership of William J. McKell remained in office throughout 1942. The policy of the government was to co-operate with the federal administration in all matters pertaining to the vigorous prosecution of the war. This attitude was exemplified when the federal government introduced its uniform income tax legislation in June. The first reaction in New South Wales, as in the other states, was to oppose this federal incursion on state rights. Mr. McKell announced that his government would join the other states in contesting the validity of the legislation, but after reconsideration of the position by the labour caucus, the cabinet reversed its decision.

The state budget was introduced in October and showed a surplus of £A880,000 for 1941–42. Although no new taxes were introduced for 1942–43, Mr. McKell said "Nothing will change our view that the maintenance of a certain standard in the social services is essential for the successful prosecution of the war."

The loan council's allocation of loan money expenditure for New South Wales for 1942–43 was £A3,232,000, practically all of which would be absorbed by works associated with defense needs.

Education.—In 1940: public schools, 3,209; teachers, 12,877; scholars on roll, 359,777; average attendance, 296,924; expenditure by state, £A4,882,000.

Finance.—In 1940–41: revenue, £A60,750,000; expenditure, £A61,610,000; debt outstanding (June 30, 1941), £A368,975,000.

Communication.—Roads (1939), 62,297 mi. fit for motor traffic. Railways, government (Dec. 1941), 6,127 mi. Tramways (June 1941), 172 mi. Motor vehicles licensed (March 31, 1942): cars, 174,848; commercial vehicles, 73,663; cycles, 16,031. Wireless receiving set licences (Mar. 1942), 502,810. Telephones (June 1941): exchanges, 2,018; instruments connected, 280,161.

Agriculture, Manufacturing, Mineral Production.—Production in 1941–42: wheat, 48,500,000 bu.; butter, 112,000,000 lb.; wool, greasy, 550,000,000 lb.; maize, 2,833,000 bu.; coal (1939), 11,196,000 tons; gold (1939), 87,189 fine oz. Industry and labour, 1940–41: factories, 9,919; employees (average) 264,600; gross value of output £A285,916,850; unemployment (trade union returns) (Feb. 1942) 2.0%. (W. D. MA.)

Newspapers and Magazines.

The year 1942 brought to American newspapers the full impact of war economy—shortages of materials and manpower, priorities, rationing and rising cost of news gathering—as well as several conflicts with governmental agencies. But these problems were offset by evidence that, because of newspaper war services and adequate handling of the war news, the criticism of the press that marked the previous decade almost completely disappeared.

The extent to which war dominated the news was indicated by "The Twelve Biggest News Events of 1942," as drawn up by the Associated Press, as follows: (1) a "second front" is opened Nov. 7 (Nov. 8, Algerian time) with invasion of North Africa (accompanied by Rommel's rout and scuttling of French fleet at Toulon); (2) America takes offensive in the Pacific, administering a series of disastrous defeats to Japanese (at Midway, Coral sea, Solomons, Guadalcanal); (3) Russia holds (at Stalingrad) and counterattacks; (4) Japan carves out an empire in a few short months (Philippines, Singapore, Java, Burma); (5) two-party government strengthened in U.S. with Republican comeback in Nov. 3 elections; (6) Tokyo bombed April 18; (7) America goes on wartime economy, with one cup of coffee a day epitomizing the transition; (8) six of eight nazi submarine-landed saboteurs executed Aug. 8; (9) Eddie Rickenbacker rescued; (10) Dieppe raided Aug. 19 in one of the most spectacular incidents in war; (11) bombers raid Europe with worst yet to come as American planes prove their superiority; (12) Boston Cocoanut Grove night-club fire tragedy Nov. 28. To this list, other editors added: the draft of 18–19 year old boys; mobilization of women in WAAC, WAVES, SPARS, etc.; Prime Minister Winston Churchill's visit to Washington; Wendell Willkie's round-the-world trip; unprecedented federal tax law; rise of American war production. No one could keep the list down to ten items for 1942.

The impact of America's all-out conversion of industry to war production was felt at once in the mechanical departments of all publications. Manufacture of printing machinery, such as presses and linotypes, even typewriters, was stopped at once. Shortages of rubber and of printing metals, such as aluminum, zinc, copper, nickel, brass, tin and lead, set all publishers to studying economies. Picture-printing was reduced by shortage of zinc and copper; camera film for news photographers was reduced 24%. Gasoline and tire rationing brought problems to circulation departments, including the November order of the Office of Defense Transportation to reduce truck mileage by 25% and to provide for 75% return loads. Newspapers of larger cities resorted to fewer daily editions, to pooled deliveries and even to horses and wagons—with resulting protests from deliverymen's unions.

The problem of newspaper printing paper did not become acute until near the end of the year, although the constant threat of it led to many economies, and chlorine shortage at the mills showed in grayer paper. The price of newsprint had been frozen at $50 a ton, but shortage of manpower, electric power and transportation developed in the Canadian mills which supply most of the paper used by American newspapers. In December committees from the newspapers and printing industry were in Washington conferring with the government on possible rationing, and it was expected that the 1943 supply would be reduced 20% to 25%.

Manpower shortage began early; by March the newspapers had contributed 7,000 men to the armed forces and by December the number had increased manyfold. In September the army ruled that "key men" in certain occupations, including newspapers, could not enlist or volunteer for commissions without the consent of employers and ordered local draft boards to defer essential men. The chief sufferers in the manpower shortage were weekly newspapers and small print shops, of which perhaps 10,000 out of 43,000 closed because they could not obtain printers. Meanwhile, women were invading the news staffs and publishing plants as never before since World War I, and newspapers were begging the schools of journalism for help and urging "accelera programs" and similar devices to provide more graduates fas

RESEMBLING THE "OLD BILL" of Bruce Bairnsfather's cartoons, this correspondent worked, slept and ate in his slit trench behind the British lin El Alamein, Egypt, in the summer of 1942

Despite shortages, newspaper circulations went to all-time hi increasing even faster than in 1941. Tabulations near the enc the year showed daily circulations up 2.3% (2.91% for morr papers and 1.87% for afternoon papers) and Sunday papers 7.15%. In some cases the increase reached 17%. The 11 ma newspapers of New York city gained an average of nearly 400, reaching the daily total of 10,901,513 copies. The increase in spite of a widespread rise in prices to 4 or 5 cents a copy; March 806 small city dailies were selling for 5 cents, and December 648 dailies reported a price rise during the year. M to the surprise of many prophets, newspaper advertising did decline materially although it changed in character. The doct that "it pays to advertise to keep the firm name alive for post-war market" was widespread, and, when there were no gc to sell, the merchant or manufacturer bought space to ad "wise buying" and conservation of available goods.

Besides spending millions to gather the news of a war spr all over the globe, American newspapers extended their " service" to devoting thousands of columns of space to var civilian war drives, such as civilian defense, air-raid precauti sales of war bonds and stamps, rules of rationing and price trol. Outstanding among these was the national scrap drive. A the *Omaha World-Herald* had led a drive that collected 60 tons of scrap in Nebraska in three weeks, the War Produc board called 16 newspaper leaders to Washington in Septem and asked them to try to collect 4,000,000 tons throughout country. By November 5,364,415 tons had been gathered, but newspapers had devoted some 280,000 columns of free spac the job. Second in interest was a campaign through which 300 carrier boys, under the direction of newspaper circulation dep ments, sold 547,188,878 10-cent war savings stamps. Am smaller newspapers, a common service was to send free subsc tions to all local men in military service. Among metropol newspapers, appeared the sharing of exclusive news beats of t own foreign correspondents; in June the *Chicago Tribune* g its exclusive Stanley Johnston story of the Coral sea battle tc three press associations, and in July the *Chicago Times* did same with the exclusive Alaska stories by Keith Wheeler.

The system of voluntary censorship set up under the direc of Byron Price in Dec. 1941 continued to work satisfactorily, cept for some grumbling over censorship by the army and na and over the censorship of all news of President Roosevelt's about the country in September. The reorganization in July e Office of War Information under Elmer Davis was welcomed, cause of the clear definition of the three branches: domestic erations; propaganda broadcasts to Europe; and protection of ilian morale against axis propaganda. Both press and radio coerated with Mr. Davis and Mr. Price throughout 1942. The *icago Tribune* executives were summoned before a federal nd jury in August on the charge that Correspondent Stanley nston had divulged confidential navy information in his June 7 icles on the battle of Midway Island, but no indictment was urned. A small flurry developed in December over an order of OWI subordinate to the *Los Angeles Times* concerning the e of a news headline, but the order was quickly disavowed.

The most discussed conflict between the newspapers and the vernment was an antitrust suit instituted by the federal dertment of justice, charging the Associated Press with being a nopoly and citing the protest of the *Chicago Tribune* against P. membership for the new *Chicago Sun* founded late in 1941 Marshall Field. After hints of such a suit early in the year, A.P. on April 20 revised its by-laws to revoke the famous ht of protest and to liberalize membership admission; but at same meeting the A.P. members voted 684 to 287 against nitting the *Sun*—also voting down membership for Eleanor dill Patterson's *Washington Times*. The justice department d the suit on Aug. 28, and the A.P., responding on Oct. 27, tested that the suit would create a monopoly by destroying its npetitors, the United Press and the International News Serv, and would convert the A.P. into "a public utility" to be regted by government. On Oct. 29 the *Chicago Tribune* filed a arate answer, and later some 1,000 smaller newspaper members anized to file a third answer. The suit was still pending at the l of the year. Another conflict developed over hearings started e in 1941 by the Federal Communications commission, to inre into the extensive control of radio stations by newspapers; se were ended by a court decision on Jan. 26, 1942. During y smaller newspapers were concerned over discussion in conss threatening the newspaper second-class postal rate, but the tter was shortly dropped.

Although few newspaper strikes occurred during 1942, New rk city was disturbed in December by a strike of the Newsper Deliverers union which tied up 12 major newspapers for ee days. The Newspaper guild, holding its ninth annual contion at Denver, deferred all major squabbles. On May 1 the *w York Times* signed its first contract with the guild; in Nonber the *Aliquippa* (Pa.) *Gazette*, long closed by a strike, was refinanced by the striking guild; the Los Angeles guild in November took the novel action of admitting 500 newsboys to membership.

RESS CLUB" of U.S. newspapermen on Guadalcanal in the Solomon Islands 1942

Because of the world-wide scope of the war, with newspaper men joining fighting men on fleets, bombers, submarines and tanks, the tale of the war correspondent developed into an epic known in no other war. Up to December the casualty list of American war correspondents was tabulated as follows: 10 killed; 33 wounded; 2 missing; 65 captured, of whom 23 were still in custody. Outstanding were the adventures of 26 newspaper people returned on Aug. 25 on the "Gripsholm" from Japanese custody in the orient, several, like J. B. Powell of Shanghai, crippled for life. Almost every week brought such thrilling stories as those of Larry Allen, A.P. correspondent captured on Sept. 13 by the nazis after a British naval raid on Tobruk, and Vern Haugland, A.P. man, rescued on Sept. 19 after parachuting from a bomber and wandering in the New Guinea jungle for 47 days. For those returning home for rest, public lecture tours became a bonanza, paying newspaper speakers from $100 to $2,500 per talk. Other thrills were promised for the newspaper men enlisted as "combat reporters" in the marine corps and in various public relations activities in the army and navy.

Changes among the large newspapers were: the *New York Post* became a tabloid on April 6 and dropped Franklin P. Adams' famous column, "Conning Tower," in August; the *New York Times* merged its rotogravure and magazine sections in January, after having sold its Wide World Photo service to the Associated Press; the A.P. membership of the suspended *Philadelphia Public Ledger* was sold to the *Inquirer* for $10,000 in January; Marshall Field became sole owner of New York *PM* in January and his editor, Ralph Ingersoll, was inducted into the army in July; Walter Winchell disappeared from the radio and the *New York Mirror* in December when as an officer in the navy he was sent to Brazil; Charles Michelson, publicity man of the Democratic national committee since 1930, retired in December. Notable suspensions were: the *Milwaukee Post*, successor of Victor Berger's socialist *Leader*, on May 23; and the *Kansas City Journal* on March 31.

American magazines and periodicals were even more seriously affected by war economy than were the newspapers; declining advertising reduced their size; paper shortage was evident in the substitute stocks used; contents of the large newsstand magazines were devoted more and more to articles and fiction concerning the war, some magazine war correspondents sharing the glory with newspaper and radio daredevils. By concerted action, 500 magazines appeared with the American flag in colours on the covers of their July issues; much of the reading public commented on the striking change in format and title of the *Saturday Evening Post*. An ugly scandal resulted from the conviction on Sept. 5 of the former publisher of the *North American Review*, the *Living Age* and *Current History* on the charge of serving the Japanese government for pay for three years; he had later organized *Scribner's Commentator* which was suspended for subversive behaviour. *Social Justice*, mouthpiece of the Rev. Charles Coughlin, was barred from the mail in April. Two interesting new projects were: the *Far Easterner*, launched in December by J. R. Young, former I.N.S. writer in Japan, and J. B. Powell, former editor of the Shanghai *China Weekly Review;* and *Victory*, a pictorial in several languages, to be published every other month for foreign circulation by the Office of War Information. Two others, forced to suspend because of paper shortage, were *Extra*, a midweek pictorial launched in New York, and *Parade's Weekly*, a 5-cent companion of his *Parade* newspaper supplement, launched by Marshall Field in May. (G. M. Hy.)

Great Britain.—Notwithstanding the shortage of many vital materials and increased staffing difficulties caused by the recruitment of man-power for the forces, the newspaper and periodical industry of Great Britain during 1942 continued to prosper. It was felt by the cabinet that newspapers and periodicals were part of the front line effort in the maintenance of public morale by the dissemination of war information. Hence, the government extended facilities to newspaper and magazine representatives to watch the war effort from all angles and to write with comparative freedom. At no period since Sept. 1939 was there greater liaison between the authorities and the general public than that provided by the daily, weekly and monthly press. The national newspapers spent large sums in reporting the war all over the world, and cabled accounts from the far and middle east, from Iceland and the United States, from Russia and Madagascar, were in the highest tradition of British journalism. The permanent staff of the national papers numbered 12,000, as against 18,000 pre-war, excluding the canvassing staff of several thousands disbanded immediately upon the outbreak of war.

The consumption of newsprint by the national newspapers was approximately 210,000 tons per annum, compared with more than 600,000 tons just before the war. The periodical press consumed in 1942 newsprint at the rate of 40,000 tons per annum in contrast with 200,000 tons pre-war. In March a 10% cut in newsprint was met by the popular national papers cutting their circulation.

The net profits of many of the newspaper and periodical publishers exceeded the previous year. The following figures give the profits shown in the 1942 balance sheet as compared with those (in parentheses) for 1941: London Express Newspapers (after providing £565,000 for taxation), £247,789 (£246,185); Amalgamated Press, £750,162 (£593,555); George Newnes, £120,387 (£120,084); News of the World, £631,285 (£501,685); Sunday Pictorial Newspapers, £192,497 (£208,709); Allied Newspapers, £465,689 (£481,775); Daily Mirror, £302,307 (£288,835).

Circulations were maintained at a high level but readers of the *Times* and *Telegraph* were asked to share their copies. The *Daily Express* net sale in September, certified at 2,541,708 copies daily, was claimed to be three-quarters of a million more than any other daily in Great Britain.

In spite of the newsprint shortage over 80 foreign papers were regularly published in 1942: dailies, weeklies and monthlies. These expressed the views and printed the news of the oppressed nations under the control of the axis powers such as France, Denmark, Holland, Belgium, Greece, Norway and Poland; while other publications printed news and the views of Soviet Russia and refugee Germans.

A large number of foreign journalists were engaged on these papers.

One of the notable events of the year was the reappearance on Sept. 7 of the communist *Daily Worker* which was banned in Jan. 1940, when the home secretary ruled that its stock contents were calculated to foment opposition to the successful prosecution of the war. The lifting of the ban was acclaimed by the whole press.

In March the home secretary, Herbert Morrison, warned the *Daily Mirror* under Defence Regulation 2D because of a cartoon by "Zec."

The warning aroused much controversy in all circles, and when the subject was debated in parliament the traditional freedom of the press was widely supported.

Three important changes occurred in Fleet street during 1942. In February J. L. Garvin retired from the *Observer* on a difference of policy after 34 years' editorial control, and later joined the *Sunday Express* where he continued his weekly article which had made him famous for a generation. Michael Foot succeeded to the editorship of the *Evening Standard* when Frank Ow joined the forces, and the Hon. Lionel Berry, eldest son of Lo Kemsley, became the editor of the *Daily Sketch*.

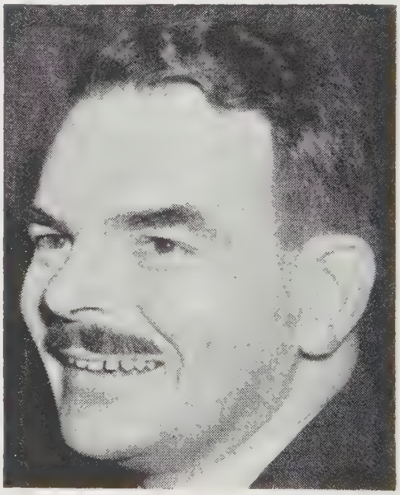
In November the *Observer* decided to print news on the fro page, and the *Times* then remained the only national newspap to retain the front page advertisement tradition. (*See* also A VERTISING; PRINTING.)

(S. R. C.)

New York.

One of the original 13 states of the union, pop larly known as the "Empire state," New Yo covers an area of 49,576 sq.mi., of which 1,647 sq.mi. are wat With a population of 13,479,142 (federal census, 1940) it retain its place as the most populous of the states. It had in that ye a foreign-born population of 2,853,530, which included 584,0 born in Italy and 316,800 born in Germany. The capital is A bany, with a pop. of 130,577. Among the other cities are N York, with a population of 7,454,995, or about twice as many any other city in the U.S.; Buffalo, 575,901; Rochester, 324,97 Syracuse, 205,967; Yonkers, 142,598; Utica, 100,518; Bingha ton, 78,309; Troy, 70,304.

History.—The legislature at its 1942 session created a sta war council with broad powers, authorized the waiving of the ru of a 40-hour week on public work and the maximum number hours a day for employment on private work, permitted the e ployment of prison labour in the production of goods needed f war, reduced the state income tax by 25% for 1942 and 194 abolished the only remaining state tax on real estate, gave t welfare commissioners the right to refuse home relief to perso who refused to accept work and passed a congressional reappo tionment act continui the practice of electi 43 of the 45 represent tives by districts and tw at large. It rearrang the boundaries of t congressional districts become effective in 194 It also authorized t construction of a sup highway on new rights way on the west bank the Hudson river fro the New Jersey state li to Albany and then across the state to Buffa and along the shore Lake Erie to the Pen sylvania state line.



THOMAS E. DEWEY, governor of New York, elected Nov. 3, 1942, in a Republican vote of landslide proportions

As the state was to ele a governor, Preside Roosevelt sought to induce the Democrats to nominate Unit States Senator Mead, but he was opposed by James A. Farle chairman of the Democratic state committee, who favoured Jo J. Bennett, Jr., the attorney general. He succeeded in bringi about the nomination of Bennett. The Republicans nominat Thomas E. Dewey, who had distinguished himself as district torney of New York county, and the American Labor party nam Dean Alfange. Dewey was elected by a plurality of more than h a million votes, the first Republican to be elected to the office in years. The Republicans also elected the lieutenant governor and t state controller, while the Democrats elected the attorney gener Three supreme court judges were re-elected in the first distr with the support of either the Republicans and Democrats or t Democrats and the American Labor party. In the second distr five judges were elected with the support of the Republicans a ocrats.

November 22, President Roosevelt appointed Governor nan as director of foreign relief and rehabilitation to act un- he supervision of the state department. The governor, who inherited a deficit of $100,000,000 from F. D. Roosevelt, his ecessor, and left office with a surplus of $70,000,000, resigned)ecember 3 to take up his new duties and was succeeded by les Poletti, the lieutenant governor, who served until Jan. 1,

le principal officers in 1942 were Herbert H. Lehman, gov- , Charles Poletti, lieutenant governor, who became governor ecember 3, John J. Bennett, Jr., attorney general, Arthur W. dt, superintendent of public works, and George D. Stoddard, nissioner of education.

ucation.—During the fiscal year ending June 30, 1942, the year for which complete figures have been assembled, there 972 high schools with 741,596 pupils and 8,357 elementary ols with 1,427,161 pupils. The total cost of maintaining the ols, exclusive of money raised by the sale of bonds was $357,- 85.

blic Welfare, Charities and Correction.—The number of ns receiving public assistance in Oct. 1942, was 278,011, as ared with 344,458 in 1941 and 492,040 in 1940. The amount for relief during the month was $9,784,200 or $2,000,000 han in 1941 and $4,000,000 less than in 1940. Old age assist- was given to 117,214 persons to the amount of $3,287,349 ne month; $82,623 was paid out for the relief of 2,815 blind, 2,430 dependent children and their families received $1,368,-

e number receiving WPA assistance for the month was 3 as compared with 82,261 in Oct. 1941. There were 14 in- ions under supervision of the department of correction with erage population of 17,564 for the fiscal year 1941–2. The of maintenance and personal service was $10,380,963.10.

mmunication.—There were in the state 84,591 miles of vays in 1942 exclusive of the streets in cities and incorpo- villages, of which 71,836 were town and county roads. Of otal, 58,620 miles were classified as improved. The state ap- iation for their maintenance, exclusive of money for grade ings, was $6,800,000, and $7,037,645 was received from the al government for highway purposes. The state maintained stem of canals 515 mi. long, including the Erie, Oswego, ga-Seneca and Champlain. The Erie, which runs from Water- on the Hudson to Tonawanda on Lake Erie, is 339 mi. long. ng the operation season of 1941, 4,503,059 tons were carried ne canals, and for the fiscal year $43,158,079.05 was appro- ed for maintenance, operation and personal services. Al- gh no tolls are charged, the canals yielded a revenue of $666,- rom the use of terminals, sale of water power, licenses and peration of grain elevators.

nking and Finance.—On Dec. 31, 1941, there were 1,282 cial institutions under the supervision of the banking depart- , including 126 state banks, 156 trust companies, 14 indus- banks, 134 savings banks and 194 savings and loan associa- . The total deposits in all the institutions were $19,222,316,- . In addition to the institutions under the supervision of the ing department there were on June 30, 1942, 419 national s with a total capital of $273,551,000, deposits of $8,364,- 00 and assets of $9,331,061,000. Twenty-six foreign banking rations maintained offices in the state in charge of their s.

riculture.—According to the census of 1940, there were 38 farms in the state with a total acreage of 17,170,337. The of the products sold, for 1939, was $273,175,053 of which 052,240 consisted of livestock and livestock products.

Table I.—*Leading Agricultural Products of New York, 1942 and 1941*

Crop	1942	1941
Corn, bu.	28,120,000	26,169,000
Tobacco, lb.	1,500,000	1,750,000
Potatoes, bu.	27,313,000	28,078,000
Apples, bu.	17,500,000	16,120,000
Grapes, tons	69,600,000	56,800,000

Manufacturing.—In 1939, according to the manufacturing census, there were 34,506 manufacturing establishments employing 957,844 persons, paying $1,163,785,198 in wages and producing goods valued at $7,134,400,147.

Table II.—*Principal Industries of New York, 1939 and 1937*

Industry	Value of products	
	1939	1937
Boots and shoes	$101,141,500	$125,819,448
Bread and bakery products	204,500,887	243,386,287
All clothing	917,562,506	842,556,856
Steel products	197,884,816	157,809,733
Printing, including periodicals	416,760,806	576,731,299

Mineral Production.—The total value of raw minerals produced in 1939 was $78,383,851.

Table III.—*Principal Mineral Products of New York, 1939 and 1938*

Mineral	Value, 1939	Value, 1938
Cement	$ 9,866,102	$ 7,893,270
Coke	24,526,646	23,529,138
Ferroalloys	18,388,766	7,699,520
Petroleum	10,650,000	9,550,000
Pig iron	45,275,716	25,450,764
Salt	5,855,422	5,467,077
Stone	10,111,032	10,527,452

(G. W. Do.)

New York City.

The largest city in the U.S.A., New York had a population of 7,454,995, according to the census of 1940. Mayor: Fiorello H. La Guardia.

A crusade against gambling was begun early in 1942. John Harlan Amen, a special prosecutor appointed to conduct an investigation in Brooklyn, charged the police in that borough with receiving $1,000,000 a year for the protection of gambling house operators, and he named 34 of them whom he accused of guilt. They were arraigned before the police commissioner, who dismissed five from the force, reprimanded three, found two innocent and inflicted some form of punishment on the others. Mayor La Guardia in the autumn asked all those who knew of the location of gambling houses to let him know. As a result, citizens sent him a list of 244 gambling houses. The list was sent to the various police precinct commanders with instructions to close the places.

Complaints against indecent shows on Broadway led to an order closing the play, "Wine, Women and Song," in which there was a disrobing scene. This action was precipitated by a sermon by the Roman Catholic archbishop in which he denounced indecency in the theatre without advertising any shows by naming them. It was announced that other shows of a similar character would be closed.

The substitution of bus lines for elevated railroad lines progressed. The removal of the structure of the Second avenue line was assured when the state legislature in the spring of 1942 passed a bill authorizing the apportionment of the cost, one-third upon the borough of Manhattan, one-third upon the real estate to be benefitted and one-third on the city. Placing one-third of the cost upon Manhattan was justified as the removal would take from the centre of a wide thoroughfare an unsightly obstruction and increase the taxable value of the property along the street. The removal of the Ninth avenue structure was assured when an agreement was reached to levy one-third of the cost on the real estate benefitted and the remainder on the city.

When the federal government at the beginning of the war took over the free port zone, established on Staten Island in 1938, the legislature authorized the transfer of the business of the zone to Manhattan for the duration of the war so that it might still serve the importers.

Work on the construction of a tunnel under the harbour from the Battery in Manhattan to Brooklyn was suspended by order of the War Production Board to release a large number of workers as well as to reduce the demand for iron. The Tunnel Authority had 28,000 tons of cast iron lining which the officials in charge planned to sell for scrap.

The local housing authority tore down the houses on a 38 acre plot near Fort Greene Park in Brooklyn and erected on it a large group of apartments for workers in the navy yard as well as for those families who had been forced to vacate their homes to make room for the new buildings. They were planned to accommodate 13,100 persons in modern, sanitary quarters at a modest rent, and were opened for occupancy in December. (*See* also Municipal Government.) (G. W. Do.)

New York University. An institution of higher education at New York city. Twenty thousand of this institution's alumni and former students were in war service in 1942, and 10,000 students were enrolled in war training courses. Two hundred fifty faculty members had joined the armed forces and related agencies. Special students attending government-sponsored war training courses numbered 5,500. For other statistics of the university, *see* Universities and Colleges.

New York university was one of five centres in the metropolitan area for advanced work in meteorology; some 400 officers of various war forces were receiving such training in 1942. Other assigned contingents were receiving ordnance training, special instruction in aeronautical engineering, in electronics and in other fields. A national training conference on aerial bombardment protection and another on munitions plants safety education were conducted. Studies in industrial camouflage were well patronized. Every possible element of the diversified curricula of the 13 schools and colleges was given a wartime bent and application. General physical fitness was stressed in the curtailment of intercollegiate sports and emphasis on corrective exercise and intramural athletics.

The Bellevue Schools of Nursing, with 450 women and men students and 50 teachers, were adopted as an integral division of the university's college of medicine, while an extended post-graduate program in nursing was instituted for the U.S. public health service.

Degrees and certificates were conferred upon 4,412 graduates. (H. W. Ch.)

New Zealand, Dominion of. A British dominion, consisting of a group of islands lying in the south Pacific between 34° 25′ and 47° 17′ S. and between 166° 26′ and 178° 36′ E. Area: Dominion proper, 103,415 sq.mi.; other islands, 519 sq.mi.; pop.: Dominion proper, (est. Dec. 31, 1941) 1,631,414, including Maoris (93,116): Cook and other Pacific islands (census 1936), 16,350. Chief cities (pop. est. April 1, 1941): Auckland (223,700); Wellington (cap. 160,500); Christchurch (135,500); Dunedin (82,200). Language: English. Religion: Christian (1936 figures, excluding Maoris: Church of England 600,786; Presbyterian 367,855; Roman Catholic 195,261; Methodist 121,012). Ruler: King George VI; governor general (1942): Air Marshal Sir Cyril Newall, O.M.

History.—While New Zealand forces in 1941 had received a bitter baptism of fire in Greece and Crete, it was not until the Japanese struck in December of that year that the dominion itself
was directly menaced. The prime minister, Peter Fraser, at on
declared that all civilians must be placed on a war footing, a
the country's history in 1942 was largely the story of the ste
taken to implement this declaration. Whereas in Sept. 194
65,000 men were on active service, the number rose by May 19
to 140,000 (compared with 120,000 in World War I). Relatio
with the United States became of vital importance and the a
pointment in January of Walter Nash as minister in Washingt
proved a great success. Nash visited Britain later in the year a
conferred with the war cabinet. Brigadier General P. J. Hurle
U.S. minister to New Zealand, arrived on March 12. With t
whole country on a war footing, opinion in favour of a natio
government grew, especially since it was well known that t
prime minister was held back from this step only by the oppo
tion of the trade unions, which feared its effect upon the wh
system of social security built up by the Labour governme
Finally, as a compromise, an administration charged with all ma
ters relating to the war effort was set up, with its own war ca
net. This war administration was to function side by side wi
the Labour government cabinet, which continued to handle
matters of policy and administration not connected with the w
The war administration comprised seven Labour members and
opposition members, and its cabinet of seven was made up of fo
Labour representatives, including as well as Mr. Nash, Mr. Fras
the prime minister, D. G. Sullivan (supply and munitions),
Jones (minister of defense), and three opposition members, J.
Coates (armed forces and war co-ordination), A. Hamilton (as
ciate minister of supply and munitions), and S. G. Holland (w
expenditure and deputy chairman). This somewhat curious co
promise appeared to be working reasonably effectively until
was terminated by the resignation of four opposition membe
who disagreed with the manner in which a Waikato coal stri
was settled.

War costs in New Zealand currency were estimated at £13
000,000, as against £53,000,000 in the previous year, and we
substantially more than the whole cost of World War I to the d
minion. The prime minister said existing war taxes would pr
duce £20,000,000, miscellaneous surpluses and revenue £7,000,0
borrowing from the United Kingdom under agreement £46,00
000, lend-lease procedure £10,000,000, leaving £50,000,000 to
met by new taxation and loans. Of this, £14,400,000 would
found by taxation, including increase of income super-tax fr
15% to 33⅓%, social security tax raised from 1/- to 1/6d. in t
pound on all income, and substantial additions to sales, liqu
and tobacco taxes. National saving and departmental investme
were estimated to produce £8,000,000 and £27,600,000 would
raised by war loans at 2½% and 3%. Expenditure on natio
development from loans would be reduced from £12,000,000
£4,500,000. The direct taxation rate was now 18/- in the pou
at £2,500 unearned and £3,700 earned income. For compan
the maximum rise was to 14/- in the pound, compared with 12
previously. To assist the family man an additional bonus of 2
per child on the existing family allowance was provided for.

The announcement in February that the combined naval for
in the Australia-New Zealand area were being established un
an American commander and of the establishment of the Pac
war council at Washington were both welcomed. A few years
fore, the possibility that a force other than the British na
would be protecting New Zealand would have been, it was point
out, "beyond imagining," but the new situation was evidence
mutual trust and full collaboration between the dominion and t
United States. D. G. Sullivan, J. G. Coates and service rep
sentatives visited Australia in March to confer on mutual d
fense problems. A Defence Construction council was establis
to insure priority for defense works, and hours of labour on su

RICK J. HURLEY, U.S. minister to New Zealand, laying a wreath at the of a cenotaph in Auckland during Anzac day ceremonies in 1942

ks were extended. Many industries were proclaimed essential their workers reserved from military service. A great drive increased farm production achieved much success; cheese ex- ts to Britain were increased to twice the pre-war rate. Two -awaited railway links, Westport-Reefton and Gisborne- pier, were completed during the year.

ationing of sugar, tea and clothes and restrictions on the sale iquor were imposed, The number of women in factories rose 2,000 (against 11,000 in World War I). A liberty loan of ,000,000 closed with subscriptions exceeding £17,000,000, the est sum ever raised by an internal loan. A second loan was ched in October. Two rather severe earthquakes centred in Wellington province caused considerable damage to property no loss of life.

he New Zealand expeditionary force, resting in Syria after nuous exertions, was rushed back to the fighting line to play rominent part in halting Rommel's march on Alexandria. Ser- nt Keith Elliott won New Zealand's fifth V.C. of World War y a series of remarkable exploits at Ruweisat on July 15.

lucation.—(Dec. 1940) state elementary schools, 2,230; scholars, 245,- secondary, 197; scholars 52,656. University of New Zealand has six tituent colleges, including two agricultural colleges at Lincoln and nerston North, grouped together as the New Zealand School of Agricul- ; university students 5,528. Total cost (year to March 31, 1941), 55,393.

nance.—Revenue, consolidated fund, year to March 31, 1941, £40,437,- expenditure £38,711,503. War expenses account 9 mos. to Dec. 1940, 448,867; 9 mos. to Dec. 1941, £35,876,621. Public debt (March 31,) £349,427,575; note circulation May 26, 1941, £21,782,022; reserve Reserve bank) Nov. 24, 1941: gold £2,801,875, sterling £11,044,531. overseas funds, Feb. 23, 1942, £31,595,442. Exchange rate: £NZ.125= sterling=approx. $403 U.S. in 1942. Deposits in post office and trustee ngs banks (March 31, 1942) £87,575,330; depositors 1,325,312.

ade and Communication.—Overseas trade: total merchandise—exports ended April 1942, £67,520,712 (compared with £68,318,425 in 1941); merchandise imports year ended April 1942 £49,968,229 (compared £47,713,255 in 1941). Communications and transport: roads, March 1941—paved or surfaced (including main highways, 12,381 mi.) 44,271 not paved or surfaced, 9,108 mi.; railways 3,400 mi.; passenger jour- , year to March 31, 1941, 26,276,923 (compared with 24,454,014); s traffic 8,426,182 tons (compared with 7,673,950). Shipping (1940) red 2,801,685 tons net, cleared 2,824,167 tons net. Motor vehicles sed (March 1942): cars 207,353; trucks 46,983, buses 785, motor- es 16,098. Wireless licences, March 31, 1942, 372,219; telephone sub- ers, 228,346.

griculture.—(1940–41) Acreages: wheat, for threshing, 243,197, total, 733; oats, for threshing, 71,758, total, 306,944; barley, for threshing, 25, total, 41,088; maize, for threshing, 10,763, total, 16,896; linseed 4; peas, for threshing, 34,893; potatoes 16,998; onions 903; perennial grass 62,590; linen flax 13,118; western wolths and Italian rye-grass 34; cocksfoot 9,977; tobacco 2,150. Yields, total and per acre: wheat 5,865 bu. (34.15); oats 3,114,946 bu. (43.41); barley 1,066,408 bu. 30); maize 513,554 bu. (47.71); peas 741,535 bu. (21.25); potatoes 23 tons (5.54); onions 8,223 tons (9.11); perennial rye-grass 20,395,849 lb. (326). Dairy produce (1939–40): butter 3,103,797 cwt.; cheese 2,033,506 cwt. Livestock in dominion, 1941: horses 266,066; cattle 4,575,873 (including 1,779,603 dairy cows in milk and dry); pigs 769,180 (including 100,378 breeding-sows); sheep 31,751,660 (including 20,030,933 breeding ewes).

Manufacturing.—Factory production, 1940–41:—number of establishments 6,395; total number of employees 113,999; salaries and wages paid £26,946,799; value of products £147,153,559; value of land, buildings, machinery and plant £83,755,137. (A. J. Hp.)

NHA: *see* National Housing Agency.

Nicaragua.

The largest Central American republic; area, 49,500 sq.mi. Pop. (est. 1942): 1,380,000. Capital, Managua (117,000). Other leading cities: León (60,000); Granada (20,000); Masaya (14,000); Chinandega (13,000); Matagalpa (10,000). Language: Spanish. President in 1942: General Anastasio Somoza.

History.—Internal affairs in Nicaragua remained relatively quiet in 1942. The Somoza administration continued its policy of active co-operation in inter-American defense, started by declaration of war in 1941. The most significant development was the negotiation of agreements in April between the United States and Nicaragua by which the two republics were to rush construction of the Nicaraguan portion of the Inter-American highway. The United States agreed to assume two-thirds of the cost, Nicaragua the remainder.

Other items concerned in the exchange of notes were an extension of credit not to exceed $500,000 by the Export-Import Bank of Washington, an assurance by the United States that Nicaragua would be given consideration in priorities for essential supplies, and a plan to rush construction of an Atlantic-Pacific road which would be of value in hemisphere defense. Production of strategic materials was stimulated by grant of an option to the Rubber Reserve company on all crude rubber produced, and by agreements to make plantings of both rubber and abacá.

With the rest of Central America, Nicaragua found it necessary to ration tires, automobiles and gasoline, and to establish price controls.

Education.—Nicaragua in 1942 had some 700 elementary schools and 18 secondary schools. The national university is at Managua.

Defense.—The normal 2,500 men of the National Guard was increased in 1942 beyond 3,000 for the war period.

Finance.—The monetary unit is the córdoba, fixed at 20 cents U.S. The budget for 1941 (34,000,000 córdobas) was reported reduced by $600,000 in 1942.

Trade.—Trade with the U.S. for the first half of 1941 amounted to: imports, $3,316,000 (up 16% from 1940); exports, $1,888,000 (a decrease of 14.5%). Total imports for 1940 were $7,052,000; exports, $9,494,000. Gold was the most important item of export (60%). Coffee (31% in 1939), bananas (7.8%), and cotton (3%) are agricultural exports, with corn, sugar and some other crops raised for domestic consumption. Imports are textiles, machinery, chemicals, paper and books, gasoline, and some foodstuffs.

Communication.—External communication by water was curtailed by the war; air service increased in 1942. Nicaragua had 395 mi. of railroad in 1942, and some 2,000 mi. of highway, only part of which was improved.

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(D. Rd.)

Nickel.

Data on the world's nickel industry were so shrouded in secrecy because of their military value to the enemy that no specific information was published on production after the beginning of the war. It was officially announced that the Canadian output, which supplied about 90% of the total, increased materially in both 1940 and 1941. As nearly as could be judged from sales receipts of the operating companies, the increase in 1940 was something like 5%, and in 1941 more like 10%. If we accept these rough indications as a measure of world output, we arrive at estimates of 124,000 metric tons for 1940, and 136,000 tons for 1941, against 118,000 tons in 1939.

The only production in the United States is a few hundred tons as a by-product in the refining of copper, and even secondary recovery has been comparatively small—5,315 short tons in 1941. Imports were expanding rapidly, the gross weight of nickel products imported, less exports, having increased from 53,200 short tons in 1939 to 82,300 tons in 1940, and figures for the first nine months of 1941 were at the rate of 120,300 tons for the year, with the supply inadequate to meet the demand.

Operations on minor deposits in Brazil were being increased, and development work was being done on a deposit in Cuba. After the fall of France, New Caledonian matte was shipped to the United States for treatment. Nothing was heard from operations in Norway and Finland. (G. A. Ro.)

Nickel (5 Cent Piece): *see* CHEMISTRY; COINAGE.
Niger: *see* FRENCH COLONIAL EMPIRE.
Nigeria: *see* BRITISH WEST AFRICA.

Nimitz, Chester William

(1885–), U.S. naval officer, was born Feb. 24 in Fredericksburg, Tex., and was graduated from Annapolis in 1905. An experienced submarine officer, during World War I he was chief of staff to the commander of the Atlantic fleet's submarine force. He was promoted to rear admiral, June 23, 1938. On Dec. 17, 1941 the navy high command was overhauled after the surprise attack on Hawaii, and Admiral Nimitz was made commander-in-chief of the Pacific fleet, with the rank of admiral. He assumed his post at Pearl Harbor on Dec. 31, 1941.

On Dec. 7, 1942—the first anniversary of Pearl Harbor—he predicted that the Pacific fleet would soon carry the war to Japan's home waters, but warned against underestimating the Japanese who, he said, would "fight to the last gasp. That's why it will take so long to win."

Nitrogen, Chemical.

Sodium nitrate of mineral origin was the world's first source of chemical nitrogen; later this was supplemented by ammonia recovered in the coking of coal in by-product coking ovens; and finally in 1906 the fixation of nitrogen from the air began its commercial development. According to the latest data available, now (Jan. 1, 1943) five years old but dating only a short time before the beginning of World War II, sodium nitrate furnished only 8% of the current world supply of combined nitrogen, coal by-products 27% and air nitrogen 65%, of which 11% came from the cyanamid process and 55% from the various electrical fixation processes. These figures illustrate the speed with which air nitrogen took over a predominating share of the nitrogen industry.

War demand intensified the demand for chemical nitrogen, and all three sources responded to the stimulus. World data were no longer available, but so far as they were at hand at the close of 1942, United States figures will be used to indicate the general trend. Of the three, sodium nitrate showed the least change, but this was due solely to the long haul, with the limited cargo space available more needed for other products. Between 1937 and 1941 the output of nitrogen in coal by-products increased 25% to a total of about 180,000 short tons of contained nitrogen, and was still growing. No specific figures could be located for the air nitrogen branch of the industry, but it was known to have b
expanded to an enormous degree, and current or planned capac
was probably several times that of 1938. Just what the t
capacity of these three sources was at the close of 1942, could
be known, but whatever it might be, that it was not sufficient
evidenced by the listing by the War Production board of a
monia, cyanamid, nitric acid and sodium nitrate among th
materials the supply of which was inadequate to meet curr
demand. (G. A. Ro.

NLRB: *see* NATIONAL LABOR RELATIONS BOARD.

Noel, Conrad le Despenser Roden

(1869 – 194
British cler
man, known as the "Red Priest" of the Church of England,
born July 12. He was the son of the poet, Roden B. W. N
Upon completing his studies at Corpus Christi college, Cambri
university, and the Chichester Theological college, he wor
among the slum dwellers in Portsmouth, England. He was vi
of Thaxted from 1910 to 1942. He lectured for socialist gro
throughout the British Isles and was the author of a number
religious and political books including *The Labour Party* (190
Socialism and Church History (1910), *Byways of Belief* (191
Uplifting the Son of Man (1919), *Life of Jesus* (1937) and *Je*
the Heretic (1939). An ardent socialist, he was nicknamed
"Red Priest" because he once flew a red flag over his church.
died in the vicarage at Thaxted, July 23.

Nordström, Ludvig Anselm

(1882–1942), Swedish
thor, was educated at U
sala university and during his career as novelist and journa
published about 40 volumes. Among them were *Lloyd Geo*
(1916), *Det okända Sverige* (1924) and *Stor-Norrland* (192
He died April 15, according to a London report.

North Borneo: *see* BRITISH EMPIRE.

North Carolina.

A south Atlantic coast state, popula
known as the "Old North state" or
"Tar Heel state," North Carolina is one of the original 13 sta
of the union; area 52,712 sq.mi.; pop. (1940), 3,571,623, of wh
974,175 (27·3%) were urban, 2,597,448 (72·7%) rural and 1,0
501 (28.2%) nonwhite. Capital, Raleigh (46,897); other cit
Charlotte (100,899); Winston-Salem (79,815); Durham (
195); Greensboro (59,319); Asheville (51,310).

History.—In the June Democratic primary Josiah Will
Bailey won the nomination for United States senator
Richard T. Fountain and was re-elected easily in November
his Republican opponent. In the November election, in wh
the vote was small, the Democrats won every judgeship, ele
all 12 congressmen, including former governor and United St
senator Cameron Morrison from the new district, and captu
overwhelming though somewhat reduced majorities of both hou
of the legislature. The voters also ratified two constitutio
amendments providing for solicitorial districts which need
be the same as the judicial districts, and for the centraliza
of control of the public schools in one state board of educat

State officers in 1942 were: J. Melville Broughton, goverr
R. L. Harris, lieutenant governor; Thad Eure, secretary of st
George Ross Pou, auditor; C. M. Johnson, treasurer; Clyde
Erwin, superintendent of public instruction; Harry McMul
attorney general; W. P. Stacy, chief justice.

Education.—In 1940–41 there were 3,769 public elemen
schools with 18,470 teachers and 680,268 pupils and 982 pu
high schools with 7,530 teachers and 207,880 pupils, operate

t of $34,195,798, about four-fifths of which was contributed ie state government.

blic Welfare, Charities, Correction.—In Dec. 1942 public s amounting to $407,052 were made to 39,058 persons for ge assistance and $160,703 to 9,191 families for aid to de- ent children; and in August, $34,069 to 2,241 blind persons, '25 for general relief (by the county governments), and ,365 for unemployment compensation benefits. On Dec. 15, , WPA employment in the state was 9,800. The state main- d eight charitable institutions with 9,421 inmates on Nov. 1, ; five correctional institutions with 823 inmates; and state vay prison camps with 7,974 prisoners.

ommunication.—In 1942 the state highway and public works nission maintained 11,347 mi. of state highways, of which mi. were hard-surfaced, and 48,749 mi. of county roads, hich 2,364 mi. were hard-surfaced. There were 4,593 mi. of ads, 511 mi. of city bus routes, 6,385 mi. of passenger bus s and 8,923 mi. of freight vehicle routes. There were in ition across the state one east-west and two north-south ys.

nking and Finance.—On April 30, 1942, there were 44 nal banks with deposits of $161,713,000, loans of $57,219,000 investments of $39,184,000; and on June 30, there were 183 banks with deposits of $529,551,000, loans of $165,754,000 investments of $193,506,000. In 1941 there were 156 build- nd loan associations with total assets of $92,356,275.26. In -42 state receipts were $210,081,593; disbursements, $154,- 46. On June 30, 1942, the state gross bonded and net debts $133,736,500 and $113,942,103, respectively. The assessed of property was $2,496,247,967 in 1941. In the state gen- fund there was a cash surplus of about $30,000,000 at the of 1942.

griculture.—Increased acreage, production and value char- ized 1942 wartime agriculture in North Carolina. The total of production harvested from more than 6,500,000 ac. was oximately $464,000,000, of which tobacco alone accounted 228,509,000. The cash income of North Carolina farmers in was $240,481,000 from crops, $45,077,000 from livestock livestock products, and $14,474,000 from government pay- s. The value of the lands and buildings on the 278,276 farms 940, 44% of which were operated by tenants, was $736,- 125.

anufacturing.—In 1939 manufacturing establishments num- ig 3,225 employed 270,210 wage earners at wages of $199,- 501 and made products valued at $1,421,329.578. War needs produced an expansion of North Carolina industry in 1942.

ole I.—*Leading Agricultural Products of North Carolina, 1942 and 1941*

Crop	1942 (est.)	1941
acco, lb.	585,700,000	459,490,000
on, bales	721,000	552,000
ı, bu.	47,068,000	52,624,000
ie hay, tons	1,184,000	1,052,000
uts, lb.	373,800,000	265,640,000
at, bu.	8,014,000	7,347,000
et potatoes, bu.	8,510,000	6,880,000
potatoes, bu.	8,988,000	6,640,000
s, bu.	6,800,000	6,552,000
eans, bu.	3,900,000	1,760,000
edeza seed, lb.	38,800,000	28,500,000
ches, bu.	2,463,000	3,167,000
les, bu.	1,086,000	1,505,000
ıns, lb.	2,600,000	3,290,000

II.—*Principal Mineral Products of North Carolina, 1941, 1940 and 1939*

Mineral	Value, 1941	Value, 1940	Value, 1939
ie	..	$4,850,277	$6,979,426
y products	..	..	4,761,867
d and gravel	$2,345,165	1,439,457	1,101,369
lspar	552,386	426,784	397,631
a	..	391,481	253,721
and pyrophyllite	567,921	298,382	283,789

Mineral Production.—The mineral production for North Carolina in 1940 was valued at approximately $20,000,000. In the production of mica and feldspar, North Carolina ranked first among the states.

BIBLIOGRAPHY.—U.S. Census; *Minerals Yearbook*, 1940, 1941; reports of state agencies; North Carolina newspapers. (A. R. N.)

North Dakota. A west north central state of the United States, popularly known as the "Flickertail state." Area, 70,054 sq.mi.; pop. (1940) 641,935. The rural population was 510,012; urban, 131,923. Capital, Bismarck (15,496). The chief cities are Fargo (32,580); Grand Forks (20,228); and Minot (16,577).

History.—The chief officers of the state in 1942 were as follows: governor, John Moses; lieutenant governor, Henry Holt; secretary of state, Thomas Hall; state auditor, Berta E. Baker; state treasurer, Carl Anderson; attorney general, Alvin C. Strutz; commissioner of insurance, Oscar E. Erickson; commissioner of agriculture and labour, Math Dahl.

Education.—Elementary schools in 1942 had an enrolment of 100,655; secondary schools, 32,548. The total number of schools was 3,935. The institutions of higher learning were the state university and school of mines, the agricultural college, three state teachers colleges, two normal schools, a school of forestry and a school of science. The total enrolment in these institutions in 1941 was 6,600 and their teaching staffs numbered 445.

Public Welfare, Correction.—The WPA during the fiscal year ending June 30, 1942 expended $4,171,742 of federal funds and employed an average of 6,382 per month. The number of correctional institutions in 1942 was seven and the average number of inmates was 565. The cost of maintenance was $1,500,000.

Communication.—Mileage on state highways on Jan. 1, 1942 was 7,330.6; of rural highways on Jan. 1, 1940, 107,361.6. State expenditures of the highway department for the year ending June 30, 1942 were $5,654,436.25. The total railway mileage in the state in 1941 was 5,269.92.

Banking and Finance.—In 1942 there were 114 state banks and one trust company, with resources of $47,256,629.70 and deposits of $42,864,030.31. Nineteen savings and loan associations had resources of $13,810,399.30 for 1941. For the year ending June 30, 1942 state receipts were $40,974,128.28, and expenditures were $37,186,090.16. The bonded indebtedness of the state was $21,076,850.00. New state capital building indebtedness was $172,000.

Agriculture.—The total farm acreage harvested in 1942 was 16,162,000 (excluding wild hay). The cash income from crops and livestock was (1941) $227,700,000, including benefit payments of $24,670,000. Cash income from livestock (1941) was $80,398,000.

Table I.—*Leading Agricultural Products of North Dakota, 1942 and 1941*

Crop	1942 (est.)	1941
Wheat, bu.	149,844,000	111,960,000
Durum, bu.	37,664,000	34,238,000
Corn, bu.	29,000,000	24,679,000
Oats, bu.	74,925,000	58,575,000
Barley, bu.	67,454,000	43,675,000
Rye, bu.	16,082,000	13,516,000
Flax, bu.	9,184,000	4,576,000
Potatoes, bu.	17,955,000	14,155,000

Manufacturing.—The total value of manufactures in 1939 was $43,767,082, and the total employment was 3,435. The estimated value of creamery butter for 1942 was $30,000,000. The value of flour and grain mill products in 1939 was $5,303,788; of publishing and printing, $2,255,874.

Mineral Production.—For the year ending July 1, 1942, the production of lignite coal was 2,469,364 tons, valued at $3,099,633.68. The total value of mineral production in 1939 was $2,689,627; in 1938 it was $2,653,473. (O. G. L.)

Table II.—Principal Mineral Products of North Dakota, 1939 and 1938

Mineral	Value, 1939	Value, 1938
Coal	$2,425,000	$2,380,000
Sand and gravel	128,279	151,824
Natural gas	29,000	27,000

Northern Ireland: *see* IRELAND, NORTHERN.
Northern Rhodesia: *see* RHODESIA.

Northern Territory

OF AUSTRALIA. Area 523,620 sq.mi.; pop. (June 30, 1940): aboriginals, full-blooded, 13,901; half-caste, 902; white (est. Dec. 31, 1941), 9,615. Capital, Darwin (pop. Dec. 31, 1940, 3,900).

Early in 1942 the whole of the Northern Territory was proclaimed a defense area and the civilian population other than those engaged directly on defense work was evacuated. (*See* WORLD WAR II.)

Finance.—Revenue (1941–42), estimated, £A157,042; from Central Australia railway (1941–42), £A280,000; from North Australia railway (1941–42), £A230,000. Expenditure, ordinary appropriation (1941–42), £A525,860; new works, etc., £A450,000.

Production and Communication.—Production in 1939–40: pastoral industry, £A587,821; gold, £A233,789; wolfram, £A47,836; pearl shell, £A15,998. Railways, government (Dec. 31, 1941), 508 miles. (W. D. MA.)

Northwestern University.

An institution of higher learning at Evanston and Chicago, Ill. The university comprises the following divisions: the college of liberal arts, the graduate school, the technological institute, and the schools of music, education, speech, commerce and journalism, all located in Evanston (suburb of Chicago) on a campus bordering Lake Michigan; the medical, law and dental schools and the evening departments of the university, all on Chicago's near north side, on a campus six blocks from the loop business district.

The total of gifts for the fiscal year ending Aug. 31, 1942 amounted to approximately $925,000, which was received from more than 5,000 alumni and friends of the university.

The new $5,000,000 building of the technological institute was formally dedicated on June 15–16, 1942. Walter P. Murphy, who died Dec. 16, bequeathed another $20,000,000 to the institute, which he had established by a previous donation.

During 1942 the university's participation in the war effort was impressive. The following schools were conducted on the campus in co-operation with the army or navy: on the Chicago campus, the Naval Reserve Midshipmen's school, 2,200 men; on the Evanston campus, the Naval Radio Operators' school, 1,000 men, the naval R.O.T.C., 325 men, and the Army Signal Corps school, 170 men.

A total of 241 members of the faculty and staff were in the armed services or in vital civilian work for the government. Training for war industries was given in the technological institute to 2,600 men and women. Three hospital units, with personnel from the medical school faculty, were organized for the army and navy. Flight instructors and combat flyers were being trained in the technological institute. Scores of faculty members were engaged in war research of a confidential nature. For additional statistics of the university, *see* UNIVERSITIES AND COLLEGES.

Northwest Territories.

Area, 1,309,682 sq.mi.; p (1941 census), 11,271; seat government, Ottawa. The Northwest Territories comprise territories formerly known as Rupert's land and the Northwest territory, except such portions thereof as form the provinces Manitoba, Saskatchewan and Alberta and the Yukon territo together with all British territories and possessions in No America and all islands adjacent thereto not included within province, except Newfoundland and its dependencies. For adm istrative purposes the Territories were subdivided into the pro sional districts of Mackenzie, Keewatin and Franklin by ord in-council of March 16, 1918. The Northwest Territories governed by the commissioner, the deputy commissioner and councillors appointed by the governor general in council. commissioner in council has power to make ordinances for government of the Territories under instructions from the gov nor general in council or the minister of mines and resources, s ject to any act of the dominion parliament applying to the T ritories respecting such matters as direct taxation within the T ritories in order to raise revenue, etc., establishment and t ure of territorial offices, maintenance of municipal instituti licences, solemnization of marriages, property and civil righ administration of justice, education and generally all matters a local nature.

Communications.—Two well-organized transportation com nies maintained regular boat service for both passengers freight in 1942, leaving end of steel at Waterways, Alberta, destined to points in the Mackenzie district served by water tra portation. Regular and frequent commercial air service connec Edmonton, Alberta, with the Mackenzie district and carried m The eastern Arctic was served by a yearly supply ship from Mo real and smaller boats operating from Churchill. Strategica placed government radio stations, supplemented by sets opera by trading companies and others, maintained wireless commu cation throughout the Territories and with centres of populat in the provinces.

Trade.—The main activities are the fur trade and the min industry. Furs to the value of approximately $1,325,000 are ported annually. Natives and half-breeds living the life of nati enjoy free hunting and trapping rights. Of the white reside only those who, under the regulations, are included in an est lished eligible list are permitted to hunt and trap and such in viduals require an annual licence. Fur trading is controlled regulation and only those who have been issued permits and have established permanent posts are able to engage in the trade. Reindeer herding in the northern Mackenzie district being developed in the interests of the native population.

Mineral Production.—Wartime demands for tungsten other strategic minerals were responsible for increased prospe ing and exploration activity in the Northwest Territories in 19 The output of gold on a commercial basis commenced with pouring of the first gold brick at the Con property of the Cons dated Mining and Smelting Company of Canada, Ltd., on the w side of Yellowknife bay, in September 1938. Six other propert came into production, namely, Negus Mines, Ltd., Slave L Gold Mines, Ltd., Thompson-Lundmark Gold Mines, Ltd., Ry Mines, Ltd., Ptarmigan Mines, Ltd., and the Ruth Mine. Ptar gan and Ruth mines were closed temporarily in August 1942. total value of gold produced from these properties excee $9,000,000, the largest producer being the Con mine. The proximate average monthly production from these properties the year was: Con, $150,000; Thompson-Lundmark, $75,0 Negus, $65,000; Ptarmigan, $50,000; Slave Lake, $20,000; Ry $10,000. The pitchblende-silver property of Eldorado Gold Mi Limited, at Great Bear lake, which was closed down in June 19 s re-opened in August 1942. The mill at this property treats re than 100 tons of radium-bearing ore daily. (R. A. G.)

orway. A country of northern Europe, bounded N. by the Arctic ocean, E. by Finland and Sweden, S. and W. the North sea. Area 124,556 sq.mi.; pop. (est. 1939) 2,921,- o. Capital, Oslo (253,124). Other principal cities, with 1930 pulations, are Bergen (98,303); Trondhjem (54,458); and avanger (46,780). Religion, Lutheran Christian. Ruler in 1942: ng Haakon VII (*q.v.*). Prime Minister: Johan Nygaardsvold exile in London). Norway was occupied by Germany in 1940, d was administered in 1942 through Reichscommissar Josef rboven, and Premier Vidkun Quisling (after Feb. 1).

History.—Norway experienced intensification of conflict in 42. From bases there the Germans slashed out at Russia-bound nvoys, attacking under the water, on the surface, from the air. e nazis also felt it necessary to strengthen their defenses on coast, and forced Norwegian labourers to build roads and tifications. German garrisons were increased by some 75,000 n in March. Opposition and sabotage led to ruthless counter- asures. Herr Rediess, chief of the Gestapo in Norway, executed res. In October Trondhjem suffered under a veritable reign of ror. For the killing of two Germans the entire village of Tele- g was wiped out—men killed, women and children removed, ldings burned. Later Bulandet was likewise destroyed. Many perties were confiscated, and fines levied, the city of Stavanger, example, having to pay a levy of 6,000,000 kr. Some 1,000– oo Norwegians were taken to concentration camps in Germany, ong such prisoners being Didrik Arup Seip, rector of the Uni- sity of Oslo. One thousand Jews were deported in November, l a small remaining group awaited the same fate at the end the year.

Despite such stringent measures, opposition grew. Two hundred illegal papers spread news from home and abroad. Fires broke out. Accidents increased; one of the most notable was that in which Gulbrand Lunde, the Quisling minister of propaganda, was thrown into an icy fjord in his car and drowned. Police minister Jonas Lie disappeared also—perhaps at the front. From outside came timely aid, such as the British raids on the naval base at Trondhjem and the spectacular air attack on Oslo, Sept. 25, when Quisling and the nazis were celebrating two years of the New Order in Norway.

LY WEEK IN NORWAY," a reference by Lewis in the *Milwaukee Journal* idkun Quisling's high-handed methods of suppressing the opposition of Nor- ian bishops to state-controlled religion in 1942

Three particularly effective groups working in opposition to the invaders were the labourers, the clergy and the teachers. Labourers resigned en masse from the nazi-controlled unions, slowed down their work and practised ingenious sabotage. The seven bishops of Norway, led by Eivind Berggrav, all resigned on Feb. 24 in protest against state interference and dictation. Quisling's policies finally led to the mass resignation of 1,100 clergymen, and ultimately to the declaration of the church as a "free church" completely separate from the state (July). Quisling's own "church council" gained small support. Only about 40 ministers sided with the Quislingites, and the German authorities advocated a relaxation of Quisling's attacks. The overwhelming majority of the teachers of Norway refused to join the nazi teachers' association; for a time all schools were closed as the state tried to discipline the obstreperous pedagogues. About 1,700 were arrested and several hundred, sent north to work on roads, were treated with exceptional brutality.

On Feb. 1 Vidkun Quisling was made premier, and was maintained in office although he did not gain popular support.

The United Nations appreciated the effective work of Norwegian opposition at home, the aid of the Norwegian merchant fleet, and of the airmen from Camp Little Norway (in Canada). To show her admiration, the U.S. raised the rank of its envoy to the Royal Norwegian government to ambassador, and President Roosevelt personally handed over to the Norwegian navy a subchaser christened "King Haakon VII."

Education.—In 1937–38 there were 357,793 students and 10,521 teachers in the elementary schools; 31,127 students and 1,809 teachers in the middle schools and gymnasia, and 16,033 students in continuation schools. The 11 universities had a combined enrolment of 4,998. The total state budget for educational purposes in 1939–40 was 65,364,000 kr.

Defense.—The budget for 1939–40 was 54,762,000 kr.; Jan.–June 1941 (by govt. in London), 21,385,543 kr.

Army. Under the law in force in 1940, compulsory service began at age 20, extended for 12 years in the regular army and 12 years in the "Landvaern." About 30,000 men became liable annually, and served a training period of 84 days. In 1939 permanent personnel included 1,135 officers, 765 noncommissioned officers and 12,500 men.

Navy. The navy on Jan. 1, 1941 had two coast-defense ships, 16 torpedo boats and 6 submarines. By the end of 1942 it was claimed this strength had been increased, largely by the use of some of the over-age U.S. destroyers.

Finance.—The monetary unit is the krone (23.4 U.S. cents in 1939). Budgetary income and expenses for 1937–38 balanced at 572,135,000 kr.; the proposed budget of 1939–40 was 595,627,000 kr. The government in London planned expenditures of 142,827,636 kr. in the first six months of 1941 and of about 92,000,000 kr. in the second six months of 1942. Nearly one-sixth of this was for payments on the state debt. Income was largely from the merchant fleet, requisitioned early in the war. The state debt Dec. 31, 1938 was 1,430,395,000 kr.

On Dec. 31, 1938 the Norges bank had capital of 35,000,000 kr. and deposits of 130,643,000 kr.; 711 private and savings banks had deposits of 2,928,000,000 kr.

Trade.—In 1939 exports were valued at 808,172,000 kr.; imports, 1,361,835,000 kr. The imports rose rapidly in the last three months, while Norway built up stocks for the war period.

Communication.—In 1939 there were 2,335 mi. of state railways and 25,677 mi. of highways (11,857 mi. improved, 13,820 unimproved). In 1938 there were 107,657 motor vehicles. Norwegian air lines flew a total of 85,000 mi. in 1938. Telephones numbered 122,664; telegraph lines extended 21,875 mi.; radio receivers (licensed) numbered 400,623.

Agriculture.—The total value of agricultural products in 1938 was 384,207,000 kr.; of animal products (eggs, milk, wool, etc.), 428,000,000 kr.; furs, 30,000,000 kr. Landholdings numbered 562,407 (298,360 operating units) with a value of 2,410,101,000 kr. Leading crops were wheat 15,791,000 kr., rye 2,197,000 kr., barley 22,382,000 kr. and oats 31,479,000 kr. In 1938 total productive forest area was one-quarter of the total land area, or 18,700,000 ac.

Fisheries.—The total catch of fish in 1937 was 903,646 tons, the value of which was 92,272,000 kr.; 523,000 tons of the total was herring of various kinds.

Manufacturing.—In 1937 there were 4,306 establishments which turned out products valued at 2,023,551,000 kr. According to value of the product, the most important industries were food and tobacco 411,109,000 kr., paper, cellulose 309,733,000 kr., iron and metal 308,169,000 kr., mining 216,511,000 kr., textile 144,488,000 kr., and wood, furniture, etc. 140,756,000 kr.

Mineral Production.—In 1938 the principal mineral product was iron ore, valued at 26,665,000 kr. Pyrites, valued at 18,168,000 kr., and copper, valued at 5,013,000 kr., were respectively the second and third minerals. (F. D. S.)

Nose: *see* EAR, NOSE AND THROAT, DISEASES OF.

Notre Dame, University of. An institution of higher education at Notre Dame (South Bend), Ind. The year 1942 marked the 100th anniversary of the founding of the university (Nov. 26). Officially, the centenary year was opened with the fall semester in Sept. 1942, to conclude with the closing of the summer semester in Sept. 1943. But the concurrence of war cancelled many of the programs, meetings of learned societies and publications which were to feature the year-long observance.

Beginning in Jan. 1942 Notre Dame adopted the accelerated three-semester academic year to facilitate wartime training. In April the navy, already having established an N.R.O.T.C. at Notre Dame, occupied residence halls and other facilities on the campus for the conduct of an indoctrination school for midshipmen. The university students doubled up in the remaining facilities, and the entire subsequent year found a normal capacity undergraduate enrolment existing in conjunction with some 1,300 navy trainees. In Oct. 1942 the Notre Dame indoctrination school was reclassified as a complete midshipmen's school, with a four-months course leading to the ensign's commission.

Two acting deans were appointed during 1942, Raymond J. Schubmehl in the college of engineering, and Lawrence H. Baldinger in the college of science.

Emphasizing its policy of cultivating liberal arts in a war era, the university awarded the 1942 Laetare medal to Helen Constance White, author and professor at the University of Wisconsin. In addition to the direct uses of its facilities for students and navy training, Notre Dame's campus and equipment, and faculty to a limited extent, participated in a program of training for men and women in defense, especially in chemistry, physics, engineering and management. For statistics of enrolment, endowment, library volumes, etc., *see* UNIVERSITIES AND COLLEGES.

Nova Scotia. One of the three maritime provinces of th Dominion of Canada, admitted to the union i 1867; area 21,428 sq.mi.; pop. (1941), 577,962. Capital, Hal fax (69,326); estimated wartime population 1942, 120,000. Othe cities are Sydney (28,081) and Glace Bay (25,050) both centre of coal, iron and steel industries. The lieutenant governor i 1942 was H. E. Kendall; the premier A. S. MacMillan.

Education.—The number of students in provincially controlle schools in 1942 was 122,378; in private schools, 3,459; in institutions of university standard, 2,389.

Communications.—The mileage of surfaced highways in 194 was 6,234; earth highways, 8,853; provincial expenditure o highways, $1,746,369. The railroad mileage in 1942 was 1,396; the number of telephones, 52,251.

Finance.—The ordinary receipts in 1942 were $16,443,946; ordinary expenditure, $15,497,608. The direct debt (less sinkin funds) was $98,478,264; indirect liabilities (less sinking funds), $3,181,812.

Agriculture.—The acreage of field crops in 1942 was 551,600; gross value of field products, $16,056,000; gross value of al crops, $29,810,000.

Table I.—*Leading Agricultural Products of Nova Scotia, 1941 and 1940*

Crop	1941	1940
Oats, bu.	3,094,000	3,265,000
Turnips, cwt.	3,300,000	3,511,000
Potatoes, cwt.	2,091,000	2,319,000
Hay and clover, tons	667,000	649,000

Manufacturing.—The gross value of manufactured products in 1940 was $113,814,650; net value, $40,548,446; number f employees, 21,062; salaries and wages, $21,519,617.

Table II.—*Principal Industries of Nova Scotia, 1939 and 1938*

Industry	Value of products	
	1939	1938
Steel works	$15,223,484	$11,183,267
Fish packing	6,531,571	6,471,510
Pulp and paper	5,523,373	5,933,523
Railway rolling stock	2,507,399	3,246,033
Sawmills	2,954,498	3,013,284

Mineral Production.—The value of the mineral production i 1940 was $33,318,587. The Inverness field had been closed.

Table III.—*Principal Mineral Products of Nova Scotia, 1940 and 1939*

Mineral	Value	
	1940	1939
Coal	$28,766,195	$25,611,271
Gypsum	1,302,347	1,340,830
Gold	855,432	1,082,170

BIBLIOGRAPHY.—*The Royal Gazette; Journal of Education; Public A counts; Report of Department of Industry and Publicity; Canada Year Book, 1942.* (J. C. HE.)

Nursery Schools: *see* EDUCATION.
Nutmegs: *see* SPICES.
Nutrition: *see* DIETETICS; MEDICINE; VITAMINS.

Nuts. Owing to the rubber shortage, imports of Brazil nuts into the United States in 1942 were practically forbidden. The United States and Brazil agreed to limit the market for these nuts, thereby inducing natives in Brazil to gather latex from the wild rubber trees as a more profitable occupation. Preliminary estimate of the 1942 crop in the Amazon basin was 26,300 short tons, unshelled basis. Before World War II interfered with shipping, the crop approximated 40,000 short tons annually.

U.S. Production of Pecans by States, 1942 and 1941

State	Improved Varieties 1942 lb.	Wild 1942 lb.	Improved Varieties 1941 lb.	Wild 1941 lb.
eorgia	22,300,000	4,200,000	22,549,000	3,671,000
labama	7,900,000	2,000,000	9,971,000	2,189,000
lississippi	3,100,000	2,300,000	3,927,000	2,963,000
lorida	2,700,000	1,900,000	2,616,000	2,056,000
outh Carolina	2,700,000	400,000	2,670,000	399,000
orth Carolina	2,300,000	300,000	3,000,000	290,000
ouisiana	1,900,000	4,500,000	1,400,000	4,200,000
exas	1,400,000	8,200,000	2,873,000	19,227,000
rkansas	900,000	2,500,000	682,000	3,578,000
klahoma	400,000	5,100,000	1,224,000	29,376,000
lissouri	20,000	580,000	88,000	1,652,000
linois	10,000	490,000	27,000	860,000

The 1942 crop of pecans in the United States, produced in states, was 78,100,000 lb., of which 45,630,000 lb. were of proved varieties and 32,470,000 lb. of wild or seedling varies. In 1941 production was 51,027,000 lb. of improved rieties and 70,461,000 lb. of wild; the ten-year (1930–39) erage, 26,808,000 lb. of improved varieties and 54,358,000 lb. wild. Almonds, grown only in California, yielded 22,000 tons 1942 compared with 6,000 tons in 1941 and a ten-year average 13,800 tons. English walnuts, grown commercially in Calinia and Oregon, yielded in 1942: California, 57,000 tons; egon, 3,600 tons. In 1941 the walnut crop was: California, 000 tons; Oregon, 7,000 tons. The ten-year average: Calinia, 44,730 tons; Oregon, 3,080 tons. The commercial crop filberts in 1942 was as follows: Oregon, 3,900 tons; Washton, 670 tons. The 1941 crop of filberts was: Oregon, 4,900 s; Washington, 850 tons. The ten-year average was: Oregon, 55 tons; Washington, 242 tons. Pecans are the most widely wn and important nut crop in the United States.

Reports on nut crops in other countries were fragmentary. eliminary estimates reported a bumper 1942 crop of filberts Turkey—77,000 tons, unshelled—compared with 33,000 tons 1941. Preliminary forecast for the 1942 filbert crop in Spain s 21,800 short tons, compared with 20,900 tons in 1941. The anish almond crop was forecast at 27,500 short tons, shelled sis, for 1942 as against 24,200 tons in 1941. (*See* also Coco-TS; PEANUTS.) (S. O. R.)

WLB (National War Labor Board): *see* WAR LABOR ARD, NATIONAL.

A: *see* NATIONAL YOUTH ADMINISTRATION.

asaland: *see* BRITISH EAST AFRICA.

ts.

The largest oats crop since 1925 was harvested in 1942 in the United States—1,358,730,000 bu. from 37,899,000 The yield, 35.9 bu. per ac., was the highest since 1915, a fortunate situation because of the need of maintaining the oats ration for the increased numbers of livestock on farms in 1942. In Texas only one-third of the average acreage was harvested because of insect damage. Oklahoma, Georgia and South Carolina also had yields below average. The 1941 crop was 1,180,663,000 bu. from 37,965,000 ac. and the yield was 31.1 bu. per ac. The ten-year (1930–39) average was 1,016,061,000 bu. from 36,653,000 ac.; the yield, 27.4 bu. per ac. Canadian production in 1942 was 692,724,000 bu.; 324,673,000 bu. in 1941 (U.S. bu. of 32 lb.).

U.S. Production of Oats, 1942 and 1941

State	1942 bu.	1941 bu.	State	1942 bu.	1941 bu.
wa	201,435,000	176,702,000	North Carolina	6,800,000	6,552,000
innesota	177,567,000	116,019,000	California	5,696,000	3,699,000
inois	141,320,000	153,467,000	Colorado	5,647,000	5,859,000
isconsin	100,577,000	75,669,000	Alabama	4,800,000	4,128,000
uth Dakota	90,400,000	54,912,000	Maine	4,017,000	3,096,000
orth Dakota	74,925,000	59,664,000	Wyoming	3,660,000	3,875,000
ichigan	67,410,000	45,900,000	Virginia	3,510,000	2,625,000
issouri	59,427,000	52,938,000	Tennessee	3,105,000	2,484,000
ebraska	58,278,000	54,280,000	Louisiana	3,000,000	2,776,000
diana	53,428,000	56,375,000	Vermont	1,961,000	1,504,000
io	51,824,000	51,374,000	West Virginia	1,848,000	1,776,000
ansas	46,232,000	38,865,000	Kentucky	1,760,000	1,869,000
ew York	33,440,000	25,650,000	Utah	1,638,000	1,892,000
nnsylvania	26,010,000	30,222,000	New Jersey	1,290,000	1,428,000
klahoma	23,940,000	25,900,000	Maryland	1,110,000	1,024,000
ontana	20,319,000	14,544,000	New Mexico	924,000	918,000
uth Carolina	13,461,000	12,364,000	Nevada	320,000	287,000
exas	11,210,000	37,975,000	New Hampshire	273,000	240,000
orgia	10,152,000	10,516,000	Arizona	252,000	256,000
ashington	10,080,000	7,605,000	Massachusetts	198,000	204,000
egon	10,064,000	8,732,000	Florida	168,000	160,000
ississippi	9,000,000	10,152,000	Connecticut	136,000	144,000
kansas	7,904,000	5,946,000	Delaware	132,000	93,000
aho	7,898,000	7,080,000	Rhode Island	34,000	32,000

Obituaries.

The following is a list of men and women who died during 1942. An asterisk (*) marks those for whom biographical notices are to be found in regular alphabetical position.

Name	Birth date	Death date
ADDAMS, CLIFFORD ISAAC, U.S. artist	May 25, 1876	Nov. 5?
AGELLO, FRANCESCO, Italian air ace	1903?	Nov. 27
*AHMED II, SIDI, Bey of Tunis	1862	June 19
*AINSWORTH, WILLIAM NEWMAN, U.S. Methodist bishop	Feb. 10, 1872	July 7
*ALBEMARLE, ARNOLD ALLAN CECIL KEPPEL, 8TH EARL OF, British peer	June 1, 1858	Apr. 11
ALESSANDRO, TRADITI, Italian army officer	1860	May 6
ALFORD, LEON PRATT, U.S. engineer, editor	Jan. 3, 1877	Jan. 2
*ALLEN, GLOVER MORRILL, U.S. scientist	Feb. 8, 1879	Feb. 14
*ALVEAR, MARCELO TORCUATO DE, Argentine politician	Oct. 4, 1868	Mar. 23
AMATO, PASQUALE, Italian baritone	Mar. 21, 1878	Aug. 12
*AMULREE, WILLIAM WARRENDER MACKENZIE, 1ST BARON, British lawyer and labour arbitrator	Aug. 19, 1860	May 5
ANDERSON, ALEXANDER E., U.S. army officer	Nov. 23, 1889	Dec. 24
ANDERSON, DICE ROBINS, U.S. educator	Apr. 18, 1880	Oct. 23
*ANNENBERG, MOSES (MOE) LOUIS, U.S. publisher	Feb. 11, 1878	July 20
*AOSTA, AMEDEO, DUKE OF, Italian general	Oct. 21, 1898	Mar. 3
APPLETON, EDWARD DALE, U.S. publisher	Jan. 10, 1858	Jan. 29
*ARNOLD, BION JOSEPH, U.S. electrical engineer	Aug. 14, 1861	Jan. 29
*ARTHUR, JOSEPH CHARLES, U.S. botanist	Jan. 11, 1850	Apr. 30
ASCHER, LEO, Austrian composer	Oct. 17, 1880	Feb. 25
ASHBOURNE, WILLIAM GIBSON, 2ND BARON, Irish peer	Dec. 16, 1868	Jan. (?)
ASKWITH, GEORGE RANKEN ASKWITH, 1ST BARON, British industrial arbitrator	Feb. 17, 1861	June 3
*ASSOLLANT, JEAN, French aviator	Sept. 26, 1905	May 9?
*ATHOLL, JOHN GEORGE STEWART-MURRAY, 8TH DUKE OF, Scottish peer	Dec. 15, 1871	Mar. 16
*AYALA, EUSEBIO, Paraguay statesman	Aug. 14, 1875	June 4
BAILEY, SIR SIDNEY ROBERT, British navy officer	Aug. 1882	Mar. 27
*BAILEY, VERNON, U.S. biologist	June 21, 1864	Apr. 20
*BAILLET-LATOUR, HENRY DE, COUNT, Belgian sportsman	Mar. 1, 1876	Jan. 7(?)
BALANOS, NICHOLAS, Greek architect	1860	Sept. 22
BARNUM, MALVERN-HILL, U.S. army officer	Sept. 3, 1863	Feb. 18
*BARRYMORE, JOHN BLYTHE, U.S. actor	Feb. 15, 1882	May 29
*BAUDRILLART, ALFRED, French cardinal, writer	Jan. 6, 1859	May 18
*BAYARD, THOMAS FRANCIS, U.S. congressman	June 4, 1868	July 12
BEAUMONT, JOHN COLT, U.S. marine corps officer	Oct. 7, 1878	Apr. 12
BEAUMONT, LOUIS D., U.S. merchant	Apr. 26, 1857	Oct. 1
*BEAUX, CECILIA, U.S. portrait painter	1863	Sept. 17
BECK, EDWARD SCOTT, U.S. newspaper editor	Dec. 12, 1868	Dec. 25
BECKET, FREDERICK MARK, U.S. metallurgist	Jan. 11, 1875	Dec. 1
BEEBY, SIR GEORGE STEPHENSON, Australian judge	May 23, 1869	July 18
BELL, BRIAN, U.S. newspaperman	Mar. 30, 1890	June 8
BELL, SAMUEL WALTER, U.S. judge	June 25, 1870	Feb. 20
BENRIMO, J. HARRY, U.S. actor, playwright	June 21, 1874	Mar. 26
*BERCHTOLD VON UND ZU UNGARSCHITZ, LEOPOLD, COUNT, Austro-Hungarian statesman	Apr. 18, 1863	Nov. 21?
BERGLUND, ABRAHAM, U.S. educator, author	Dec. 10, 1875	May 28
BERIGAN, BERNARD (BUNNY), U.S. orchestra leader	1909?	June 2
*BERNACCHI, LOUIS CHARLES, British explorer, scientist	1876	Apr. 24
BERR, GEORGES, French playwright, actor	July 30, 1867	July 21?
*BERRY, MARTHA MCCHESNEY, U.S. educator	Oct. 7, 1866	Feb. 27
*BESIER, RUDOLF, British dramatist	July 2, 1878	June 15
BETTEN, FRANCIS SALESIUS, U.S. historian, educator	Apr. 16, 1863	Dec. 8
BETTMAN, GILBERT, U.S. judge	Oct. 31, 1881	July 17
BEVIER, ISABEL, U.S. home economist	Nov. 14, 1860	Mar. 17
*BILLINGTON, ROSE ANN, U.S. suffragist	1859?	Oct. 12
BIRKETT, HERBERT STANLEY, Canadian educator	July 17, 1864	July 19
BISBEE, WILLIAM HENRY, U.S. army officer	Jan. 28, 1840	June 11
BISHOP, CARL WHITING, U.S. archaeologist	July 12, 1881	June 16
BLAKELY, JOHN RUSSELL YOUNG, U.S. naval officer	July 17, 1872	Mar. 28
BLANCHE, JACQUES ÉMILE, French painter	Feb. 1, 1862	Oct. 3
BLEASE, COLEMAN LIVINGSTON, U.S. politician	Oct. 8, 1868	Jan. 19
*BLOMFIELD, SIR REGINALD, British architect	Dec. 20, 1856	Dec. 28?
BLOOD, HENRY HOOKER, U.S. governor	Oct. 1, 1872	June 19
*BOAS, FRANZ, U.S. anthropologist	July 9, 1858	Dec. 21
BOEMER, KARL, German press official	1900?	Aug. ?
*BOGGIANI, TOMMASO PIO, Italian cardinal, chancellor of Roman church	Jan. 19, 1863	Feb. 26
BOLAND, PATRICK J., U.S. congressman	Jan. 6, 1880	May 18
BOLZA, OSKAR, U.S. mathematician	(?)	July 5
BONNET, EDGAR, French business executive	Mar. 28, 1856	Feb. 15
BORICAN, JOHN, U.S. track champion	1913?	Dec. 22
*BORNO, LOUIS, Haitian politician	Sept. 20, 1865	July 29
BOSCARELLI, RAFFAELE, Italian diplomat	Apr. 3, 1885	Apr. 23
*BOSCH, ROBERT, German industrialist, manufacturer	Sept. 23, 1861	Mar. 12
BOSTWICK, ARTHUR ELMORE, U.S. librarian	Mar. 8, 1860	Feb. 13
BOSWELL, HELEN VARICK, U.S. suffragist	1863(?)	Jan. 5
*BOULE, PIERRE MARCELIN, French scientist	Jan. 1, 1861	July 19
BOURTZEFF, VLADIMIR LVOVITCH, Russian revolutionary writer	Nov. 30, 1862	Oct. (?)
BOYER, LUCIEN, French singer, composer	1876(?)	June 16
BRADEN, WILLIAM, U.S. mining engineer	Mar. 24, 1871	July 18
*BRAGG, SIR WILLIAM HENRY, British scientist	July 2, 1862	Mar. 12
*BRAMAH, ERNEST, British writer	1868(?)	June 26

Name	Birth date	Death date
Breckinridge, James Carson, U.S. marine corps officer	Sept. 13, 1877	Mar. 2
Bressler, David Maurice, U.S. welfare worker	May 1, 1879	Dec. 16
Brewster, Andre Walker, U.S. army officer	Dec. 9, 1862	Mar. 27
*Briggs, Caspar Warren, U.S. photographer	1846(?)	July 10
Brinton, Christian, U.S. art critic	Sept. 17, 1870	July 14
*Bristol, Arthur LeRoy, U.S. naval officer	July 15, 1886	Apr. 20
Brown, Arthur Tillotson, British sea captain	1878	June 15
Brown, Edward Scott (Ted), U.S. cartoonist	Sept. 14, 1876	Dec. 28
*Brown, Wade Hampton, U.S. pathologist	Oct. 18, 1878	Aug. 4
Bruce, Robert Randolph, Canadian politician	July 16, 1863	Feb. 21
Bryant, Ernest Calvin, U.S. educator	Apr. 22, 1867	Sept. 7
Buchanan, Malcolm Griswold, U.S. judge	Mar. 10, 1881	Jan. 12
Buckner, Mortimer Norton, U.S. banker	Mar. 10, 1873	Feb. 25
*Buckner, Thomas Aylette, U.S. insurance executive	Jan. 18, 1865	Aug. 8
Bull, Rene, British artist	(?)	Mar. 20
Bullock, Walter Frederick, British newspaperman	1873(?)	May 1
Buxton, Charles Roden, British pacifist	Nov. 27, 1875	Dec. 17
Calkins, Truesdel Peck, U.S. educator	Oct. 7, 1877	June 8
*Callaghan, Daniel Judson, U.S. naval officer	July 26, 1890	Nov. 13?
*Calvé, Emma (Emma dé Roquer), French opera singer	1858(?)	Jan. (?)
Calvo, Carlos, Bolivian statesman	1873	May 31
Campbell, Harold George, U.S. educator	Jan. 13, 1884	June 17
*Capablanca, José Raoul, Cuban chess champion	Nov. 19, 1888	Mar. 8
*Carlile, Wilson, British clergyman	Jan. 14, 1847	Sept. 26
Carlisle, Floyd Leslie, U.S. utility executive	Mar. 5, 1881	Nov. 9
*Carney, Thomas Joseph, U.S. business executive	Apr. 7, 1886	June 29
*Carr, Wilbur John, U.S. state department official	Oct. 31, 1870	June 26
Carvalho, Solomon Solis, U.S. newspaper executive	Jan. 16, 1856	Apr. 12
Carveth, Hector Russell, U.S. electrochemist	Jan. 23, 1873	Sept. 17
Chambers, Raymond Wilson, British scholar	Nov. 12, 1874	Apr. 23
*Champion, Pierre, French historian	1880	June 29
*Chang Ching-hui, Chinese politician	1871	Dec. (?)
Chanler, Lewis Stuyvesant, U.S. lawyer, politician	Sept. 24, 1869	Feb. 28
Chapin, Henry Dwight, U.S. paediatrician, educator	Feb. 4, 1857	June 27
Chiang Tso-pin, Chinese diplomat	1883	Dec. 24
Cinelli, Delfino, Italian novelist	Aug. 16, 1889	May 4(?)
*Cohan, George Michael, U.S. actor	July 4, 1878	Nov. 5
*Colby, Nathalie Sedgwick, U.S. novelist	Feb. 4, 1875	June 10
Colman, Sir Jeremiah, 1st Baronet, British manufacturer	Apr. 24, 1859	Jan. 16
Conklin, Edmund Smith, U.S. psychologist	Apr. 19, 1884	Oct. 6
*Connaught, Arthur William Patrick Albert, Duke of, British duke	May 1, 1850	Jan. 16
Cons, Louis, U.S. educator	May 26, 1879	Apr. 19
Cook, Willis Clifford, U.S. diplomat	Oct. 5, 1874	Jan. 5
*Cooper, Sir Edwin, British architect	1874	June 24
*Corrigan, Joseph Moran, U.S. clergyman, educator	May 18, 1879	June 9
Couper, William, U.S. sculptor	Sept. 20, 1853	June 23
Covington, James Harry, U.S. judge, lawyer	May 3, 1870	Feb. 4
*Cram, Ralph Adams, U.S. architect	Dec. 16, 1863	Sept. 22
Cremonesi, Filippo, Italian politician	Aug. 22, 1872	May 17
*Crews, Laura Hope, U.S. actress	1880	Nov. 13
Crissinger, Daniel Richard, U.S. bank official, attorney	Dec. 10, 1860	July 12
Crowell, T. Irving, U.S. publisher	1866(?)	Jan. 11
*Crozier, William, U.S. artillerist, inventor	Feb. 19, 1855	Nov. 10
*Cruze, James, U.S. motion picture director	1884	Aug. 3
Curran, Charles Courtney, U.S. artist	Feb. 13, 1861	Nov. 9
*Curtis, Heber Doust, U.S. astronomer	June 27, 1872	Jan. 8
Curtis, Sir James, British government food adviser	July 5, 1868	June 29
Cushing, Otho, U.S. artist	1871(?)	Oct. 13
*Dandurand, Raoul, Canadian statesman	Nov. 4, 1861	Mar. 11
*Darlan, Jean Louis Xavier François, French naval officer, politician	Aug. 7, 1881	Dec. 24
Darnton, Byron, U.S. newspaperman	Nov. 8, 1897	Oct. 18
*Daudet, Léon, French writer, politician	Nov. 16, 1867	July 1
Daugette, Clarence William, U.S. educator	Oct. 14, 1873	Aug. 9
Davis, Boothe Colwell, U.S. educator	July 12, 1863	Jan. 16
Davis, J. Frank (James Francis), U.S. writer	Dec. 20, 1870	Apr. 6
*Davis, Robert Hobart (Bob), U.S. editor, writer	Mar. 23, 1869	Oct. 11
Davis, Westmoreland, U.S. politician	Aug. 21, 1859	Sept. 2
*De Beck, William, U.S. cartoonist	Apr. 16, 1890	Nov. 11
De Groot, Adriaan M., U.S. portrait artist	1870	Jan. 17
Delavan, David Bryson, U.S. physician	May 1, 1850	May 23
*De Lee, Joseph Bolivar, U.S. obstetrician	Oct. 28, 1869	Apr. 2
*Deming, Edwin Willard, U.S. painter, sculptor	Aug. 26, 1860	Oct. 15
Denison, Arthur Carter, U.S. judge	Nov. 10, 1861	May 27
*Dewey, Davis Rich, U.S. economist, educator	Apr. 7, 1858	Dec. 13
*Ditmars, Raymond Lee, U.S. naturalist	June 20, 1876	May 12
*Dodge, Raymond, U.S. psychologist	Feb. 20, 1871	Apr. 8
Doran, James M., U.S. prohibition commissioner	Aug. 17, 1885	Sept. 8
Doster, James Jarvis, U.S. educator	Dec. 20, 1873	Oct. 21
Doten, Carroll Warren, U.S. statistician	Jan. 27, 1871	June 14
Dow, Alex, U.S. utility executive	Apr. 12, 1862	Mar. 22
Duncan, Asa N., U.S. army air officer	Mar. 30, 1892	Nov. 17?
Duncan, Malcolm, U.S. actor	Sept. 19, 1881	May 2
Dunedin, Andrew Graham Murray, 1st Viscount, British justice	Nov. 21, 1849	Aug. 22
Du Pont, Francis Irénée, U.S. research chemist	Dec. 3, 1873	Mar. 16
*Eaton, Edward Dwight, U.S. educator	Jan. 12, 1851	June 18
*Eberle, Abastenia St. Leger, U.S. sculptress	Apr. 6, 1878	Feb. 26
Eichheim, Henry, U.S. conductor, composer	Jan. 3, 1870	Aug. 22
*Elias, Alois, Czech general and premier	1890	June (?)
*Elliott, John Lovejoy, U.S. educator	Dec. 2, 1868	Apr. 12
*Engel, Kurt, Austrian pianist	Jan. 14, 1909	Jan. 22
Ensor, James, Baron, Belgian painter	1860(?)	Dec. (?)
*Epstein, Abraham, U.S. social insurance expert	Apr. 20, 1892	May 2
*Esperey, Franchet d', French army officer	May 25, 1856	July 8
Essary, Jesse Frederick, U.S. newspaperman	Aug. 22, 1881	Mar. 11
*Estaunié, Édouard, French novelist	Feb. 4, 1862	Apr. 2
Estrada, Enrique, Mexican politician	1889(?)	Nov. 3
Ewart, Frank Carman, U.S. educator	Sept. 4, 1871	Sept. 28
*Farish, William Stamps, U.S. oil executive	Feb. 23, 1881	Nov. 29
Farr, Marcus Stults, U.S. educator	Feb. 19, 1870	Aug. 27
Farrand, Wilson, U.S. educator	Sept. 22, 1862	Nov. 4
*Fawcett, Edward, British anatomist	May 18, 1867	Sept. 22
*Feiler, Arthur, U.S. economist	1879	July 11
Fell, Thomas, U.S. educator	July 15, 1850	Apr. 13
Fellows, George Emory, U.S. educator	June 9, 1858	Jan. 14
*Ferrero, Guglielmo, Italian historian	July 31, 1871	Aug. 4(?)
*Feuermann, Emanuel, Austrian cellist	Nov. 22, 1902	May 25
*Field, Rachel, U.S. author	Sept. 19, 1894	Mar. 15
Figner, Vera Nikolaevna, Soviet revolutionary	1852	June 16

Name	Birth date	Death date
Fink, Theodore, Australian lawyer, publicist, writer	July 3, 1855	Apr. 26
Finnen, Edo, Dutch labour leader	June 18, 1881	Dec. 14
*Finucane, Brendan (Paddy), British war ace	1921	July 17 (?
Fisher, Albert, U.S. auto pioneer	Jan. 2, 1864	Mar. 15
Fisher, Fred, U.S. publisher, author, composer	(?)	Jan. 14
Fisher, Howard A., U.S. automobile manufacturer	Mar. 10, 1902	Mar. 31
*Fiske, Bradley Allen, U.S. naval officer	June 13, 1854	Apr. 6
*Fiske, Charles, U.S. Episcopal bishop	Mar. 16, 1868	Jan. 8
*Fiske, Harrison Grey, U.S. playwright, theatrical manager	July 30, 1861	Sept. 2
*Fitzpatrick, Sir Charles, Canadian judge, politician	Dec. 19, 1851	June 17
Flannagan, John Bernard, U.S. sculptor	Apr. 7, 1897	Jan. 6
Fleischer, Carl Gustav, Norwegian army officer	1883	Dec. 19
Flickinger, Roy Caston, U.S. educator	Dec. 17, 1876	July 6
Flux, Sir Alfred William, British economist	Apr. 8, 1867	July 23(?
*Fokine, Michel, U.S. choreographer, ballet master	Apr. 26, 1880	Aug. 22
Foote, Harry Ward, U.S. chemist	Mar. 21, 1875	Jan. 14
Forsyth, Andrew Russell, English mathematician	June 18, 1858	June 2
Fox, Abraham Manuel, U.S. economist	May 14, 1889	June 21
Fox, Herbert, U.S. pathologist	June 3, 1880	Feb. 27
*Franckenstein, Clemens von, German composer	July 14, 1875	Aug. 22
Frost, Gilman du Bois, U.S. educator	May 7, 1864	Oct. 8
Gagnon, Clarence A., Canadian artist	Nov. 8, 1881	Jan. 5
*Gale, Henry Gordon, U.S. physicist	Sept. 12, 1874	Nov. 16
*Garfield, Harry Augustus, U.S. educator	Oct. 11, 1863	Dec. 12
*Garratt, Geoffrey Theodore, British author	1888	May 1(
*Garrett, John Work, U.S. diplomat	May 19, 1872	June 26
Gault, Benjamin T., U.S. naturalist	1859(?)	Mar. 20
*Genthe, Arnold, U.S. photographer	Jan. 8, 1869	Aug. 9
*George, Harold H., U.S. army air officer	Sept. 14, 1892	Apr. 30 (
*Gest, Morris, U.S. theatrical producer	Jan. 17, 1881	May 16
Geyelin, Henry Rawle, U.S. educator, physician	1884(?)	Sept. 7
*Gibbs, George, U.S. novelist, artist	Mar. 8, 1870	Oct. 10
Gil Borges, Esteban, Venezuelan politician	Feb. 8, 1879	Aug. 3
Gilman, Luthene Clairmont, U.S. railroad executive	Jan. 28, 1857	Sept. 7
*Gilmore, John Washington, U.S. educator	May 9, 1872	June 25
Glanely, William James Tatem, 1st Baron, British shipowner	1868	June 27
Glicenstein, Enrico, U.S. sculptor, artist	May 24, 1870	Dec. 30
Goldberg, Abraham, U.S. writer, Zionist leader	Feb. 23, 1883	June 5
Goldwater, Sigismund Schultz, U.S. hospital administrator	Feb. 7, 1873	Oct. 22
Gorman, James Edward, U.S. railroad executive	Dec. 3, 1863	Mar. 25
*Gortner, Ross Aiken, U.S. biological chemist	Mar. 20, 1885	Sept. 30
Gotch, John Alfred, British architect and author	1852	Jan. 17
Gottesman, Mendel, U.S. banker, philanthropist	Mar. 24, 1859	Dec. 16
Graham, Ben George, U.S. educator	May 18, 1880	Mar. 20
*Grant, Elihu, U.S. educator, archaeologist	July 12, 1873	Nov. 2
Gravatt, William Loyall, U.S. bishop	Dec. 15, 1858	Feb. 14
Graves, Bibb, U.S. governor	Apr. 1, 1873	Mar. 14
Greaves-Lord, Sir Walter, British judge	Sept. 1878	June 18
Greene, Herbert Eveleth, U.S. educator	Aug. 27, 1858	Sept. 3
Greenwood, Allen, U.S. surgeon	Mar. 1, 1866	Oct. 23
Grieve, Kenneth John Mackenzie, Canadian transatlantic flier	1880(?)	Sept. 2
Gros, Edmund Louis, U.S. hospital executive	1869(?)	Oct. 1
Grose, Clyde Leclare, U.S. educator	Apr. 8, 1889	May
*Hackett, Charles, U.S. opera singer	Nov. 4, 1889	Jan. 1
Haight, Thomas Griffith, U.S. judge	Aug. 4, 1879	Jan. 2
Hale, Sydney Arthur, U.S. editor	Aug. 1, 1888	Aug. 12
Hales, Harold Keates, British M.P., merchant, writer	Apr. 22, 1868	Nov. (
Hall, James Henry, British M.P.	Mar. 24, 1877	June 6
*Hamilton, Cosmo, British author	1872(?)	Oct. 1
Hamilton, Hale, U.S. actor	Feb. 28, 1880	May
Harding, Charles Francis, U.S. educator	Sept. 11, 1881	Apr. 1
Harley, Joseph Emile, U.S. governor	Sept. 14, 1880	Feb. 27
Harper, Theodore Acland, U.S. author	Dec. 17, 1871	May
*Harper, William Allen, U.S. educator	Apr. 27, 1880	May 11
*Harrington, John Lyle, U.S. construction engineer	Dec. 7, 1868	May 2
Haskins, Charles Nelson, U.S. mathematician	May 7, 1874	Nov. 1
Haultain, Sir Frederick William Gordon, Canadian judge	Nov. 25, 1857	Jan. 30
Héglon, Meyriane, Danish-Belgian opera singer	1867(?)	Jan. 12(
Hellmund, Rudolph Emil, U.S. electrical engineer	Feb. 2, 1879	May 1
Henderson, Lawrence Joseph, U.S. biological chemist	June 3, 1878	Feb. 1
Henderson, Robert, U.S. actuary and mathematician	May 24, 1871	Feb. 1
*Henderson, Sir Nevile Meyrick, British statesman	June 10, 1882	Dec. 2
Hero, Andrew, Jr., U.S. army officer	Dec. 13, 1868	Feb. 7
*Hertz, Alfred, U.S. conductor	July 15, 1872	Apr. 17
*Hertzog, James Barry Munnik, South African politician	Apr. 3, 1866	Nov. 21
*Heydrich, Reinhard, German police official	Mar. 7, 1904	June 4
Hill, Sir Enoch, British financier	Sept. 10, 1865	May 1
*Hill, William (Red), Canadian swimmer	Oct. 22, 1886	May 1
*Hillhouse, Percy Archibald, British naval architect	Mar. 4, 1869	Sept. 2
Hind, E. Cora, Canadian editor, newspaperwoman	Sept. 18, 1861	Oct.
Hirsch, Isaac Seth, U.S. radiologist	Dec. 3, 1880	Mar. 2
Hitchcock, Lucius Wolcott, U.S. illustrator	Dec. 2, 1868	June 1
Hofmann, Hans Georg, German army officer	Sept. 26, 1873	Jan. 3
Hogan, James Joseph, U.S. vaccine specialist	1872(?)	July 1
Hohenzollern, Eitel Friedrich, German prince	July 7, 1883	Dec. 7
Hoiriis, Holger, U.S. aviator	1901(?)	Aug. 7
Holden, Louis Edward, U.S. educator	Apr. 30, 1863	Apr. 1
*Hollins, Alfred, British organist, composer	Sept. 11, 1865	May 17
Holmes, Jesse Herman, U.S. educator	Jan. 5, 1864	May 27
*Holmes, Phillips, U.S. actor	July 22, 1909	Aug. 1
Holt, Arthur Erastus, U.S. educator	Nov. 23, 1876	Jan. 1
Honess, Arthur E., U.S. mineralogist	1887(?)	Dec. 1
*Hornblow, Arthur, U.S. editor, writer	1865	May
Hornby, Frederick Harrison, U.S. banker	1883(?)	Oct. 1
*Horthy, Stephen, Hungarian vice-regent	1904	Aug. 20
Horton, George, U.S. author, diplomat	Oct. 11, 1859	June
*Howe, Harrison Estell, U.S. chemist	Dec. 15, 1881	Dec. 1
*Hubeny, Maximilian John, U.S. radiologist	Oct. 12, 1880	July
Hunter, (Wiles) Robert, U.S. sociologist, author	Apr. 10, 1874	May 1
Hustis, James Humphrey, U.S. railroad executive	Jan. 11, 1864	Sept. 1
Hyat-Khan, Sir Sikander, Punjab premier	June 5, 1892	Dec. 2
Hydari, Sir Akbar, Indian politician	Nov. 8, 1869	Jan.
Hyde, Sir Charles, British newspaper owner	Oct. 23, 1876	Nov. 2
Illingworth, Albert Holden Illingworth, 1st Baron, British politician	May 25, 1865	Jan.
*Inman, Ondess Lamar, U.S. scientist	Nov. 11, 1890	July

Name	Birth date	Death date
win, Elisabeth Antoinette, U.S. educator	(?)	Oct. 16
ck, Emanuel J., U.S. rabbi, educator	Aug. 23, 1889	Aug. 21
ckson, Joe (Joseph Francis Jaranek), U.S. comedian	1873(?)	May 14
ckson, William Henry, U.S. photographer	Apr. 4, 1843	June 30
mes, William Roderick (Will), U.S. author, painter	June 6, 1892	Sept. 3
rquin, Carlos Brenes, Nicaraguan president	1886(?)	Jan. 2
udwine, Sir Hugh Sandham, British army officer	June 9, 1862	Dec. 2
hns, Carl Oscar, U.S. chemist	Aug. 19, 1870	Apr. 17
hnson, Herbert Spencer, U.S. clergyman	Oct. 4, 1866	Sept. 25
hnson, Hugh Samuel, U.S. army officer, administrator, columnist	Aug. 5, 1882	Apr. 15
nes, Charles (Buck), U.S. motion picture actor	Dec. 4, 1894	Nov. 30
nes, Harry Stuart Vedder, U.S. educator	Aug. 8, 1878	Jan. 10
rdan, David Francis, U.S. educator	July 21, 1890	Aug. 20
seph Ferdinand, Archduke, head of Tuscany branch of house of Hapsburg	May 24, 1872	Aug. 28
lin, Jacob von, Finnish industrialist	1881	Feb. 19
hn, Albert, U.S. architect	Mar. 21, 1869	Dec. 8
neko, Kentaro, Count, Japanese statesman	Apr. 1853	May 16
rnebeek, Herman Adriaan van, Netherlands diplomat	Aug. 21, 1874	Apr 2(?)
rolyi, Julius, Count, Hungarian industrialist, banker	1906(?)	Sept. 2
to, Sotomatsu, Japanese diplomat	Mar. 1890	Feb. 11
nt, Duke of, youngest brother of King George VI	Dec. 20, 1902	Aug. 25
nt, Sidney R., U.S. motion picture executive	July 30, 1885	Mar. 19
yes, Charles Rollin, U.S. geologist	Dec. 24, 1864	May 18
mball, George Cook, U.S. steel manufacturer	Oct. 13, 1879	Jan. 12
ng, LeRoy Albert, U.S. educator	Aug. 10, 1886	June 5
ngsley, William Morgan, U.S. banker	Dec. 16, 1863	Sept. 7
rchwey, George Washington, U.S. criminologist, lawyer	July 3, 1855	Mar. 3
youra, Keigo, Count, Japanese statesman	Feb. 1850	Nov. 6(?)
abenshue, Paul, U.S. foreign service officer	Oct. 31, 1883	Feb. 1
iotts, Howard Clayton, U.S. World War I ace, lawyer	Aug. 25, 1895	Nov. 23
ussevitzky, Nathalie (Mrs. Serge Koussevitzky), U.S. sculptor	(?)	Jan. 11
nd, William Jesse Goad, U.S. botanist	Dec. 2, 1865	Aug. 1
ndin, Paul, French inventor	1845(?)	Jan. (?)
ngford, William S., U.S. football official	1874(?)	Mar. 2
rmor, Sir Joseph, English mathematician	July 11, 1857	May 19
wrence, Henry Wells, U.S. educator, author	Dec. 2, 1879	Jan. 23
dochowski, Vladimir, Superior General of Society of Jesus	Oct. 7, 1866	Dec. 13
jeune, John Archer, U.S. marine corps officer	Jan. 10, 1867	Nov. 20
me Da Silveira Cintra, Sebastian, Brazilian cardinal	Jan. 20, 1882	Oct. 17
nt, Frederick, U.S. clergyman, educator	June 10, 1872	Dec. 30
vi-Civita, Tullio, Italian mathematician	Mar. 29, 1873	Jan. 1(?)
lie, Gordon W. (Pawnee Bill), U.S. frontiersman and showman	Feb. 14, 1860	Feb. 3
tle, Philip, U.S. artist	Sept. 6, 1857	Mar. 31
ch, Edward Douglas Loch, 2d Baron, British army officer	Apr. 4, 1873	Aug. 14
cke, Morris E., U.S. army officer	June 14, 1877	July 3
dge, Gonzalez, U.S. educator	Dec. 19, 1863	Dec. 23
mbard, Carole (Carol Jane Peters), U.S. motion picture star	Oct. 6, 1908	Jan. 16
ngan, George Baker, U.S. publisher	Dec. 11, 1878	Oct. 16
omis, Orland S., U.S. lawyer, governor-elect of Wisconsin	Nov. 2, 1893	Dec. 7
re, Ludwig, U.S. newspaperman	June 26, 1875	July 8
wenstein, Solomon, U.S. welfare worker	Mar. 3, 1877	Jan. 20
ettwitz, Walther von, German army officer	Feb. 2, 1859	Sept. 22
nn, William, British M.P.	Nov. 1, 1872	May 17
pino, Stanley, British actor	May 15, 1894	June 10
tes, Della Thompson, U.S. author	(?)	July 13
cAndrews, James, U.S. congressman	Oct. 22, 1862	Aug. 31
caulay, Thomas Bassett, Canadian insurance execu-ive	June 6, 1860	Apr. 3
cAuliffe, Joseph John, U.S. newspaperman	Feb. 12, 1877	July 9
Clintic, George Warwick, U.S. federal judge	Jan. 14, 1866	Sept. 25
cClure, Nathaniel Fish, U.S. army officer	July 21, 1865	June 26
cDonald, Pirie, U.S. photographer	Jan. 27, 1867	Apr. 22
cdonogh, Sir George M. W., British lawyer, army officer	Mar. 4, 1865	July 10
cIntosh, Burr, U.S. actor, author, lecturer	Aug. 21, 1862	Apr. 28
cKean, Thomas, U.S. author, playwright	Apr. 29, 1869	Feb. 7
cKenzie, William P., U.S. church official	(?)	Sept. 8
cNamee, Graham, U.S. radio announcer	July 10, 1888	May 9
cSwiney, Mary, Irish Republican leader	(?)	Mar. 7
cSwiney, Sean, Irish Republican army leader	1883(?)	Jan. 23
goffin, Ralph Van Deman, U.S. educator, archaeolo-ist	Aug. 8, 1874	May 15
hin, Frank C., U.S. army officer	May 27, 1887	July 24
linowski, Bronislaw Kasper, British anthropologist	Apr. 7, 1884	May 16
ncroft, Arthur Michael Samuel, 1st Baron, British M.P.	Dec. 6, 1872	Aug. 17
nning, William Ray, U.S. state dep't. editor	Dec. 26, 1871	Oct. 28
rch, Alden, U.S. newspaperman, editor	Sept. 29, 1869	Sept. 14
rgerie, Pierre de, French diplomat	1861	June 3
rgueritte, Victor, French novelist	Dec. 1, 1866	Mar. 23
rie-Anne of Luxembourg, Dowager Grand Duchess	July 13, 1861	July 31
rk, Louis, Hungarian portrait painter	1867	Mar. 18
rks, Henry Kingdon, U.S. neurologist, author	1885(?)	Sept. 4
rshall, Thomas Charles, U.S. Salvation Army officer	1854(?)	Oct. 7
rtin, Percy Alvin, U.S. educator, author	Aug. 20, 1879	Mar. 8
rtin, William F., U.S. army officer	July 19, 1863	Apr. 15
sten, Cornelius Arthur, Canadian justice	Dec. 16, 1857	Aug. 31
theson, Samuel Pritchard, Canadian archbishop	Sept. 20, 1852	May 19
urer, Irving, U.S. educator, clergyman	Sept. 2, 1879	Feb. 28
ehan, Thomas Francis, U.S. journalist	Sept. 19, 1854	July 7
rriam, Clinton Hart, U.S. biologist, naturalist	Dec. 5, 1855	Mar. 19
tcalf, Jesse Houghton, U.S. senator	Nov. 16, 1860	Oct. 9
dleton, William St. John Fremantle Brodrick, 1st Earl of, British statesman	Dec. 14, 1856	Feb. 13
ers, Sir Henry, British geologist	May 25, 1858	Dec. 11
kell, Henry Judah, U.S. bishop	Aug. 4, 1873	Feb. 20
lburn, Devereux, U.S. polo player	1881	Aug. 15
llard, Thomas Franklin Fairfax, U.S. newspaperman	July 8, 1868	Sept. 8

Name	Birth date	Death date
*Miller, Alice Duer, U.S. author	July 28, 1874	Aug. 22
Mills, James A., U.S. newspaper writer	June 20, 1883	Mar. 27
Mitchell, Charles Bayard, U.S. bishop	Aug. 27, 1857	Feb. 23
Monroe, Anne Shannon, U.S. author	1877	Oct. 18
*Montgomery, Lucy Maud (Mrs. Ewan MacDonald), Canadian author	Nov. 30, 1874	Apr. 24
*Mooney, Thomas J., U.S. labour leader	1882	Mar. 6
Moore, Herbert McComb, U.S. clergyman and educator	Aug. 17, 1876	May 7
Moore, Robert Webber, U.S. educator	Dec. 14, 1862	Nov. 21
Morrill, Albert Henry, U.S. business executive	June 20, 1875	Sept. 13
Morris, George D., U.S. newspaper writer	Aug. 8, 1874	Apr. 30
*Morris, Ira Nelson, U.S. diplomat, author	Mar. 8, 1875	Jan. 15
Morse, Edwin Kirtland, U.S. engineer	July 3, 1856	May 28
Moschcowitz, Paul, U.S. painter and teacher	Mar. 4, 1875	Jan. 4
Munro, Patrick, British M.P.	Oct. 9, 1883	May 2
Murphy, Walter Patton, U.S. rail industrialist, philanthropist	Jan. 26, 1873	Dec. 16
Murray, William Spencer, U.S. engineer	Aug. 4, 1873	Jan. 9
Myers, Gustavus, U.S. author	Mar. 20, 1872	Dec. 7
*Nast, Condé, U.S. publisher	Mar. 26, 1874	Sept. 19
*Naylor, William Keith, U.S. army officer	Nov. 24, 1874	Aug. 3
Neal, Sir William Phene, Lord Mayor of London	Oct. 22, 1860	July 7
Neibaur, Thomas C., U.S. World War I hero	1898(?)	Dec. 23
Neilson, John Shaw, Australian poet	1872	May 12
Nestos, Ragnvald Anderson, U.S. lawyer, politician	Apr. 12, 1877	July 15
*Newkirk, John Van Kuren ("Scarsdale Jack"), U.S. navy flier	Oct. 15, 1913	Mar. 24
Newton, Thomas Wodehouse Legh, 2nd Baron, British M.P.	Mar. 19, 1857	Mar. 21
*Noel, Conrad le Despenser Roden, British clergyman	July 12, 1869	July 23
*Nordström, Ludvig Anselm, Swedish author	1882	Apr. 15
Norris, George Washington, U.S. lawyer, banker	July 5, 1864	May 13
Norton, Roy, U.S. author	Sept. 30, 1869	June 28
Noyes, Newbold, U.S. newspaperman	Jan. 19, 1892	Apr. 16
O'Brien, Jack, U.S. boxing champion	Jan. 17, 1878	Nov. 12
*Ocker, William C., U.S. aviation inventor	June 18, 1880	Sept. 15
Odom, William MacDougall, U.S. art school director	May 30, 1884	Jan. 29
*O'Flanagan, Michael, Irish clergyman, politician	Aug. 13, 1876	Aug. 7
*Oliver, Edna May, U.S. actress	Nov. 9, 1883	Nov. 9
*Oliver, Sir Thomas, British physician	Mar. 2, 1853	May 16
*Ortiz, Roberto M., Argentine president	Sept. 24, 1886	July 15
Osorio, Miguel Ángel (Ricardo Arenales, Porfirio Barba Jacob), Colombian poet	1883	Jan. 14
Pace, Homer St. Clair, U.S. educator	Apr. 13, 1879	May 22
*Packard, Frank Lucius, Canadian-U.S. author	Feb. 2, 1877	Feb. 17
Paine, Frank D., U.S. educator	Mar. 7, 1886	June 30
Parker, Alton N., U.S. pilot	1895(?)	Nov. 30
*Parker, John Henry, U.S. army officer	Sept. 19, 1866	Oct. 13
*Parseval, August von, German dirigible builder	Feb. 5, 1861	Feb. 23
*Patrick, Mason Mathews, U.S. army officer	Dec. 13, 1863	Jan. 29
Pattangall, William Robinson, U.S. judge	June 29, 1865	Oct. 21
*Paul, Maury Henry Biddle (Cholly Knickerbocker), U.S. society editor	Apr. 14, 1890	July 17
*Pavlovich, Dimitri, Grand Duke, Russian nobleman	Sept. 6, 1891	Mar. 6
Peele, Robert, U.S. mining engineer	July 15, 1858	Dec. 8
Pendleton, Joseph Henry, U.S. marine corps officer	June 2, 1860	Feb. 4
Percy, William Alexander (Will), U.S. poet, lawyer, author	May 14, 1885	Jan. 21
*Péret, Raoul, French politician	Nov. 29, 1870	July 22
*Perrin, Jean, French physicist	Sept. 30, 1870	Apr. 17
*Pessôa, Epitacio da Silva, Brazilian politician and jurist	May 23, 1865	Feb. 13
Peter, Luther Crouse, U.S. ophthalmologist	Feb. 14, 1869	Nov. 12
Peterson, Reuben, U.S. gynaecologist	June 29, 1862	Nov. 25
*Petrie, Sir (William Matthew) Flinders, British archaeologist	June 3, 1853	July 28
Petroff, Eugene, Russian writer, journalist	1902	July 2
Petroff, Gherghi, Bulgarian statesman	1860(?)	Jan. 22
Petty, Orville Anderson, U.S. clergyman	Feb. 20, 1874	Aug. 12
Pfanstiehl, Carl, U.S. research engineer, inventor	Sept. 17, 1888	Mar. 1
Philips, Gerhard Leonard Frederik, Dutch industrialist	Oct. 9, 1858	Jan. 26
Phillips, Theodore Evelyn Reece, British astronomer	Mar. 28, 1868	May 13
Phillips, Ze Barney Thorne, U.S. senate chaplain	May 1, 1875	May 10
Pine, William Bliss, U.S. senator	Dec. 30, 1877	Aug. 25
Plantenga, Jan Hendrik, Dutch architect, art historian	Jan. 15, 1891	Nov. 25
Poliakoff, Alexander, Russian author	1908	Oct. 3(?)
*Politis, Nicolas Socrate, Greek jurist, diplomatist	1872	Mar. 4
Pope-Hennessy, Ladislaus Herbert Richard, British army officer	1875	Mar. 3
*Porras, Belisario, Panaman politician	Nov. 28, 1856	Aug. 28
Portago, Antonio Cabeza de Vaca y Carbajal, Marquis de, Spanish politician	(?)	May 5
Porter, Joseph Franklin, U.S. utility executive	June 27, 1863	Nov. 7
*Poulsen, Valdemar, Danish engineer	Nov. 23, 1869	Aug. (?)
Powlison, Charles Ford, U.S. sociologist	Jan. 26, 1865	July 1
Prosser, Seward, U.S. financier	May 1, 1871	Oct. 1
*Pryor, Arthur, U.S. bandleader	Sept. 22, 1870	June 18
Putnam, Thomas Milton, U.S. mathematician	May 22, 1875	Nov. 14
Raghavendra Rao, E., Indian lawyer, politician	1890(?)	June 15
Rameau, Jean, French poet, novelist	Feb. 19, 1858	Feb. 24(?)
Ranson, Stephen Walter, U.S. anatomist	Aug. 28, 1880	Aug. 30
Rapp, William Jourdan, U.S. writer and editor	June 17, 1895	Aug. 12
Raven-Hill, Leonard, British cartoonist	Mar. 10, 1867	Mar. 31
Redington, Paul Goodwin, U.S. forestry expert	Jan. 25, 1878	Jan. 12
Redway, Jacques Wardlaw, U.S. geographer	May 1849	Nov. 6
Rees, Thomas H., U.S. army officer	Oct. 18, 1863	Sept. 20
*Reeves, Jesse Siddall, U.S. educator	Jan. 27, 1872	July 7
*Reichenau, Walter von, German field marshal	1884	Jan. 17(?)
Reighard, Jacob Ellsworth, U.S. zoologist	July 2, 1861	Feb. 13
Reimers, Paul, German tenor, teacher	Mar. 14, 1878	Apr. 14
*Reisner, George Andrew, U.S. Egyptologist	Nov. 5. 1867	June 7
*Relander, Lauri Kristian, Finnish statesman	May 31, 1883	Feb. 9
*Rhodes, Edgar Nelson, Canadian statesman	Jan. 5, 1877	Mar. 15
*Rice, Alice Caldwell Hegan, U.S. author	Jan. 11, 1870	Feb. 10
Rice, Thomas Stevens, U.S. criminologist	Feb. 21, 1878	Feb. 14
Richter, George Martin, U.S. art authority	Mar. 27, 1875	June 9
Riggs, Norman Colman, U.S. mathematician	Nov. 1, 1870	July 18
Robbins, Edmund Yard, U.S. educator	Oct. 3, 1867	May 30
*Robson, May, U.S. actress	Apr. 19, 1858	Oct. 20
*Roca, Julio Argentino, Argentine politician	May 17, 1873	Oct. 8

Name	Birth date	Death date
Rogers, Charles Edwin, U.S. educator	June 5, 1874	June 30
Ross, Sir Charles, British inventor	Apr. 4, 1872	June 28
Rothschild, Alphonse, Baron, Austrian financier	1878(?)	Sept. 1
Rothschild, Lionel Nathan de, British M.P.	Jan. 25, 1882	Jan. 28
Roussy de Sales, Raoul de, Count, French journalist	Mar. 5, 1896	Dec. 3
Rowe, Peter Trimble, Canadian clergyman	Nov. 20, 1856	June 1
Royle, Edwin Milton, U.S. dramatist, actor	Mar. 2, 1862	Feb. 16
*Ruckstull, Frederick Wellington, U.S. sculptor	May 22, 1853	May 26
*Ruff, Robert Hamric, U.S. clergyman, educator	July 27, 1887	May 5
*Rugh, James Torrance, U.S. orthopaedist	1867(?)	Oct. 12
Rusie, Amos, U.S. baseball star	1871(?)	Dec. 6
Rutenberg, Pinhas, Zionist leader	Feb. 5, 1879	Jan. 3
Saavedra, Abdón, Bolivian lawyer and politician	1872	Jan. 6
Saltzman, Charles McKinley, U.S. army officer	Oct. 18, 1871	Nov. 25
Salvesen, Edward Theodore Salvesen, Lord, Scottish judge	July 20, 1857	Feb. 23
*Sarg, Anthony Frederick (Tony), U.S. artist, puppeteer, author	Apr. 24, 1882	Mar. 7
*Sauer, Emil von, German pianist	Oct. 8, 1862	Apr. 29(?)
*Saydam, Refik, Turkish premier	1881	July 7
Sayles, Robert Wilcox, U.S. geologist	Jan. 29, 1878	Oct. 23
Schacht, Adolph (Ad). U.S. baseball trainer	1884(?)	Jan. 23
Schneider, Arthur E., U.S. artist	Sept. 16, 1865	Feb. 7
*Schneider, Eugene, French munitions manufacturer	Oct. 29, 1868	Nov. 17(?)
Schneider, Louis F., U.S. auto racer	1902(?)	Sept. 22
Schoellkopf, Alfred Hugo, U.S. utility executive	July 12, 1893	Sept. 9
Schoellkopf, Jacob Frederick, U.S. industrialist, financier	Feb. 27, 1858	Sept. 9
*Schofield, Frank Herman, U.S. naval officer	Jan. 4, 1869	Feb. 20
Schorr, Anshel, U.S. playwright	Oct. 25, 1871	May 31
Schuchert, Charles, U.S. palaeontologist	July 3, 1858	Nov. 20
*Schurman, Jacob Gould, U.S. diplomat, educator	May 22, 1854	Aug. 12
Scott, Henri, U.S. opera singer	Apr. 8, 1876	Apr. 2
Scott, Jonathan French, U.S. author, educator	Dec. 10, 1882	May 30
*Scott, Norman, U.S. naval officer	Aug. 10, 1889	Nov. 13(?)
*Seignobos, Charles, French historian	Sept. 10, 1854	Apr. 29(?)
Seltzer, Charles Alden, U.S. author	Aug. 15, 1875	Feb. 9
Sheppard, Melvin, U.S. Olympic track star	1884(?)	Jan. 5
Shiras, George, 3rd, U.S. naturalist, lawyer	Jan. 1, 1859	Mar. 24
Shriver, George McLean, U.S. railroad executive	1868	May 11
*Sickert, Walter Richard, British painter and etcher	May 31, 1860	Jan. 23
Siebern, Emil, U.S. sculptor	Apr. 15, 1888	June 14
Siebert, Ludwig, German politician	Oct. 17, 1874	Oct. 31
Siles, Hernando, Bolivian politician	Aug. 5, 1882	Nov. 23
Simon, T. Frantisek, Czechoslovak artist	May 13, 1877	Dec. 19
Simopoulos, Charalambos, Greek diplomat	July 1874	Oct. 24
*Skinner, Otis, U.S. actor	June 28, 1858	Jan. 4
Smart, Edmund Hodgson, U.S. artist	Mar. 12, 1873	Nov. 15
*Smith, Albert William, U.S. educator, engineer	Aug. 30, 1856	Aug. 16
Smith, Charles Howard, British diplomat	May 17, 1888	July 23
*Smith, Sir George Adam, British biblical scholar	Oct. 19, 1856	Mar. 3
Smith, Thomas R., U.S. editor	Dec. 13, 1880	Apr. 11
*Snook, Homer Clyde, U.S. electrophysicist	Mar. 25, 1878	Sept. 22
*Spender, John Alfred, British journalist	1862	June 21
*Spurgeon, Caroline Frances Eleanor, British educator, writer	1869	Oct. 24
*Stainforth, G. H., British air ace	1899(?)	Sept. 30(?)
Staub, Hugo, German psychotherapist	Nov. 18, 1885	Oct. 29
*Stauning, Thorvald, Danish premier	Oct. 26, 1873	May 3
Stauss, Emil Georg von, German banker, politician	Oct. 6, 1877	Dec. 11
Stayton, William H., U.S. shipping executive	Mar. 28, 1861	July 12
*Steer, Philip Wilson, British artist	Dec. 28, 1860	Mar. 21
Stephens, George Washington, Canadian politician	Aug. 1866	Feb. 0
Stevens, Thomas Wood, U.S. theatre director, author	Jan. 26, 1880	Jan. 29
Stewart, James Christian, U.S. engineer	Sept. 16, 1865	Jan. 17
*Stock, Frederick August, U.S. conductor, composer	Nov. 11, 1872	Oct. 20
Stokes, Edward Casper, U.S. governor	Dec. 22, 1860	Nov. 4
Stoll, Sir Oswald, British theatrical manager	Jan. 20, 1866	Jan. 9
Stout, John Elbert, U.S. educator	Dec. 15, 1868	Dec. 20
Strauss, Hermann, German physician	Apr. 28, 1868	Mar. (?)
Studley, Elmer E., U.S. congressman	Sept. 24, 1869	Sept. 6
Stumme, Georg von, German army officer	1886(?)	Nov. (?)
Sturtevant, Sarah Martha, U.S. educator	Feb. 22, 1881	Dec. 18
Sutherland, Annie, U.S. actress	Mar. 1, 1867	June 22
*Sutherland, George, U.S supreme court judge	Mar. 25, 1862	July 18
Sykes, Charles Henry, U.S. cartoonist	Nov. 12, 1882	Dec. 19
Sykes, Richard Eddy, U.S. clergyman, educator	Jan. 3, 1861	Oct. 2
*Talbot, Arthur Newell, U.S. engineer	Oct. 21, 1857	Apr. 3
Talley, Truman H., U.S. movie producer, editor	Mar. 18, 1891	Jan. 18
Tavenner, Clyde Howard, U.S. congressman, journalist	Feb. 4, 1882	Feb. 7
Taylor, Marion Sayle ("Voice of Experience"), U.S. author, lecturer	Aug. 16, 1889	Feb. 1
*Tempest, Dame Mary Susan, British actress	July 15, 1866	Oct. 15
*Terhune, Albert Payson, U.S. author	Dec. 21, 1872	Feb. 18
*Terra, Gabriel, Uruguayan politician	1872	Sept. 15
Thompson, Carmi Alderman, ex-treasurer of the U.S.	Sept. 4, 1870	June 22
Thompson, Gustave Whyte, U.S. chemist	July 27, 1865	Apr. 22
Tillman, Samuel Escue, U.S. army officer	Oct. 2, 1847	June 24
*Tinker, Clarence Leonard, U.S. army officer	Nov. 21, 1887	June (?)
Tinlot, Gustave, French violinist	1887(?)	Mar. 2
Tobin, Harold J., U.S. educator	June 18, 1894	June 17
*Todt, Fritz, German engineer	Sept. 4, 1891	Feb. 8
Tomlinson, George Ashley, U.S. railway executive	Jan. 26, 1869	Jan. 24
Torchio, Philip, U.S. electrical engineer	Aug. 2, 1868	Jan. 14
Torrey, George Burroughs, U.S. portrait painter	1863	Apr. 14
Trafford, Bernard Walton, U.S. banker	July 2, 1871	Jan. 2
Trask, James D., U.S. educator	Aug. 21, 1890	May 24
Trenchard, Thomas Whitaker, U.S. judge	Dec. 13, 1863	July 23
*Troy, John Weir, U.S. politician	Oct. 31, 1868	May 2
Tsahai, Princess, daughter of Ethiopian Emperor Haile Selassie	1920(?)	Aug. 17
*Tufts, James Hayden, U.S. educator	July 9, 1862	Aug. 6
*Turnbull, Margaret, U.S. author	(?)	June 12
*Turner, Sir Ben, British labour and political leader	1863	Sept. 30
Underwood, Frederick Douglass, U.S. railway executive	Feb. 1, 1849	Feb. 18
Vanbrugh, Violet (Mrs. Arthur Bourchier), British actress	June 11, 1867	Nov. 10
*Vanderbilt, Cornelius, III, U.S. capitalist	Sept. 5, 1873	Mar. 1
Vaughan, Sir Louis Ridley, British army officer	Aug. 7, 1875	Dec. 7
Veeder, Van Vechten, U.S. lawyer, judge	July 4, 1867	Dec. 4
Verity, George Matthew, U.S. steel manufacturer	Apr. 22, 1865	Nov. 6
Vezin, Charles, U.S. artist	Apr. 9, 1858	Mar. 1
*Visser, Lodewijk Ernst, Dutch jurist	Aug. 21, 1871	Feb. 24
*Voliva, Wilbur Glenn, U.S. clergyman	Mar. 10, 1870	Oct. 1
Vreeland, Williamson Updike, U.S. educator	Aug. 30, 1870	Nov.
*Wagner, Boyd David, U.S. army air officer	Oct. 26, 1916	Nov. 30(
Waite, Arthur Edward, British writer	1857	May 1
Walker, Thomas L., Canadian mineralogist	Dec. 30, 1867	Aug.
Walmsley, T. Semmes, U.S. lawyer, mayor	June 10, 1889	June 1
*Warren, Joseph, U.S. educator	Mar. 16, 1876	Sept. 1
Warriner, Samuel Dexter, U.S. corporation executive	Feb. 24, 1867	Apr.
Wayburn, Ned, (Edward Claudius), U.S. theatre director	Mar. 30, 1874	Sept.
Weagant, Roy Alexander, U.S. electrical engineer	Mar. 29, 1881	Aug. 2
*Weber, Joseph (Joe) M., U.S. actor, manager	Aug. 11, 1867	May 1
Weiller, René, French diplomat	Mar. 8, 1878	Sept.
*Weingartner, Felix, Yugoslav-Swiss composer, conductor	June 2, 1863	May
Weiss, Soma, U.S. physician	Jan. 27, 1899	Jan. 31
*Wells, Carolyn, U.S. author	(?)	Mar. 2
Wendt, Julia Bracken, U.S. sculptor	June 10, 1871	June 2
Westcott, John Howell. U.S. educator	Aug. 3, 1858	May 1
*Westley, Helen, U.S. actress	Mar. 1879	Dec. 1
White, Henry Ten Eyck, U.S. newspaper editor	1853(?)	Aug. 31
White, James Gilbert, U.S. engineer, banker	Aug. 29, 1861	June
*Whiteside, Walker, U.S. actor	Mar. 16, 1869	Aug. 1
Whitney, Gertrude Vanderbilt, U.S. sculptress	(?)	Apr. 1
Wiegand, Karl, U.S. botanist	June 2, 1873	Mar. 1
Wilcox, Elias Bunn, U.S. judge	June 28, 1869	Oct. 27
*Wilcox, John Walter, Jr., U.S. naval officer	Mar. 22, 1882	Apr. (?)
*Willard, Daniel, U.S. railroad executive	Jan. 28, 1861	July 6
Willard, John, U.S. author	1885(?)	Aug. 31
Williams, Philip, U.S. naval officer	Feb. 8, 1869	Oct. 31
Williams, T. Walter, U.S. newspaperman	Aug. 14, 1865	Nov.
Williams-Bulkeley, Sir Richard Henry, British peer	Dec. 4, 1862	July
*Willson, Beckles, Canadian author	Aug. 26, 1869	Sept. 1
*Willstaetter, Richard, German scientist	Aug. 13, 1872	Aug. 3(?
*Wilson, John Arthur, U.S. chemist	Aug. 16, 1890	Sept. 1
*Wilson, (Robert) Forrest, U.S. writer	Jan. 20, 1883	May
Wilson, Scott, U.S. judge	Jan. 11, 1870	Oct. 2
Winchell, Benjamin La Fon, U.S. industrialist	July 8, 1858	Mar. 1
*Windham, Sir Walter George, British aviation pioneer	1868	July
*Wood, Grant, U.S. artist	Feb. 13, 1892	Feb. 1
Woodsworth, James Shaver, Canadian politician	July 29, 1874	Mar. 21
Woodward, Charles Edgar, U.S. judge	Dec. 1, 1876	May 1
Woodward, Walter Carleton, U.S. church official	Nov. 28, 1878	Apr. 1
*Work, Hubert, U.S. politician	July 3, 1860	Dec. 1
Wright, Charles Baker, U.S. educator	Oct. 5, 1859	Apr. 2
Wyman, Walter Scott, U.S. utility executive	May 6, 1874	Nov. 1
Young, William Henry, British mathematician	Oct. 20, 1863	July
*Younghusband, Sir Francis (Edward), British explorer	May 31, 1863	July 31
Zanni, Pedro Leandro, Argentine army air force commander	May 12, 1891	Jan 2
Zeigen, Frederic, U.S. author, financier	Apr. 18, 1874	May 2
*Zemlinsky, Alexander von, Austrian composer, conductor	Oct. 4, 1872	Mar. 1
*Zweig, Stefan, Austrian author	Nov. 28, 1881	Feb. 2

Obstetrics: *see* Gynaecology and Obstetrics.

OCD (Office of Civilian Defense): *see* Civilian Defens

Oceanography. While, because of the war, field observ tions continued to be curtailed, the analys and publication of accumulated observations continued. Th most notable oceanographic event of 1942 was the appearan of two up to date text books, the first complete and authoritati works in many years.

Ocean Currents.—A study of four hydrographic sectio crossing the straits of Florida near Havana indicated variatio in total transport between 26.0 and 30.3 million cubic mete per second for the month of March. A counter current in th deep water north of the Florida current appeared to be a chara teristic of this part of the straits.

Plankton.—Recent plankton studies emphasized the importan of vertical movements in maintaining an adequate supply nutrients near the surface. For example, the rate of increase the plankton population in the spring on Georges Bank seeme to be a linear function of the reciprocal of the thickness of t wind-stirred surface layer. In the open Pacific a positive corre tion was found between the density of plankton in the upper metres and the phosphate content of the water. It was also sho that surface waters richer in phosphate occurred in regions wh vertical movements, which carried phosphate up into the surfa layer from the rich reservoirs below, could be associated wi the permanent currents. (*See* also Fisheries; Marine Biolog; Zoology.)

Bibliography.—H. U. Sverdrup, *Oceanography for Meteorolog* (1942); H. U. Sverdrup, M W. Johnson and R. H. Fleming, *The Oce Their Physics, Chemistry, and General Biology* (1942); R. B. Montgom

ansport of the Florida Current off Habana," *Jour. of Marine Research*, iv, no. 3; Gordon A. Riley, "The Relationship of Vertical Turbulence Spring Diatom Flowerings," *ibid.*, vol. v, no. 1; Herbert W. Graham, ankton Production in Relation to Character of Water in the Open ific," *ibid.*, vol. iv, no. 3. (C. O'D. I.)

ker, William C. (1880–1942), U.S. aviation inventor, was born June 18 in Philadelphia, Pa. An ert pilot with one of the longest records of service in the S. army air corps, Col. Ocker first saw action in the Spanish-erican War. He re-enlisted in 1912 in the aviation section the signal corps and qualified for a pilot's licence two years er. He rose in rank to colonel in 1940, by which time he had n commanding officer at various flying fields. In the 1920s experimented with instrument flying, and in 1930 he piloted lane with a covered cockpit for 900 mi. from San Antonio, x., to Scott Field, Ill., solely by instruments. He invented ious training devices for students of "blind-flying," including "flight integrator."

Ocker was co-inventor of the "pre-flight reflex trainer" and a new type of propeller that was said to lessen noise, vibra- n and strain in the blades. He died in Washington, D.C., t. 15.

EM: *see* Emergency Management, Office for.

fice for Emergency Management: *see* Emergency Man- ment, Office for.

fice of Civilian Defense: *see* Civilian Defense.

fice of Defense Transportation: *see* Defense Trans- tation, Office of.

fice of Education, U.S.: *see* Education.

fice of Petroleum Coordination: *see* Petroleum.

fice of Price Administration: *see* Price Administra- n, Office of.

fice of Production Research and Development: *see* duction Research and Development, Office of.

fice of Scientific Research and Development: *see* entific Research and Development, Office of.

fice of Transit Controller: *see* Electric Transporta- n.

fice of War Information: *see* War Information, Office

Flanagan, Michael (1876–1942), Irish clergyman and politician, was born August 13 in onfower, Castlereagh, County Roscommon. A college profes- and curate, he joined the Sinn Fein movement, becoming its e-president in 1917, and was one of De Valera's chief aides ring the turbulent civil war years, 1916–22. In 1920, Father Flanagan, who was acting Sinn Fein president while De Valera s in America, sent a wire to Prime Minister David Lloyd orge, declaring that Ireland was willing to make peace. Nothing ne of the Sinn Fein leader's proposals, and he was subsequently med by Irish patriots for Ireland's failure to secure complete ependence in 1922 instead of dominion status. He died in blin, August 7.

Henry Memorial Awards: *see* Literary Prizes: *United ites.*

io. A north central state of the United States, popularly known as the "Buckeye state." Area, 41,222 sq.mi.; pop. 940) 6,907,612, of whom 2,294,626 were rural and 4,612,986 ban; native white 6,047,265, foreign born 520,773, Negro 339,- 1, other races 1,620. Capital, Columbus (306,087). Other ies of more than 100,000 were Cleveland (878,336), Cincinnati 55,610), Toledo (282,349), Akron (244,791), Dayton (210,-718), Youngstown (167,720) and Canton 108,401.

History.—Gov. John W. Bricker in Nov. 1942 was re-elected by the largest majority and with the highest percentage of the total vote ever won by a candidate for governor of Ohio. He was the first Republican governor to be elected for three consecutive terms. This election record made Gov. Bricker a leading potential candidate for the Republican presidential nomination in 1944. His majority over former Congressman John McSweeney (Dem.) of Wooster was 375,654, and he carried all but two of the 88 counties.

The entire Republican state ticket was elected by substantial majorities. Lieut. Gov. Paul M. Herbert of Columbus, Treasurer of State Don Ebright of Akron and Attorney-General Thomas J. Herbert of Cleveland were returned to office for their third consecutive terms. Edward J. Hummel of Cincinnati was elected secretary of state. The only Democrat left holding state office was Auditor of State Joseph T. Ferguson, who was in the middle of a four-year term. The Republican party also won overwhelming control of the state legislature. In the 23 congressional contests, only three Democrats survived the Republican landslide. Charles S. Bell of Cincinnati was elected to the Ohio supreme court, and Judges Roy H. Williams of Sandusky and Edward C. Turner of Columbus were re-elected. All ran on the Republican ticket.

The state legislature, which adjourned May 17, 1941, did not meet at all in 1942. Although mayors and city managers of 14 Ohio municipalities repeatedly urged Gov. Bricker to call the legislature into session to consider some form of financial aid to cities for the civilian defense program, and Democrats charged that he was not supporting the national war effort but was piling up a huge surplus in the state treasury which rightfully belonged to the local subdivisions, the governor steadfastly refused to convene the legislature. He maintained that he had co-operated with the federal government in every respect, that the state civilian defense organization was efficient and that the surplus, which exceeded $30,000,000 by the end of 1942, would make new taxes unnecessary during the next two years, when state revenues were expected to fall because of rationing and priorities.

Education.—Ohio in 1942 had 3,828 elementary schools with a total enrolment of 708,343 (including 21,652 children in kindergartens) and a total teaching staff of 22,470 (including 392 kindergarten teachers); 1,350 secondary schools with a total enrolment of 469,101 (including 83,837 pupils in junior high schools) and a total teaching staff of 28,160 (including 2,860 junior high school teachers).

Public Welfare, Charities, Correction.—Ohio's relief-case load for Nov. 1942 was 24,243, the lowest since the state started keeping relief records. The average number of general relief cases for 1942 was 33,362 and the total spent was $7,870,596. Average of WPA employment was 30,563, at a total cost of $24,651,356; average number of cases of aid for the aged, 139,123, at a total cost of $41,250,821; average number of cases of aid to dependent children, 11,387, at a total cost of $5,310,003; average number of cases of aid to the blind, 3,928, at a total cost of $991,833; number of weeks of unemployment compensated (11 months) 1,178,-911, the net amount of benefit payments being $14,064,162. In 1942 the four penal institutions had an average population of 7,736 and were operated at a total cost of $2,478,861. The two industrial schools had an average population of 1,172 and were operated at a total cost of $609,084.

Communication.—Ohio had 86,563.54 mi. of highways in 1942 outside municipalities. Of this total 16,261.64 mi. were classified as state mileage, 28,352 county mileage and 41,949.90 township mileage. Estimated expenditures on the state highway system in 1942 were $36,500,000. The state had 8,870.26 mi. of railroads, 111 airports and landing fields and 1,480,398 telephones.

Banking and Finance.—There were 446 state banks in Ohio with deposits (Sept. 28, 1942) of $2,077,160,739 and resources of $2,264,650,121. There were 241 active national banks in Ohio with deposits (June 30, 1942) aggregating $1,525,397,000 and resources of $1,679,020,000. State-chartered savings and loan associations numbered 547 with total resources (June 30, 1942) of $661,244,108.

There were 122 federal savings and loan associations with total assets (Dec. 15, 1942) of $271,598,614. The state budget for the 1941–42 biennium was $352,800,000.

Agriculture.—The total acreage harvested in Ohio in 1942 was 10,359,500; in 1941, 9,906,500. Total value of agricultural production in the state in 1941 was $491,101,000. A wet harvest season cut Ohio wheat production in 1942, but the corn and soybean crops set new records in spite of a shortage of harvest labour.

Table I.—*Leading Agricultural Products of Ohio, 1942 and 1941*

Crop	1942	1941
Corn, bu.	185,752,000	160,974,000
Wheat, bu.	36,205,000	48,978,000
Oats, bu.	51,824,000	51,374,000
Barley, bu.	1,428,000	1,140,000
Rye, bu.	1,649,000	1,332,000
Soybeans, bu.	28,819,000	13,143,000
Potatoes, bu.	9,180,000	10,614,000
Apples, bu.	6,384,000	6,000,000
Tame hay, tons	3,659,000	3,325,000
Tobacco, lb.	23,948,000	25,311,000

Manufacturing.—The total value of manufactures in Ohio in 1939, was $4,584,665,659; total employment, 686,089; total wages and salaries paid, $1,033,426,673.

Mineral Production.—The total estimated value of mineral production for Ohio in 1940 was $61,457,191.

Table II.—*Principal Mineral Products of Ohio, 1940 and 1939*

Mineral	Value, 1940	Value, 1939
Bituminous coal	$37,114,560	$32,981,760
Petroleum	3,514,560	3,534,720
Coke	36,725,369	28,502,924
Pig iron	180,700,876	147,154,864
Natural gas	21,132,280	18,818,000
Sand and Gravel	9,230,358*	6,595,483

*1941.

(P. By.)

Ohio State University.

An institution of higher education at Columbus, Ohio. Formally established as a land-grant institution in 1870, it opened its doors on Sept. 17, 1873, to a student body of 17.

The university admits both women and men. It has ten colleges: agriculture, arts and sciences, commerce and administration, dentistry, education, engineering, law, medicine, pharmacy and veterinary medicine; a graduate school; and five special schools: home economics, journalism, nursing, optometry and social administration. Graduate work is offered through the doctor of philosophy degree. Special curricula in 1942 prepared women and men for war work. New departments of occupational therapy and physical medicine were created. Latest additions to the physical plant were a 400-acre airport and a war research laboratory. The university for 20 years had operated on a four-quarter plan, enabling most students to complete their studies in three calendar years.

For statistics of enrolment, faculty, library volumes, etc., *see* UNIVERSITIES AND COLLEGES. Dr. Howard L. Bevis, president, took office Feb. 1, 1940. (H. L. B.)

Oil: *see* PETROLEUM.

Oils and Fats, Vegetable and Animal: *see* VEGETABLE OILS AND ANIMAL FATS.

Oklahoma.

A west south-central state and the 46th of th United States. The people of the state are pop larly known as "Sooners," from the name applied to those wh crossed the starting line sooner than the time fixed by the gover ment for the first land run into Oklahoma, April 22, 1889. Are 69,283 sq.mi.; pop. (1940) 2,336,434, a decrease of 59,606 sin 1930. The rural population in 1940 numbered 1,456,771; urba 879,663. Approximately 87% of the population was native whit 7% Negro, 4% Indian and 2% foreign born, Mexican and misce laneous. The state's two largest cities are Oklahoma City (204 424), the capital, and Tulsa (142,157).

History.—Perhaps the most important development durin 1942 was the adoption in November of a constitutional amen ment making women eligible for election to all state office Another constitutional amendment was adopted in July authori ing the legislature to provide for retirement pensions for teacher The fiscal year 1941–42 ended with a large surplus, and tax co lections indicated a surplus for the fiscal year 1942–43. Th administration of Governor Leon C. Phillips ended with the b ginning of 1943. At th November election, Rob ert S. Kerr was chosen t succeed Phillips as gov ernor. Others electe were: lieutenant gove nor, James E. Berry; se retary of state, Frank Carter; state auditor, C. Childers; attorney ge eral, Mac Q. Williamson state treasurer, A. S. Shaw; state superinten ent of public instructio A. L. Crable.

ROBERT S. KERR, governor of Oklahoma, elected Nov. 3, 1942, on the Democratic ticket

Education. — In th public schools in 1941–4 528,293 pupils were en rolled, with 19,391 teach ers. Of these pupils, 128 603 were enrolled in the 854 public high schools. The expenditu for the maintenance of public schools, elementary and secondar during the fiscal year amounted to $32,625,955. The state 1942 maintained a university at Norman, a state agricultur and mechanical college at Stillwater, the Panhandle agricultur and mechanical college at Goodwell, four agricultural junio colleges, a college for women, six state colleges primarily fo teachers, an agricultural, mechanical, and normal university fo Negroes at Langston, two academic junior colleges, and a mil tary academy.

There were twelve municipal junior colleges. In additio there were six accredited colleges and three junior colleges wit church affiliations.

Public Welfare, Charities, Correction.—During 1941–4 77,749 persons were the recipients of old-age assistance, 2,18 blind persons received aid, and 19,941 dependent children wer cared for; 2,059 were enrolled in CCC camps, 8,968 were em ployed by the NYA (1,971 in school and 6,997 out of school and 19,069 were employed by the WPA.

The hospitals and eleemosynary institutions in 1942 includ five mental hospitals, three tuberculosis sanitariums, two orphan homes, one school for the deaf, and one for the blind. The was also one penitentiary, one reformatory, and four schools detention and correction.

Communication.—Oklahoma maintained approximately 10 000 miles of state and rural highways in 1942, not includi eets in towns and cities. Annual expenditures for roads were proximately $23,000,000. Within the state there were 6,478 les of railroad.

Banking and Finance.—National banks numbered 207 in ne, 1942, with capital of $55,589,000 and deposits of $503,-,000. There were 182 state banks with capital of $9,477,000 l deposits of $74,539,000. There were 32 federal savings and n associations with resources of $53,200,000 and 32 state ociations with resources of $12,700,000. State receipts during 1–42 were $81,369,741.67, besides $20,498,830.42 received m the federal government; expenditures were $87,169,607.50. e state funded debt in 1942 stood at $36,106,735.68.

Agriculture.—No extended droughts occurred during 1941 or 2, which were on the whole good crop years. The total num- of acres harvested in 1942 was 12,763,600, as compared with 350,200 harvested in 1941. The cash income to farmers in 1 was $123,591,000 from crops, $132,985,000 from livestock, l $21,035,000 from government payments, a total of $277,-,000.

Table I.—*Leading Agricultural Products of Oklahoma, 1942 and 1941*

Crop	1942 (est.)	1941
heat, bu.	57,370,000	48,610,000
rn, bu.	35,631,000	31,202,000
ts, bu.	23,940,000	25,900,000
ain sorghums, bu.	13,260,000	13,260,000
rley, bu.	10,625,000	9,216,000
tton, bales	720,000	718,000
y, tons	1,716,000	1,716,000
oomcorn, tons	11,900,000	10,200,000

Manufacturing.—Total value of manufactures in 1939 was 2,168,499, as compared with $366,088,721 in 1937. State in-tries employed 33,528 persons; salaries of $11,090,299 and ges of $30,465,185 were paid.

Table II.—*Principal Industries of Oklahoma, 1939 and 1937*

Industry	1939	1937
troleum refining	$106,666,837	$144,474,915
eat packing	33,001,703	38,555,703
illing—flour and other grain products	23,023,319	33,119,822
eamery butter	13,162,718	15,149,654
blishing and printing	10,288,965	12,066,319
kery products	10,052,666	10,787,412
elting and refining of nonferrous metals	9,122,686	13,537,488
l field machinery	8,523,190	8,320,399
ass, clay and stone products	6,887,716	6,783,870
iler shop products	6,355,993	7,527,539
ttonseed products	6,142,384	5,661,596

Mineral Production.—The total value of mineral production 1941 was estimated at $260,000,000, as compared with $236,-,000 in 1940. Petroleum production declined in 1941 and 2 in some of the older pools, but the number of new pools l extensions was developed.

Table III.—*Principal Mineral Products of Oklahoma, 1941 and 1940*

Mineral	Value 1941	Value 1940
troleum	$175,000,000	$162,500,000
tural Gas	31,000,000	31,603,000
nc	24,990,300	20,529,810
tural Gasoline	13,043,000	8,926,000
tuminous Coal (est.)	5,000,000	4,350,000
ad	2,852,394	2,124,000

(R.GIT.)

d-Age Insurance: *see* SOCIAL SECURITY.

d-Age Pension: *see* RELIEF; SOCIAL SECURITY. *See* also der various states.

iver, Edna May (1883–1942), U.S. actress, was born Nov. 9 in Malden, Mass. She studied sic, dancing and voice when a child and in 1900 made her first fessional stage appearance in light opera. She later toured as pianist with an orchestra of women and played minor roles in stock shows. A versatile actress, Miss Oliver made a success on Broadway as the comedienne in *Oh Boy!,* in 1917; she later scored in a tragic part in *Ice-Bound* in 1923. The long-faced, taut-lipped actress excelled in portraying sharp-tongued spinsters and was acclaimed as one of the leading "scene-stealers" in motion pictures on the basis of her performances in *Little Women* and *David Copperfield.* Other films in which she appeared were *Alice in Wonderland, A Tale of Two Cities, Nurse Edith Cavell* and *Pride and Prejudice.* She died in Hollywood, Calif., Nov. 9.

Oliver, Sir Thomas (1853–1942), British physician and authority on industrial diseases, was born March 2 in St. Quivox, Ayrshire. He studied at the Glasgow university and in Paris schools before starting his medical practice in 1875. Sir Thomas specialized in industrial diseases, became an authority on industrial safety measures and was influential in improving the social conditions of workers. He wrote extensively on industrial diseases, served as medical expert of the dangerous trades committee of the Home Office and was honorary president of the International Congress of Accidents and Industrial Diseases at Geneva, 1931. He was also president of the University of Durham college of medicine, Newcastle, and vice-chancellor of Durham university, 1928–30. He died at Newcastle, May 16.

Oman and Muscat: *see* ARABIA.

Ontario. One of the two central provinces of the Dominion of Canada (*q.v.*), admitted to the union in 1867; area, 412,582 sq.mi.; pop. (1941) 3,787,655. Capital, Toronto (667,-457). The population in 1941 was 80% native born and 62% urban. The lieutenant governor in 1942 was Albert Matthews; the premier G. D. Conant.

Education.—The number of students in provincially controlled public schools in 1942 was 708,180; in private schools 21,264; in institutions of university standing 19,185.

Communications.—The mileage of surfaced highways in 1942 was 56,309; of earth highways 16,137; provincial expenditure on highways $16,081,059. The railroad mileage in 1942 was 10,562, number of telephones 660,002.

Finance.—The ordinary receipts in 1942 were $106,384,870; ordinary expenditure $109,618,967. The direct debt (less sinking funds) was $729,815,356; indirect liabilities (less sinking funds) $129,603,233.

Table I.—*Leading Agricultural Products of Ontario, 1942 and 1941*

Crop	1942	1941
Wheat, bu.	17,716,000	23,400,000
Oats, bu.	76,032,000	86,554,000
Barley, bu.	13,202,000	15,519,000
Corn, bu.	9,471,000	6,956,000
Potatoes, cwt.	8,694,000	6,753,000
Turnips, cwt.	18,124,000	21,528,000
Hay and clover, tons	3,760,000	5,021,000

Agriculture.—The acreage of field crops in 1942 was 9,129,400; gross value of field products $172,470,000; gross value of all

Table II.—*Principal Industries of Ontario, 1939 and 1938*

Industry	Value of products	
	1939	1938
Smelting and refining	$134,726,912	$166,012,623
Automobiles	102,102,931	133,315,645
Meat packing	79,480,472	75,917,387
Electrical supplies	67,733,158	74,510,006
Flour and feed	58,336,183	70,815,603
Pulp and paper	65,486,349	72,948,378
Butter and cheese	52,663,274	54,744,598

crops $363,584,000.

Manufacturing.—The gross value of manufactured products in 1940 was $2,302,014,654; net value $1,004,529,583; number of employees 372,643; salaries and wages $479,399,188.

Table III.—*Principal Mineral Products of Ontario, 1940 and 1939*

Mineral	Value	
	1940	1939
Gold	$125,574,988	$111,533,873
Copper	94,576,434	32,637,305
Nickel		50,920,305
Lead		1,240
Zinc		..
Silver	5,563,101	472,675

Mineral Production.—The value of the mineral production in 1940 was $261,483,349. (J. C. HE.)

OPA: *see* PRICE ADMINISTRATION, OFFICE OF.
Opera: *see* MUSIC.

Oranges. The orange crop in the five producing states of the United States in 1942 was about the same as in 1941 and in 1940, the only noticeable change being that a materially larger part of the crop was shipped by rail. Gasoline and rubber shortages affected the usual truck shipments. Railroad car loadings were well above those of previous years, owing to shortage of shipping facilities. The 1942 crop was 84,144,000 boxes, according to a preliminary estimate of the department of agriculture in Dec. 1942.

The 1941 crop was 84,534,000 boxes and the ten-year (1930–39) average was 60,179,000 boxes. A prolonged fall drought in Florida, although relieved by December rains, reduced the early and midseason crops. (S. O. R.)

U.S. Production of Oranges by States, 1942 and 1941

State	1942 boxes*	1941 boxes*
California		
Valencias	28,044,000	29,505,000
Navels and miscellaneous	17,160,000	22,327,000
Florida		
Early and midseason	16,500,000	15,200,000
Valencias	15,000,000	12,000,000
Tangerines	3,500,000	2,100,000
Texas	2,900,000	2,850,000
Arizona	700,000	660,000
Louisiana	340,000	192,000

*Net content per box of oranges in California and Arizona approximates an average of 70 lb.; in Florida, Texas and Arizona, 90 lb.

Oregon. A Pacific state of the U.S.A., admitted to the union Feb. 14, 1859. Area, 96,350 sq.mi.; pop. (1940) 1,089,684. Capital, Salem (30,908); chief city, Portland (305,394).

History.—Oregon was the second state of continental United States to be attacked by the enemy in World War II and the first to be bombed from the air. On the night of Sunday, June 21, 1942, several explosive shells were fired from the sea, presumably from a Japanese submarine. They landed among the sand dunes of Sunset beach south of the mouth of Columbia river in the extreme northwest part of the state. On the morning of Sept. 9, a very small plane was seen flying eastward in the vicinity of Brookings, in the extreme southwest corner of the state, and shortly thereafter a forest service lookout on rugged Mount Emily heard explosions. Later some bomb fragments were found and pieces of incendiary material. The plane was apparently based on a Japanese submarine. The damage in both of these attacks was negligible.

Oregon's contribution to the war effort in 1942 was largely in shipbuilding and lumber production. The metropolitan area Portland, including Vancouver, Washington, became the cent of a highly organized ship construction program, producing variety of vessels in many different yards. The U.S. Maritin commission announced that the Oregon Shipbuilding corporatio operated by Henry J. Kaiser, held the United States record f 1942 by turning over to the commission 113 completed Liber ships.

Two large army camps were put into service in 1942, and the close of the year an army engineer training and replaceme camp was announced for central Oregon. In addition, the arm and navy put into operation a number of auxiliary establishmen including some large installations.

On Nov. 18 at Oregon state hospital (mental), Salem, a qua tity of sodium fluoride was accidentally mixed with powdered eg for the evening meal; as a result 47 patients, mostly helpers, die

In the November election, Oregon took a leading position the return to the Republican party. Republican congression state and legislative tic ets were almost all su cessful, in some cases record-breaking plura ties. Earl Snell, Repub can, was elected gove nor. The legislature m in Jan. 1943 and fou state finances in excelle condition. The bienn state budget as submitt to the legislature, inclu ing deficiencies, amou ed to $32,300,860, wi sufficient revenues ava able.

EARL SNELL, Republican, elected governor of Oregon Nov. 3, 1942

Outstanding among t problems of 1942 was t great increase in popu tion in the Portland m ropolitan area. There we substantial difficulties transportation and housing, and toward the end of the year meat supply. Reasonably good solutions were found.

Education.—In 1941 there were 206,715 pupils in pub schools, including 68,594 in high schools. There were 7,8 teachers.

For the school year 1941–42 the value of school propert was $62,160,199.

Communication.—On Dec. 31, 1942, there were 4,809 mi. primary state highways, of which 4,368 were surfaced. Highw expenditures for 1942 were $15,586,827, of which $2,618,790 w for interest and debt retirement. As of Dec. 31, 1941 there we 3,665 mi. of steam railways, not including second main tra sidings, etc.

Finance.—Oregon's bonded debt as of June 1942 was $1 567,375.

Agriculture.—The total cash income of Oregon farmers 1941 was $151,612,000, of which $4,545,000 represented gove ment payments.

Table I.—*Principal Agricultural Products of Oregon, 1942 and 1941*

Crop	1942 (est.)	1941	Crop	1942 (est.)	1941
Corn, bu.	1,742,000	1,920,000	Barley, bu.	10,075,000	6,048,0
Oats, bu.	10,064,000	10,426,000	Spring wheat, bu.	2,112,000	3,105,0

Manufacturing.—The census of 1939 showed 2,248 manuf ing establishments in Oregon; 69,880 persons employed; ıries and wages, $91,326,581; value of products, $365,374,436. jor items: logging camps, $23,363,038; sawmills, $108,663,- ; planing mills, $8,122,845; meat packing, $15,178,448; paper ls $15,698,747.

Table II.—*Principal Mineral Products of Oregon, 1940 and 1939*

	Value, 1940	Value, 1939
ld.	$3,980,000	$3,268,020
ercury	1,599,436	477,293
nd and gravel.	859,943	1,233,320
one	2,234,928	1,682,175

Mineral Production.—The mineral production of Oregon in 9–40 was as indicated in Table II. (L. A. Mc.)

tiz, Roberto M.

(1886–1942), Argentine president, was born September 24 in Buenos Aires. graduated from the University of Buenos Aires in 1909 and le at school joined the Radical party, then unified under the lership of Hipolito Irigoyen. He was a member of the city ncil of Buenos Aires, 1918–20, sat in the chamber of deputies, o–24 and was minister of public works, 1925–28. Following split of the Radical party, he joined the Anti-Personalist ion led by former President Alvear, under whom he held a net post.

e was finance minister in the Justo cabinet from 1935 to 7, when he was elected president of Argentina. He embarked country upon a policy of democracy and a continuation of riendship with the United States.

wing to ill health and threatening blindness, Dr. Ortiz temarily gave up his duties of office in July 1940 and resigned n the presidency June 1942. Even while ill, Ortiz expressed support for the United States and its allies, while the regime his successor, Ramón Castillo, was mildly anti-American and iously avoided offending the axis powers. Dr. Ortiz died in nos Aires, July 15.

RD: *see* SCIENTIFIC RESEARCH AND DEVELOPMENT, OFFICE OF.

eopathy.

Oct. 3, 1942, marked the 50th anniversary of the beginning of osteopathic education. It was rved in osteopathic colleges, state and local gatherings, at pital openings, with addresses, radio broadcasts and otherwise. n a single class graduating 17 members the educational system grown to six recognized colleges, the total enrolment in which several years averaged nearly 2,000. Of the many thousands luated, more than 10,000 were in practice. The content of courses, as well as in other colleges in the country, was lified as a result of World War II, and calendars were re- nged so that four college years might be covered in three ndar years. But entering classes in the summer and fall of totalled larger than the corresponding 1941 classes, and it the policy of Selective Service to keep such students in ol on the principle that they were in preparation for essential vity.

he number of osteopathic physicians in practice reached an ime high of approximately 10,700, with a larger per cent ever before affiliating with professional organizations, na- al and state, and more than ever before availing themselves pportunities to take postgraduate and review work.

steopathic research was continued and the results published. United States congress which, in a previous year, had ap- riated funds for the payment of osteopathic interns to be inted in army hospitals, in 1942 made an appropriation for payment by the medical corps of the navy of medical officers who were graduates of osteopathic colleges. (R. G. Hu.)

Ostland.

The German name for the northern portion of the "Occupied Eastern Area," including northeastern Poland, White Russia and the former Baltic states of Estonia, Latvia and Lithuania (*qq.v.*) (including the Vilna area, disputed between Poland and Lithuania). Reichsleiter Alfred Rosenberg was appointed reichsminister for the entire area in 1941 (including White Russia and the Ukraine); Heinrich Lohse was Reichscommissar for the Ostland in 1941–42, with headquarters in Riga. (F. D. S.)

Ottawa.

The capital of the Dominion of Canada (*q.v.*) and the seat of the supreme court, is situated on the right bank of the Ottawa river near the mouth of the Rideau, both rivers having very beautiful falls. The city itself is divided into an upper and a lower town by the Rideau canal. The parliament buildings are situated on a series of high bluffs which overlook the river, in one direction toward the Chaudière falls and in the opposite direction toward the Rideau falls. The population of the city was 154,951 in 1941.

The gross value of manufactured products in 1941 was $28,582,935.

The city's most important educational institution is the Université d'Ottawa.

BIBLIOGRAPHY.—*Handbook of the City of Ottawa; The Canada Year Book, 1941.* (J. C. He.)

Outer Mongolia: *see* MONGOLIA.

Oxford University.

The academic year 1941–42, which began with 2,879 undergraduates in residence, ended with 2,832. The numbers of men matriculating in Hilary (158) and in Trinity (296) terms were again much above the normal figure; they were also slightly above the figures of the previous year. The average age of entry of men had declined since the war began. In 1941–42 58% of the men matriculating were below the age of 18½; in the previous year the percentage was 43.

The system of wartime examinations designed for men who would be called up in the middle of their courses and who wished to start them in bye-terms was maintained. The new regulations, which would normally restrict women's courses to two years, would make these examinations attract most of the women. In consequence, Pass Moderations was abolished for the period of the war.

A standing committee of scientists with some lay members was appointed to advise on technical problems of all kinds connected with the erection, maintenance and use of university buildings.

Benefactions received during the year included £1,320 a year for 10 years from the Nuffield provincial hospitals trust for the establishment of a professorship of social medicine, the holder of which would work in an institute to be established by the trust at a cost of upwards of £8,600 a year; and £3,000 a year for 10 years from the Rockefeller Foundation for research into problems of human nutrition.

In Oct. 1942 the numbers of matriculations were 887 men and 283 women. (D. V.)

Pacific Islands, British.

Territories of the British empire in the Pacific ocean, of which certain statistics are given in the table on page 520. *See* BRITISH EMPIRE for population, capital towns, status and governors.

History.—After the Japanese occupation of Nauru at the end

Pacific Islands, British

Territory and Area Square Miles	Principal Products	Imports and Exports (in thousand £)	Revenue and Expenditure (in thousand £)	Education: Elementary and Secondary
Fiji, 7,055	gold (1940) 3,600 kg. (exports 1940) sugar £F. 1,285,191 copra £F. 125,063 bananas £F. 41,747	(1940) imp. £ Fiji 1,826 exp. £ Fiji 2,679	(1940) rev. £ Fiji 938 exp. £ Fiji 948	(1940) schls., 417; scholars, 31,530
Papua (administered by the Commonwealth of Australia; *see also* Pacific Islands, Mandated) 87,786 (mainland); 2,754 (islands)	rubber (1939–40 exports) £152,487 gold (1940) 1089 kg. copra (1939) metric tons 9,500	(1940–41) imp. £A. 539 exp. £A. 493	(1940–41) rev. £A. 189.5 exp. £A. 189.3	Mission schools with compulsory attendance for native children (1939–40) Europ. schls., 3; schlrs., 63
Gilbert and Ellice Islands Colony (including the Gilbert group; the Ellice group; Ocean island [seat of administration]; Fanning, Washington and Christmas islands; and the Phoenix group*) *c.* 200	(metric tons) natural phosphates (1939) 325,000 copra (1938) 4,900	(1938–39) imp. 138 exp. 282	(est. 1939–40) rev. 73.1 exp. 82.7	(1939) schls., 236; schlrs., 6,828
New Hebrides (a condominium administered jointly by the British and French Governments †) 5,700	(1939) tons copra 14,569 cocoa 1,935	(1939) imp. 118.6 exp. 123.9	(1939–40) rev. 24.3 exp. 22.7	Numerous Presbyterian and Catholic mission native schls., 1 Fr. Govt. schl., and 1 Catholic mission schl. for whites
British Solomon Islands Protectorate, 11,458	(1940–41) copra 12,991 tons	(1940–41) imp. 134.4 exp. 121.9	(1940–41) rev. 51.3 exp. 65.8	(1937–38) elem. schls., 6; schlrs., 4,697
Tongan Islands Protectorate. *c.* 250 .	(export 1941) copra 4,258 tons bananas, 54,210 cases	(1941) imp. 71.9 exp. 56.5	(1939–40) rev. 45.3 exp. 51.9	(1940) schls., 125; schlrs., 9,324

*Canton and Enderbury Islands, in the Phoenix group, are shared with the U.S.A. under the Anglo-American pact, Aug. 10, 1938.
†New Hebrides adhered to the Fighting French cause of General de Gaulle in 1940.

of 1941, war spread rapidly to the British Pacific islands and mandated territories. The Gilbert and Ellice islands, New Britain, the Solomon islands, the Bismarck archipelago, and New Guinea were raided, attacked and partially occupied by Japan early in 1942.

Heavy counter blows were struck by the United Nations and there was bitter fighting in New Guinea and the Solomons (*see* World War II).

In the Fiji islands, which for purposes of defense came under the South Pacific command as distinct from the S.W. Pacific command, there was an enormous increase in the military and para-military activities by the peoples of all races. The garrison was heavily re-inforced, and compulsory measures were introduced in the defense force, the home guard and the civil defense service. Various boards and committees controlled such aspects of the war effort as imports, exports, foreign exchange, production and marketing, works, transport and communications, rents, and the organization of labour. A man-power board was appointed, and the call for an all-out war effort was strongly emphasized by Major General Sir Philip Mitchell, the new governor and high commissioner for the South Pacific, at his first legislative council on Aug. 1, 1942, and also at the Annual Council of Chiefs on Sept. 16. There were drastic cuts in petrol and oil consumption, and special efforts were made to provide land for food production with the goal of self-sufficiency.

Since the early months of the war, when sugar production and gold mining prospered while the principal industry of Fiji, copra, declined, a reversal had taken place by 1942. The price of the latter commodity had risen from £5 to £15 a ton, and the entire future production of both the Fiji islands and the Tonga islands was already earmarked. The export of bat guano to New Zealand proved successful during 1942.

Legislation following rapid development of the lab department created in 1940 deavoured to raise the stand of living and regulate the ho of work on the various estat while the health services of islands were further increas A new centre at Nausori opened on Sept. 19, 1942; tr elling child welfare clin served the whole Suva pen sula, and further mobile un were being added.

For the first half of 19 revenue amounted to £505,3 and expenditure to £454,8 War taxation realized £26,9 and defense expenditure talled £60,564.

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(L. E. Be.

Pacific Islands, French.

The latest statistics availabl 1942 for this French colony given herewith: area (Society, Tuamotu, Tubuai and Marque isls.), 1,540 sq.mi.; pop. (est. Dec. 31, 1939) 45,000 (whites 3,700). Chief town: Papeete (in Tahiti), cap. 8,460. Gover Commandant (1942): Georges Thierry d'Argenlieu. The Fre Pacific islands adhered to the Free French cause in Sept. 194

Finance.—Local budget (est. 1939) 27,560,000 francs.

Trade.—(1939): imports 80,482,000 francs; exports 63,536, francs. Roads 1937: Tahiti 48 mi.; Raiaeta 19 mi.; shipp (1938) cleared, 162,927 net tons.

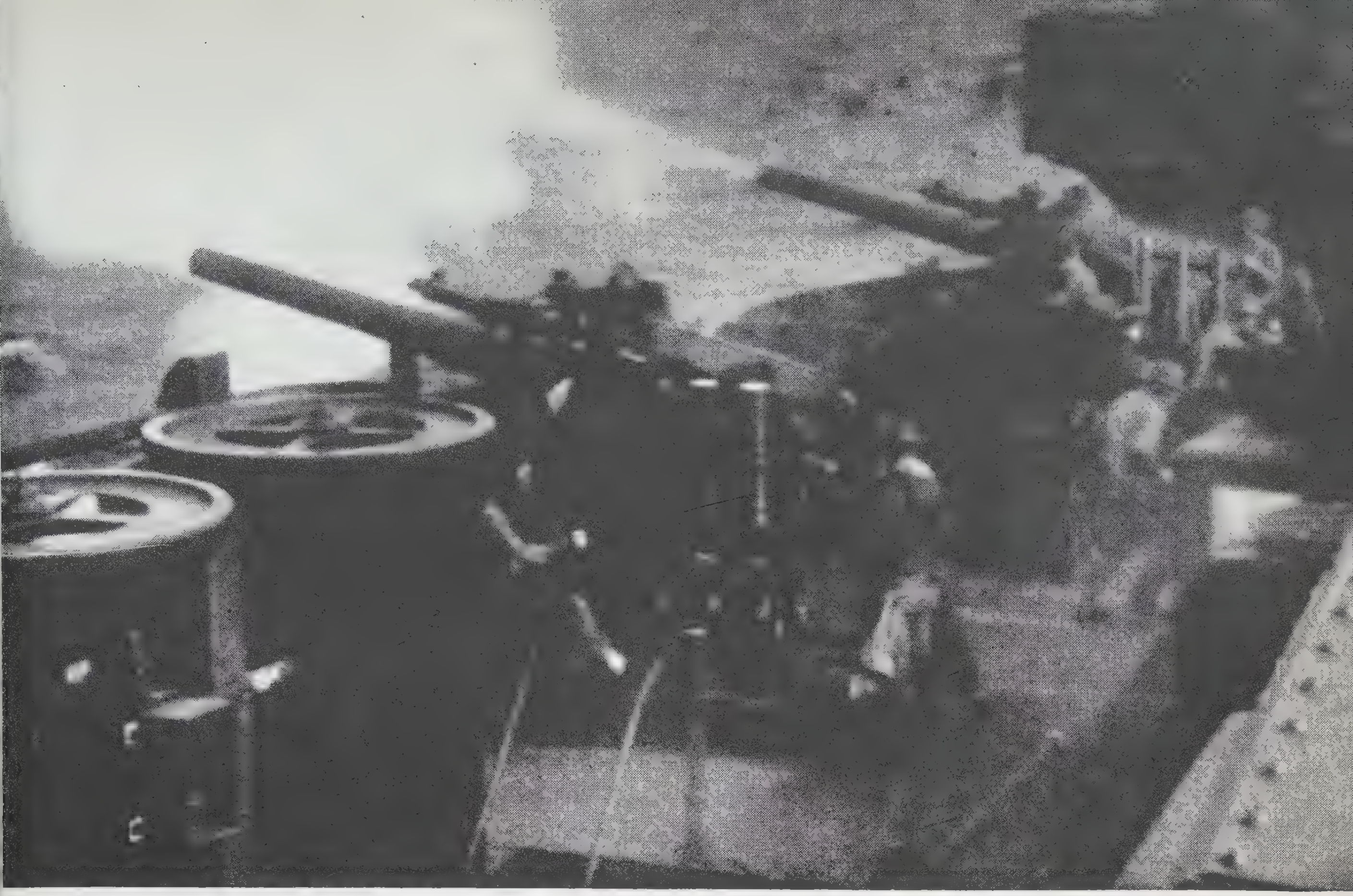
Production.—Export: copra (1939) 23,000 metric tons; na ral phosphates (1940) 173,000 metric tons. (*See* also Fren Colonial Empire.)

Pacific Islands, Mandated.

The former German poss sions in the western Pac comprise part of New Guinea with adjacent archipelagos, W ern Samoa, the Marshall, Caroline, Palau and Ladrone, or M anne islands, and the islet of Nauru. Statistics for these te tories are given in the accompanying table. For capital to and governors of New Guinea, Western Samoa and Nauru,

Mandated Pacific Islands

Territory and Area Square Miles	Population and Status	Principal Products	Imports and Exports (000's omitted)	Revenue an Expenditur (000's omitte
New Guinea, mandated territory (69,700) including Bismarck Archipelago (19,200) and Solomon Is. (4,100)	(1940) native 668,871; European 4,399; Asiatic 2,099. Under mandate of the Commonwealth of Australia	Exports: gold (1940) 7,800 kg. Copra (1938) 74,400 metric tons	(1939–40) imp. £A.1,268 exp. £A.3,674	(1939–40) rev. £A.497 exp. £A.50
Western Samoa (1,133)	(1940) 61,249 (white 410) Under mandate of New Zealand	(Export 1940) copra 5,644 tons; bananas £N.Z. 84,706	(1940) imp. £N.Z.165 exp. £N.Z.222	(1940–41) rev. £N.Z.1 exp. £N.Z.1
Marianne Is., Caroline Is., Palau, and Marshall Is. (811)	(1936) 107,137 (Japanese, 56,496) Under Japanese mandate	cane sugar (1938–39) 70,300 metric tons; phosphates (export 1938) 104,000 metric tons	(1936) imp. 13,866 yen exp. 25,108 yen	(1939) rev. 9,904 y exp. 9,675 y
Nauru (8)	(1940) 3,460 (European 171, Chinese 1,512). Under British mandate, held jointly by Great Britain, New Zealand and Australia, the administrator	natural phosphates (export 1940) 808,400 tons	(1940) imp. £A.192.7 exp. £A.541.2	(1940) rev. £A.27 exp. £A.26



GUN CREWS firing at Japanese bases during the naval raid of Jan. 31, 2, on the Gilbert and Ellice Islands

TISH EMPIRE. After the Japanese entry into the war in 1941, se islands became the scene of hostilities, for which *see* WORLD R II.

cifism.

As was the case in World War I, the so-called historic peace churches—the Society of Friends akers), the Church of the Brethren (Dunkards) and the nnonites—took a leading part in the activities of pacifists in United States, *i.e.,* those persons who on grounds of con- nce refuse to participate in any war. The combined member- of these sects in 1942 was approximately 400,000. Emphasis the right of the individual to follow his own conscience or leading of the Holy Spirit is even more fundamental with n, however, than opposition to war. A considerable number their members of military age accordingly enlisted or sub- ted to military service under the Selective Service act.

he historic peace churches were joined by the Fellowship of onciliation, the leading interdenominational religious pacifist anization, which includes in its membership many leading rchmen of all denominations, the World Peace Commission he Methodist Church, the Church of the Disciples, the Com- tee on Conscientious Objectors of the Federal Council of rches of Christ in America, and the Association of Catholic nscientious Objectors, in establishing the National Service rd for Religious Objectors which was recognized by the ective Service administration and the department of justice the agency representing conscientious objectors. Under the eral auspices of this board the Selective Service administra- n entered into an arrangement whereby the historic peace rches and the Association of Catholic Conscientious Objectors blished Civilian Public Service camps in which men recognized sincere conscientious objectors performed alternative service. estry, soil conservation, reclamation of rural slums and pre- tion and fighting of forest fires were the commonest forms of work. An increasing number of C.O.s were on "detached service" from camp working in hospitals, reform schools, training courses for postwar reconstruction, and various forms of research. The federal government provided camps and camp equipment and tools but the C.O.s received no pay and the entire cost of the administration of the camps and the maintenance of the workers was borne either by the C.O.s themselves or by churches or pacifist organizations. So far as most of these men and groups were concerned, this arrangement was a voluntary one entered into because they desired to give evidence of their willingness to serve the nation in such ways as conscience permitted. At the close of 1942, there were over 5,000 men in the 72 Civilian Public Service camps representing 115 denominations and religious groups. By adding the sum paid for maintenance and wages for these men at soldiers' pay (though many were doing highly expert work) it was computed that they were contributing service at the rate of nearly $6,000,000 per year. In addition to these men on civilian service at least an equal number of C.O.s accepted noncombatant service in the armed forces.

At the close of 1942 more than 300 conscientious objectors were in federal prisons. These included "absolutists" who refused even to register and men who were adjudged not sincere or on technical grounds not entitled to C.O. classification and who refused induction into the army. The total became nearly 800 if members of Jehovah's Witnesses who claimed to be ministers of religion and therefore entitled to complete exemption were included.

There was no way of computing the total number of pacifists in the United States in 1942. In most of the leading Protestant denominations there had, however, been a great increase after World War I. It was estimated that in that war not more than 100 Protestant ministers outside the peace churches maintained an unequivocal pacifist position. During the summer of 1942 more than 1,600 signed a public statement reaffirming their religious pacifism.

The peace churches and religious pacifist groups abhorred sabotage or obstruction of officials, civilians or soldiers in the performance of what they regard as their duty; but insisted upon their own right to proclaim their religious faith and to win converts to it. The government did not interfere with their activities. In the churches mutual respect and friendly relations between nonpacifists and pacifists, for the most part, prevailed.

Very few American pacifists were anarchists, nonresistants of the Tolstoyan type, or isolationists. There was much discussion, therefore, in pacifist circles of peace aims and postwar reconstruction. The great majority believed there must be some form of federal world government along the lines of the American union. They joined with other churchmen in the work of the Commission on the Bases of a Just and Durable Peace of the Federal Council of Churches of Christ in America. Many pacifists, however, believed that continuation of the war would lead to catastrophe and that the United States government should offer to make peace immediately with all peoples prepared to join in establishing a world order based on freedom and equality for all peoples, as the surest way of breaking the hold of totalitarianism in axis lands.

The upsurge of the nonviolent movement for Indian independence under the leadership of Gandhi served as a considerable stimulus to pacifism in the United States, and Gandhi was generally regarded as the world's leading exemplar of the pacifist philosophy and technique.

Except for minor differences, the picture of pacifism, including the treatment by the government, was the same in Great Britain and other English-speaking countries. Except in these lands and a few in Latin America, the rights of conscientious objectors were not recognized though there were small pacifist groups, Quakers and others, in nearly all countries. (*See* also RELIGION.)

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Packard, Frank Lucius (1877–1942), Canadian-U.S. author, was born Feb. 2 in Montreal, Que., of U.S. parents. He was graduated from McGill university in 1897 and then worked as an engineer in the United States. In 1917, he wrote an adventure thriller, *The Adventures of Jimmie Dale,* which proved so popular that he continued the series. The Jimmie Dale books sold about 3,000,000 copies and were widely translated. Another of his best-sellers, *The Miracle Man,* was produced on the stage and in motion pictures. Packard died in Lachine, Que., Feb. 17.

Padilla, Ezequiel (1890–), Mexican statesman, was born Dec. 31 in Coyuca de Catalan, Mexico. He studied law in Mexico and abroad and was law professor at the University of Mexico, 1926. He served three terms as federal deputy and was twice a senator. He was also attorney general of the republic, 1928, secretary of public education, 1929, and minister to Hungary and Italy, 1930–32. When Avila Camacho was elected president in 1940, he made Padilla his foreign minister. A skilled diplomat, he was frankly anti-axis and made a strong appeal for hemispheric solidarity in a speech before the Mexican senate in March 1941. He denounced Hitler's invasion of Russia and took vigorous measures to eliminate axis influence in Mexico by ousting diplomats, jailing potential fifth columnists, controlling the movements of axis nationals and exchanging information with the United States on security measures. Four hours after the Japanese attack on Pearl Harbor, Mexico severed diplomatic relations with Tokyo. After the axis po ignored Padilla's protest against the sinking of a Mexican by a U-boat, the Mexican chamber of deputies declared wa Germany, Italy and Japan on May 29, 1942.

Painting. The younger generation of artists was seriou drained in 1942 in the U.S. by service in the ar forces. Many also of the middle generations temporarily ab doned active production for war work. Much of the patronag private as well as governmental—was diverted to other cau Federal art projects and WPA undertakings were obviously of the question. Nevertheless, the new world-outlook nece tated by the nature of the war and the U.S. position in it brou a vital, contributory influence to bear. Regionalism, which already been losing emphasis in face of the immigration of cr tive workers from Europe, in 1942 took a place of defini negligible import. The interest in western hemisphere art gra ally lost its exaggerated, propagandist highlights, to retai merited, if considerably modified, esteem. European artists had, at first, found considerable difficulty in acclimatizing th selves, began to produce fresh and even provocative work an the same time to attract public attention and that of the youn American painters to these new aspects of their pictorial resea

Another development evident in American painting in 1 somewhat similar in character to growing recognition of the va of international research, was a tendency to break down barr within the nation itself. We find the work of painters on Pacific coast, in the southwest and in the Gulf states no lon unfamiliar to their fellow artists on the eastern seaboard. marked diminution of provincial bias was evident in large me politan centres such as Washington, Chicago and New Y This was undoubtedly one of the major consequences of rec experiments in government—particularly federal patronage. other was the progressive decay of racial lines and the grow liberalism in the recognition of Negro painters which marked year 1942, especially in New York, where the important Ne exhibitions were held, and a major prize won by a Negro ar in the *Artists for Victory* exhibition at the Metropolitan Muse of Art.

Probably the major public gesture of encouragement to Am ican painting in 1942 was the vast *Artists for Victory* exhibit held at the Metropolitan Museum of Art in New York. $53, in purchase prizes were distributed: between 12,000 and 14, paintings, prints and sculptures were submitted. It was one the largest reviews of modern art ever held in the U.S. while there were few newcomers among the winners, the f distribution of prizes further illustrated the growing liberality initial approach, for work of such "abstractionists" as Lyo Feininger, Charles Howard and Kurt Roesch shared the hono with a regionalist such as John Steuart Curry, with fantas such as Atherton and Peter Blume and an expressionist such Jack Levine.

Among the older artists, Max Weber and John Marin b continued to produce work of even quality—each in his pers vein. Marin in his oils showed a further gain in the mastery his medium. His new seascapes betrayed no compromise in pression and apparent spontaneity; yet a definite increase compositional strength and in clarity was recognizable with an dent enrichment of local detail. And while his greater inte had clearly gone into the perfection of his expression in oils, water-colours still offered his characteristic freshness and in viduality of idiom. Weber, in his 1942 exhibited works, offe no novelty in subject matter or treatment; yet he remained tainly the leading American painter in his sensitive handling the brush and his harmonic inter-play of surface-quality

LKS TOPOLSKI, Polish refugee artist, at work in his London studio, on a h of Churchill

AR KOKOSCHKA, Czech artist whose works had been branded as degen- by the nazis in 1939, finishing a still-life of flowers in his studio in London

LUCETTE HEUSEUX, one of Belgium's leading painters, escaped to t Britain after the Belgian surrender in 1940. She is shown finishing a at her small studio in Hampstead

A. VAN ANROOY, official war artist of the Netherlands, was generally considered the dean of United Nations artists-in-exile in Great Britain in 1942

JEAN OBERLE, Free French artist in London. London by 1942 had become the mecca of refugee artists from the continent

space and volume suggestion.

The painter who enjoyed the widest and most consistent re nition of the prize-juries during 1942 was Ivan Le Lorraine bright of Chicago. His large canvas, "That Which I Should H Done I Did Not Do," which was given the first medal awar the Metropolitan Museum of Art *Artists for Victory*, had ready won two earlier prizes during 1942 as well as the Ha Silver medal $500 award at the Chicago Art institute annual hibition in the autumn of 1941. Although Albright was a na American trained entirely in the United States, his work off a distinct resemblance to certain Central European "magic-r ists" of the 1920s, such as Otto Dix, in its expressionist emph on a precise rendering of emotive representational de Strangely enough, another painter who enjoyed recognition ing the year second only to that of Albright—Marsden Hartle also offered a clear suggestion of the Germanic influences. while Albright's "magic-realism" recalls post-1918 German w Hartley appears to have inclined rather toward the Die Bri group in his sympathies. And undoubtedly in Hartley's case, like Albright's, there has been a direct influence fostered by extended visit to Germany when the Die Brücke movement enjoying its fullest attention.

But while the year 1942 was particularly kind to Hartley Albright, both had already considerable recognition in the p Milton Avery, on the other hand, with his 1942 work, may said to have come into his own for the first time. Among fellow painters and a certain small group of critics, Avery's w had been admired for its sensibility and delicate colour-relati But the characteristic understatement of Avery's expression apparently prevented him from catching the public's eye, in s of regular appearances both in group exhibitions and in one- shows. In 1942, however, the clarity of structural organiza and the fresh quality of his palette, evident in a group of la paintings exhibited at the Valentine gallery, seemed to ca wider attention to the subtleties of his expression, and for first time Avery was accorded a recognition long his due.

Among the portraitists, Franklin Watkins' work continued reveal the sitter's personality with an incisive brilliance, and the same time make no compromise in pictorial organizat Portraits such as "Thomas Raeburn White," "R. Sturgis In soll," or "Miss Rosemary Thompson" preserve all the interes human documents without sacrificing any of their pictorial tegrity.

Three other well known younger men—Henry Varnum P Yasuo Kuniyoshi and Julian Levi—continued to produce w comparable with their best of former years. In fact, cert water-colours and oil sketches by Poor of the seacoast of C fornia, near Monterey, surpassed anything he had hitherto d both in spontaneity and freshness of formal vision; Kuniyos retrospective exhibition of the spring showed his right to be garded as one of the most individual, most sensitive and su technicians among American artists; and Julian Levi's portr and his space treatment in landscapes merited an equally h regard for his work.

In quite a different vein, Burchfield and Hopper also ma tained the level of their previous achievement. Burchfield's cent work showed a freshening of colour and a lightening of melodramatic, haunted effects; while in Hopper's, an ad sharpness of contour and an increased coldness of illuminat gave a new, sardonic eeriness to his atmospheric treatment.

Of a still younger group, the most noticed was perhaps J

AN ORDER TO PAINT only war subjects after Dec. 7, 1941, for hangin army camps, was issued to artists of the Federal Art project in Los Ang Calif. Hundreds of requests were received and filled by the artists in 19 Douglas MacArthur was the favourite subject

/ASION," one of a series of paintings by Thomas Hart Benton, inspired by attack on Pearl Harbor. The paintings were criticized in some quarters ng 1942 as too gruesome in their presentation of axis horrors

ine, whose "String Quartet" was given the first purchase prize he *Artists for Victory* exhibition. Among the abstract paint- I. Rice Pereira's work showed a steady advance in refine- t of her detail and in the strength of her structural organiza- . Morris Graves, who attracted so much attention in 1941 his mystical fantasies, disclosed an ability to blend this e of work with a solid structural emphasis derived from an oration of essentially formal interests.

ananiah Harari, formerly best known as an "abstract" painter distinct individuality, showed himself during 1942 an even e stimulating creator of fantasies in the general vein of sur- ist collage, an apposition of surprising representational elements contrasting textures. Another gifted fantasist in the collage l was Georgy Kepes, a Hungarian, former instructor at the haus in Dessau and in 1942 residing in Chicago. Quirt and aham Rattner, both prolific but uneven workers, continued to duce lively compositions; Guglielmo preserved a definite in- duality in his crisp, chilly dream concepts; while Joseph Cor- 's objects, on a vague hinterland of collage, remained prob- the most consistently individual native, surrealist expressions.

the abstract field, Criss and Stuart Davis held the forefront he field of brilliant colour composition, the former having mitted one of the most striking non-prize winners to the ropolitan museum exhibition. Of those who exhibited an- lly with the American Abstract Artists, Fritz Glarner, a Swiss king somewhat after the manner of Vordemberghe-Gildewart, ained with I. Rice Pereira the most stimulating. Balcomb ene, Slobodkina, Bolotowsky and Pollock during the year also wed interesting progress.

f the European artists in the United States, the most strik- new achievements were possibly those of Mondrian, Léger, st and Lipchitz. Mondrian in his latest work completely ndoned the dominant black structure lines so long character- of his work. A harmonic relationship of right-angle forms flat colour-areas still made the basis of his expression. The omatic elements were now restricted to primary colours and s on a white ground. Nevertheless, a greater freedom in the thms of their disposition brought his new pictures in general it much closer to his style of 1917 and 1918 than to more nt painting. A youthful freshness joined his scrupulous crafts- ship, to place his 1942 canvases among his finest work.

éger, likewise, seemed to have found a new youthfulness and ur in a series of large canvases painted in the late spring. st, in his exhibition and in a group showing of surrealist work, tinued his extremely personal marriage of cubist texture in- sts with surrealist portmanteau images; while Lipchitz in his line-and-wash studies and bronzes, conveyed the most complete sense of ease and assurance in his new surroundings.

Among the other European leaders, Chagall, Masson and Tanguy showed a slowly growing confidence, while such Hispanic Americans as Malta and Tamayo undoubtedly produced their most striking work during 1942. (*See* also SCULPTURE.)

(J. J. Sw.)

Paints and Varnishes.

Indications were that United States sales of paints in 1942 would be from 5% to 10% under the record year of 1941. This loss was shared approximately equally by industrial and trade sales. Production of protective coatings required for the war effort, of course, received first consideration. Specifications covering many new items were developed. Of particular interest were materials such as flameproofing products for military fabrics, emulsifiable camouflage paints and mildew-resisting compounds for use on many types of military equipment. Many paints combined colouration, flame retardation, protection, camouflage and mildew resistance in one product.

Various raw material restrictions required for effective prosecution of the war affected the formulation of military paints, as well as civilian paints. The most critical materials, such as imported drying oils and synthetic resins of phthalic anhydride or phenolic type, were most seriously curtailed and, in many cases, were available only for certain types of military needs.

The higher grade solvents, such as coal tar and aromatic petroleum hydrocarbons, were definitely short of demand. Lacquer solvents, either ester or alcohol type, were similarly affected. New chemical types of lacquer solvents called "nitroparaffins" were brought into commercial production and had high promise due to their good solvency and mild odour.

The year 1942 saw little change in the way of pigment problems. Availability, in general, was good. Anticipated shortages of titanium oxide did not materialize due to minor requirements of this material in military equipment. Development of chrome ore deposits in the U.S. brought about complete relaxation of all restriction orders on the important chrome pigments, such as orange and yellow.

In the field of civilian goods, emulsion paints continued to gain in popularity due perhaps to their versatility and ease of application. In general, household varnishes and enamels became slower drying through various restriction orders. Considerable discussion was held within the industry with regard to methods of conserving linseed oil in house paints due to anticipated shortages. A few new governmental exterior paint specifications appeared, calling for oil conservation. In general, it was felt these wartime paints would have excellent durability.

One of the major problems faced by the industry during 1942 was that of containers. The use of metal packages was curtailed with consequent greater increase in the use of glass bottles and the part fibre container. (A. B. Ho.)

Pakistan: *see* INDIA.

Palaeontology.

In the United States the appearance of volume II on the Proboscidae by Henry Fairfield Osborn completed this monumental work which gives the results of over a quarter of a century of labour on the part of the author. It deals with the Stegodontoidea and Elephantoidea. In early chapters it lists much factual data and gives the author's opinions on morphologic terminology, philosophic concepts as well as a discussion of the affinities and migration of the Proboscidae. The bulk of the text is devoted to an unusually complete detailed treatment of the group arranged systematically. The volume is rich in illustrative material. Richard S. Lull and Nelda E. Wright published a monographic study on the hadrosaurian dinosaurs of North America. Based on all known specimens it enabled them to describe the complete osteology, followed by a taxonomic revision of the known genera and species.

C. L. Camp described two new genera of mosasaurian reptiles from the Upper Cretaceous of California. These specimens are noteworthy as being the first representatives of this group to be found in the state. Robert W. Wilson described a fauna found in Rampart cave in Arizona. In this dry cave bones and dung of the extinct sloth *Nothrotherium* were found intermingled with the skeletal remains of living animals thus apparently indicating their post-Pleistocene age. A short paper by Richard S. Lull described new fossil tracks from the Permian of Wyoming. Bryan Patterson published a paper characterizing a new genus and species of giant bird from the Oligocene deposits of Patagonia. In Norway, Carl Wyman and Ivar Hessland published a paper on recently discovered remains of the Garfowl (*Alca impennis L.*). In Scotland Dr. T. Westold described the skeletal structure of the two Permian fishes *Dorypterus* and *Lekanichthys*.

In invertebrate palaeontology, Lloyd W. Stephenson published a monographic study of the larger fossils comprising the fauna of the Navarro group of Texas. The classification, distribution and range of these fossils are discussed and all of the forms are systematically described. In all about 296 varieties and species are described as new.

Doctors Edward Oscar Ulrich, August F. Foerste, A. K. Miller and W. N. Furnish issued a joint report on the Nautilicones of the Ozarkian and Canadian faunas of the United States. Altogether 75 species belonging to 17 genera are systematically discussed, of which 7 genera and 40 species are described as new.

A paper by Charles E. Resser names nearly 200 new species of Upper Cambrian trilobites. It is the purpose of this paper to improve the concept of known genera and to supply species for more exact stratigraphic work.

In palaeobotany the publication by R. Thiessen and G. C. Sprunk of "Coal Paleobotany," records the progress made in the study of Carboniferous floras in the United States. A paper by H. P. Hansen gives the results of studies by pollen analyses of Pleistocene and recent peat deposits in Oregon and Washington. A paper by H. D. MacGinitie describes an Eocene flora from Chalk Bluffs, Calif. Erling Dorf published a review of the important flora of the Lance formation at the type locality.

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Palestine. Palestine lies on the western edge of Asia and is bounded on the west by the Mediterranean, on the southwest by Egypt, on the south by the gulf of 'Aqaba, on the east by Trans-Jordan, on the northeast by Syria and on the north by Lebanon. Area 10,100 sq.mi.; pop. (est. Dec. 31, 1940) 1,545,000.

Chief towns: (pop. est. 1939): Jerusalem (cap. 129,800); Haifa (104,800); Jaffa (77,400); Tel-Aviv (130,300). Hig Commissioner (1942): Sir H. A. MacMichael, K.C.M.G., D.S.O languages: English, Arabic, Hebrew; religions: (1939) Mohammedan 848,933; Jewish 424,373; Christian 114,624.

History.—The preoccupations of the government and people Palestine in 1942 were symbolized by the appointment of a controller of man power and a food controller. Enrolments in the British armed forces and women's services amounted on July to just over 20,000—nearly 14,000 Jews and over 6,000 Arab There were also 20,000 Jews in various formations of auxiliar police. The responsible Jewish organizations worked both for i creased enlistment in existing conditions and for the acceptance by the British government of a separate Jewish fighting forc In June they appealed to all members of the community betwee the ages of 20 and 30, if they were unmarried or married an childless, to volunteer for combatant or women's service; an considerable social pressure, amounting at times to dismissal fro employment, was brought to bear on the unwilling. On Aug. 6 th secretary of state for war made an announcement which partial satisfied the Zionist demand for a distinct Jewish force; a Pale tine regiment, consisting of separate Jewish and Arab infantr battalions, would be created at once for service in the Midd East. The numbers in the Jewish battalions, however, would fa considerably short of the 32,000 combatants which the Jewis Agency proclaimed its ability to raise, still more of the 200,00 Jews from Palestine and elsewhere promised to the United N tions by the American Committee for a Jewish Army.

Palestine's numerous small factories and workshops, mostly i Jewish ownership, produced increasing quantities of miscellaneo manufactured goods for the army. Agricultural production, apa from citriculture, also increased, and unemployment was pract cally eliminated. The citrus farmers, whose 1941–42 crop w estimated at the low figure of 6,000,000 cases and who were ab to export only small quantities to neighbouring countries, we again given relief by the government. Loans for the 1942–43 se son were promised up to a total of £P.650,000, and it was stat that the government was trying to devise for subsequent years form of assistance which would not add to the farmers' burd of debt.

The possibility of food shortage, after the poor Middle Easte harvests of 1941, gave rise to anxiety in the early months of th year, and the cost of living continued to rise, more steeply in th Arab than in the Jewish districts. Substantial quantities of gra were imported on government account to close the gap betwe the harvests of 1941 and 1942. The latter was unusually abu dant, and the government took steps to ensure that it should n slip into the hands of hoarders and speculators, by assuming monopoly of the purchase from cultivators of wheat, barley, maiz durra and sesame, and by requisitioning the whole of these cro above the needs of the agricultural population for food and see The prices of grain and flour were also controlled, the latter bei kept down by a subsidy. Sugar and certain other commoditi were rationed.

The interruption of communications over an increasingly wi area made Jewish immigration into Palestine more and more d ficult. The number of permits issued since the *White Paper* 1939 exceeded the number of arrivals, but small numbers of ce tificates were still granted, amounting to 3,750 between Oct. 1941 and Sept. 30, 1942. (The dependents of certificate-holde would be additional to this figure.) The government continued apply its declared policy against unauthorized immigration, whi also declined in volume. On Feb. 24 the "Struma," a sm vessel which had left Constanza with 769 Jewish refugees board, was sunk in the Black Sea after being turned back by t Turkish authorities on the Palestine government's intimation th

:s passengers would not be allowed to land. There were only two
urvivors, and the episode caused intense indignation among the
ews of Palestine and elsewhere. Jewish bodies in the United
tates appealed to the State Department to ask the British gov-
rnment to modify its immigration policy in Palestine.

There was little political activity in the Arab community, but
nternal Zionist politics were lively, and dissensions in the world
adership of the movement were reported from the United States.
ı Palestine, the first elections since 1933 to a conference of the
eneral Federation of Jewish Labour (Histadruth) showed that,
though the Labour party retained its dominant position, one of
ie left-wing organizations (Hashomer Hatzair) had increased its
rength. Dr. Judah Magnes aroused vehement opposition by an
ticle in which he advocated the incorporation of a bi-national
alestine in a Semitic federation and attacked 'maximalist aspi-
tions' for either a Jewish or an Arab state. He subsequently
ganized a movement, known as Ichud (Union), to press this
oint of view. At the other extreme, a small terroristic group
hich had seceded from the illegal military formation of the Re-
sionists committed a series of outrages against the police. These
ts, which were deplored by the responsible Jewish leaders, caused
x deaths. The leader of the gang, Abraham Stern, was captured
the police and killed while trying to escape. (H. By.)

Education.—(1939–40): Arab public system maintained by government,
2 schools (12 with secondary sections), 54,367 scholars; Moslem schools,
ivate 178 (2 with secondary sections) with 14,204 scholars; Jewish public
ools (1940) 419 (including 6 training colleges and 18 secondary, 5 trade
d vocational schools) with 56,900 scholars; Jewish private schools 320
ıcluding 22 secondary schools and 2 training colleges) with 25,700
olars; Christian schools 195 with 25,274 scholars; Hebrew university,
rusalem, 130 teachers, 1,106 students.

Banking and Finance.—Revenue and expenditure (actual 1940–41) revenue
.8,441,899; expenditure £P.7,633,661; (1941–42) revenue est. £P.7,450,-
5; expenditure est. £P.9,105,532; public debt (March 31, 1941) £P.4,-
5,000; notes in circulation (April 30, 1942) £P.14,900,000; exchange
te £P.1=£1 sterling=approx. $4.03 in 1942.

Trade and Communication.—Overseas trade (merchandise): (1941) im-
rts £P.12,038,000; exports £P.1,362,000; (1940) imports £P.11,035,454;
ports, domestic £P.2,114,584; re-exports £P.176,195. Communications
d transport: roads (1939) all weather 1,451 mi.; seasonable 985 mi.;
ilways (1940) broad gauge 333 mi.; narrow (Hedjaz Rly.) 271 mi.;
ways (1938): passengers 600, mail 86.9 tons; shipping (1939) entered
57 vessels; 4,370,085 net tons (Dec. 31, 1940). Motor vehicles licensed:
62 private cars, 1,198 public cars, 936 buses; 3,180 trucks and vans,
31 cycles; 20 tractors; wireless receiving set licenses (1938) 35,708;
ephone subscribers (1940), 10,716.

Agriculture and Minerals.—Production 1939 (in metric tons): potash (ex-
rts) £P.381,162; citrus fruits (exports) £P.3,807,570; barley (1940)
3,000; wheat (1940) 136,000; olive oil (1940) 3,600; wine (1938)
,000 hectolitres; maize 6,200; tobacco (1940) 1,000; potatoes 10,400;
amum 3,800.

anama. The most southerly Central American republic. It
is bisected by the Canal Zone, leased to the United
ates. Area, 32,933 sq.mi. Pop. (census of 1940): 631,637 ex-
usive of the Canal Zone (1940 census: 51,827). Of this num-
r, 64,960 were Indians. Capital, Panama city (111,897); other
ies are: Colón (44,395); David (9,222); Chitré (4,790). Presi-
nt in 1942: Dr. Ricardo Adolfo de la Guardia.

History.—The administration of Pres. de la Guardia, which
d come into power late in 1941 on a program friendly to the
nited States and the allies, entered actively into the work of
mination of axis activity in an area so vital to American de-
nse. Civilian defense organizations of all types were established,
d the republic planned the formation of an army of at least
000 men. An agreement was worked out in May 1942 which
rned over to the United States land needed for military projects,
d which granted to Panama certain railroad lands, waterworks,
d sewage systems, also the liquidation of an indebtedness of
,700,000, the Panama share in the cost of construction of the
o Hato-Chorrera military highway. Japanese merchants were
ohibited from doing business in the republic, and travel by
ens was rigidly supervised. Spain's chargé d'affaires, Count
rlos de Bailen, was expelled.

U.S. "BUSHMASTER" jungle troops constructing a camp in Panama in 1942

Panama, with imports of tremendous importance in her economy, felt the effects of shortages in shipping facilities early in 1942. Government control of tires and autos took place in February, with typewriter stocks and other items taken over in succeeding months. For a week in Aug. 1942 no bread was available, and flour had to be shipped in from the Canal Zone. Scarcity in other articles resulted in rigid price control. Inter-American projects for the production of strategic materials included plantings of abacá and rubber in the republic.

Education.—The school system of the republic included more than 600 primary schools and a number of secondary schools. Expenditures for 1941 were $2,513,000.

Defense.—The peacetime national police force of 3,000 men was being rapidly augmented in 1942 toward a goal of an army of 5,000, supplemented by a volunteer national militia.

Finance.—The monetary unit is the balboa, in value equal to the U.S. dollar. In 1941, government revenue amounted to $17,621,000; expenditures were $18,146,000. A bond issue of $500,000 was authorized during 1942.

Trade.—Figures at hand for trade show, for 1941, exports: $4,283,145; imports: $32,507,755. The United States normally takes 90–95% of Panama's exports, and supplied (1941) 80% of imports. Main items of export: bananas, cacao beans, beef, coconuts, gold and forest products. Imports are largely machinery and vehicles, other manufactured goods and foodstuffs. Tourist trade, always important in Panama, was eliminated by the war.

Communication.—Panama had 257 mi. of railway in 1942,

CHILDREN playing outside one of the air-raid shelters for civilian inhabitants constructed in the Panama Canal Zone in 1942 and at least 750 mi. of highway, including the transisthmian defense road, reported near completion during the year. The U.S. allotted $3,675,000 for defense highway plans in Panama. One new airline service with Costa Rica was established in 1942. (*See* also CENTRAL AMERICA; HISPANIC AMERICA AND WORLD WAR II.)

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Pan-American Highway: *see* ROADS AND HIGHWAYS: *Inter-American Highway.*

Pan American Union.

The Pan American union is an international organization created in 1890 at the First International Conference of American States and maintained by the 21 American republics to promote peace, commerce and friendship among the republics. The union is supported by annual contributions from member countries in amounts proportional to population. It is controlled by a governing board composed of the secretary of state of the United States, who is chairman, and the diplomatic representatives in Washington of the other republics. Headquarters: Washington, D.C.; director general in 1942, Dr. L. S. Rowe; assistant director, Dr. Pedro de Alba.

The Pan American union serves as the permanent secretariat of the International Conferences of American States and organizes many of the technical inter-American conferences convened to consider specific subjects. The union is also a centre of information on the American republics and on inter-American relations.

During 1942, in addition to its regular activities, the Pan American union was especially active in dealing with the problems arising out of the extension of World War II to the American continent. At the beginning of the year, and on the initiative of the governments of Chile and the United States, the governing board of the Pan American union convened the third meeting of ministers of foreign affairs of the American republics which met at Rio de Janeiro Jan. 15–28, 1942. That conference recommended the severance of diplomatic and commercial relations by the American republics with the aggressor nations and adopted a series of other conclusions designed to promote the security of the western hemisphere.

Pursuant to a recommendation of the Rio de Janeiro meeting, the Pan American union organized the Inter-American Defense board, which held its first meeting in Washington on March 30, 1942. Military, naval and aviation experts of the several republics comprised the board.

An Emergency Advisory Committee for Political Defense composed of seven representatives designated by the governments of Argentina, Brazil, Chile, Mexico, the United States, Uruguay and Venezuela was also set up by the governing board of the Pan American union in April, and established its headquarters in Montevideo. This committee was organized to control subversive activities in the American republics. Closely related to this committee was the Inter-American Conference of Police and Judicial authorities which met at Buenos Aires from May 27 to June 9, 1942.

The Inter-American Financial and Economic Advisory committee organized at the Pan American union in 1939 to consider the economic and financial consequences of the war, set up during 1942 an Inter-American Maritime Technical committee to carry into effect a plan for the use of immobilized ships lying in the ports of the American republics. The committee al organized a special Conference on Systems of Financial and Ec nomic Control to regulate economic intercourse between the wes ern hemisphere and the aggressor nations, which met at the P American union from June 30 to July 10, 1942.

In Oct. 1942 the Pan American union received from the Inte American Juridical committee of Rio de Janeiro a Prelimina Study on Post War Problems, copies of which were forwarded the member states for observation and comment. An Executi Committee on Post War Problems was also appointed by th governing board. (*See* HISPANIC AMERICA AND WORLD WAR II)

(L. S. Ro).

Paper and Pulp Industry.

In 1942 the paper and pu industry found itself in th middle of a war economy. With steel, tin, aluminum and oth materials diverted almost entirely to armaments many produc heretofore made of these materials found paper and paperboa as substitutes. In the packaging of foods alone the requiremen of paper products had to meet tremendous demands. On th other hand the industry had to meet large losses through pap curtailment of other industries such as the automobile, refriger tor, radio, etc. whose reduced requirements were reflected paper and paperboard production. In all branches of busine great accomplishments were made in reducing paper requir ments.

In Nov. 1942 the industry in the east found itself cut off fro most of the wood pulp production of the Pacific coast becau of the pulpwood, labour and transportation problems of th region. Three mills were closed completely and the products the others were diverted to nitrocellulose, rayon and lend-lea commitments. Rayon pulp requirements increased from 72,00

Table I.—*United States Paper Production Capacity for 1942*

Kind of paper	Capacity*
Newsprint	1,080,000
Groundwood	700,000
Book**	2,105,300
Writing	758,000
Cover	30,000
Text	16,200
Sulphite and other wrapping	1,250,000
Kraft wrapping	1,700,000
Tissue	893,000
Paperboard	8,650,000
Building	938,000
All other	260,000
Total	18,380,500

*Including idle mills and equipment (short tons).
**Including coating raw stock and machine-coated papers.

Table II.—*United States Paper Production, 1938-41*
In Short Tons (1938–40 U.S. Census) (1941 A.P.P.A.)

	1938	1939	1940	1941
Newsprint	832,331	954,259	1,056,304	1,058,00
Book papers	1,336,814	1,534,591	1,655,423	2,020,00
Paperboard	5,103,767	6,104,968	6,449,548	8,020,00
Wrapping	1,865,856	2,238,993	2,500,818	2,860,00
Writing	481,719	594,594	599,452	735,00
Cover	20,216	19,401	26,944	28,00
Tissue	548,943	665,723	761,712	870,00
Absorbent	126,320	121,717	129,410	154,00
Building	570,454	659,090	682,460	853,00
All other	494,394	625,306	621,638	82,00
Total—all grades	11,380,814	13,509,642	14,483,709	17,280,00

Table III.—*United States Production and Consumption of Paper, Wood Pulp, and Pulpwood*

Year	Paper (Short tons)		Wood pulp (Short tons)		Consumption of Pulpwood (Cords)		
	Production	Consumption	Production	Consumption	Domestic	Imported	Total
1899	2,167,593	2,158,000	1,179,525	1,216,254	1,617,093	369,217	1,986,310
1909	4,216,708	4,224,000	2,495,523	2,856,593	3,207,653	793,954	4,001,607
1920	7,334,614	7,846,827	3,821,704	4,696,035	5,014,513	1,099,559	6,114,072
1925	9,182,204	10,590,000	3,962,217	5,590,304	5,005,445	1,088,376	6,093,821
1930	10,169,140	12,314,819	4,630,308	6,463,185	6,089,852	1,105,672	7,195,524
1935	10,506,195	12,490,886	4,944,226	6,877,869	6,590,942	1,037,332	7,628,274
1940	14,483,709	16,620,632	8,851,740	9,724,643	12,564,180	1,435,820	13,742,958
1941	17,280,000	19,768,325	9,978,400	10,801,223	15,400,000	1,292,640	16,692,640

SERIOUS PAPER SHORTAGE occurred in the U.S. during 1942. Partially onsible for the adequate supply were the waste-paper salvage campaigns ucted by U.S. school children

s in 1930 to 287,500 tons in 1941. Nitrocellulose as an outlet a new and large user of wood pulp, it having previously n made from cotton. Because of steel and other priorities new mills were built in 1942.

Canada.—In 1941 the Canadian industry surpassed the record hade in 1940. One hundred six mills operated in 1941, an in- ase of three over 1940. Production was increased in all nches of the industry. One newsprint mill was closed in 1942 onserve on power and labour.

United Kingdom.—No statistics were available to show paper duction in Great Britain after the war began. Having depended largely on Scandinavian mills for raw materials, considerable adjustment was necessary in operations since only a limited amount of pulp was available from America. Straw and old papers became the major raw materials. There was a critical shortage of rosin and esparto. The government controls eliminated most unessential uses for papers and Great Britain learned how to get along with the quality and quantity of papers produced.

(R. G. M.)

Table IV.—*U.S. Production and Consumption of Paperboard and Paper*

Year	U.S. population	Production—short tons		Per capita consumption—pounds	
		Paperboard	Paper	Paperboard	Paper
4	82,601,384	559,700	2,546,900	13.6	61.7
9	90,691,354	883,100	3,238,500	19.5	71.3
4	97,927,516	1,291,800	3,860,900	26.4	78.8
9	105,003,065	1,867,100	4,099,000	35.5	78.1
5	114,867,141	3,286,600	5,895,600	55.5	102.7
0	123,090,000	4,060,700	6,108,400	65.9	99.4
5	127,521,000	4,695,900	5,783,200	73.6	90.7
0	131,669,275	6,550,000	7,822,000	99.6	118.9

Table V.—*U.S. Wood Pulp Production (Short tons)*

ar	Unbleached sulphite	Bleached sulphite	Total sulphate	Groundwood	Soda	All others	Total
5	790,510	612,576	409,768	1,612,019	472,647	64,697	3,962,217
0	815,897	751,166	949,513	1,560,221	474,230	79,281	4,630,308
5	634,947	944,620	1,467,749	1,355,819	485,162	144,002	5,032,299
8	601,855	1,004,621	2,443,057	1,333,308	394,307	155,418	5,933,560
9	729,203	1,217,249	2,962,657	1,444,875	441,565	357,929	6,993,334
0	990,668	1,601,016	3,725,135	1,762,821	548,047	164,940	8,851,740
1	1,193,700	1,703,300	4,387,837	1,867,000	609,300	217,263	9,978,400

Table VI.—*Cellulose Consumption by the U.S. Rayon Industry (Short tons)*

Year	Total pulp	Wood pulp		Linters pulp		Raw cotton linters Bales
		Tons	%	Tons	%	
1930	72,000	45,000	62	27,000	38	115,000
1935	137,000	86,000	63	51,000	37	218,000
1939	194,500	145,000	75	53,000	25	211,000
1940	238,000	178,000	75	60,000	25	256,000
1941	287,500	214,500	75	73,000	25	324,000

Table VII.—*Canadian Paper Production (Short tons)*

Kind	1940	1941
Newsprint	3,503,801	3,510,733
Book and writing paper	102,696	117,444
Wrapping paper	139,716	162,581
Paperboard	500,094	652,314
Tissue	34,054	35,725
Other paper	39,053	42,344
Total	4,319,414	4,530,141

Table VIII.—*Canadian Wood Pulp Production and Exports*

	Production		Exports	
	1940	1941	1940	1941
Groundwood	3,305,484	3,494,922	236,609	290,790
Sulphite bleached	543,987	590,812	496,558	540,312
Sulphite unbleached	936,558	1,073,704	352,562	466,122
Sulphate	371,569	426,743	179,835	211,287
Screenings, chemical	42,741	48,270	19,426	25,777
Screenings, mechanical	62,725	55,363	20,878	21,993
All other pulp	27,698	31,033	22,765	26,384
Total	5,290,762	5,720,847	1,328,633	1,582,666

Table IX.—*World Production of Chemical Pulp*

1938 (thousands of short tons)

United States	4,596	Estonia	87
Sweden	2,620	Lithuania	60
Finland	1,621	Rumania	52
Germany	1,469	Switzerland	50
Canada	1,147	Netherlands	46
Japan	643	Italy	45
U.S.S.R.	600	Newfoundland	41
Norway	502	Latvia	32
Austria	300	Yugoslavia	23
Czechoslovakia	280	Great Britain	16
France	139	Mexico	3
Poland	120		
		Total	14,492

Papua: *see* BRITISH EMPIRE; PACIFIC ISLANDS, BRITISH.

Paraguay. An inland republic in southern South America. Area, 154,165 sq.mi.; pop. (1938 official estimate: 954,848) approximately 1,000,000 in 1942. Capital: Asunción (104,819). Other important cities (with est. pop.) are: Villarrica (36,000); Concepción (11,000); Encarnación (10,000); Paraguarí (10,000). President in 1942: Gen. Higinio Morínigo.

History.—Political discord and uncertainty, accompanied by ironclad censorship and rigorous repression, marked the year 1942 in Paraguay. General Morínigo and the army group which had been his support since his rise to power in 1940, were faced with several abortive revolts. In May the Liberal party, one of the principal opposition groups, was dissolved, and in September the "provisional" term of the president was extended, without an election, for another five years. Late in the year, however, an election was scheduled for January, 1943, with General Morínigo the sole candidate. In an effort to develop agricultural and industrial resources, loans were negotiated with the United States ($3,000,000) and Brazil (approximately $5,000,000, to be received in a six-year period).

Education.—There were nearly 2,000 primary schools in 1941 and a national university at Asunción.

Finance.—The monetary unit is the peso, valued at approximately $\frac{1}{3}$ cent U.S. in 1942 (or 70 to the Argentine peso). In Aug., Paraguay resumed interest service (unpaid since 1932) on its foreign debt (total: approximately £800,000).

Trade and Communication.—In 1940 imports (chiefly textiles, tinplate for canning, foodstuffs and miscellaneous manufactures) totalled 14,832,657 pesos, a 16% rise; exports, 11,385,345 pesos, a 29% decline from 1939. The main exports were quebracho extract, 32,066 tons (22.1% of export values); canned meat, 9,100 tons (15%); yerba maté, 10,092 tons (12.9%); hides, (12.5%); cotton 19,347 bales (11.1%); lumber (6.1%); petit grain oil, 164 tons (4.5%). In 1941, exports of quebracho extract and petit grain oil rose (respectively to 36,574 and 199 tons), while those of yerba maté fell off to 8,863 tons.

External communication is primarily by the Paraguay river to Buenos Aires, by rail to Argentina and by air. In 1942 air service was increased from three to five flights weekly. There were, in 1942, 713 mi. of railway.

Agriculture.—Important crops include sugar (1941 production: 17,474 short tons; 1940: 13,720), coco-nut oil and tung oil. Cattle are raised extensively, with canned meat and meat extracts an important export item.

Manufacturing.—Industry is chiefly textile manufacture, flour milling, and tannin extraction. (C. N. G.)

Parents and Teachers, National Congress of.

The National Congress of Parents and Teachers had a membership of 2,685,041, enrolled in 27,845 parent-teacher associations in the 48 states, the District of Columbia, Hawaii and Puerto Rico, as of April 15, 1942. It was founded in Washington, D.C., in 1897, as the National Congress of Mothers. Membership in Congress parent-teacher associations is open to all persons interested in the education and welfare of children and youth.

Activities relate to education in all its phases, health, family life, juvenile protection, etc. Outstanding projects are the summer round-up of the children, community school lunch program, and traffic safety education project.

A special war program undertaken by all local associations in 1942 included activities in the following fields: morale; health; education; juvenile protection; consumer safeguards; safety; recreation; aid to the men in service; community co-operation and volunteer service; and wartime finance.

The *National Parent-Teacher,* official parent-teacher magazine, is issued ten times a year. The *National Congress Bulletin* is sen monthly from September to June to every local association an to individual subscribers. *Community Life in a Democrac* *Schools for Democracy,* and the annual convention *Proceeding* are important books included among the numerous publication of the organization. The office of the National Congress is a 600 S. Michigan blvd., Chicago, Ill. (V. M. K.)

Paris. Capital and largest city of France, pop. (1936 2,829,746; of greater Paris, including the belt of subur ban factory towns, 4,933,855. Paris ceased temporarily to be th French capital when the government, headed by Premier Pau Reynaud, quit the city under the threat of the German advanc on June 9, 1940. The Germans entered Paris five days late The city continued under German military occupation throughou 1942. The French government organized after the loss of th war under Marshal Henri Philippe Pétain took up residence i Vichy, (*q.v.*), which was outside the original zone of Germa occupation.

Gen. Otto von Stulpnaegel, the German administrator of Paris continued to rule with an iron hand in 1942 and repeatedly re sorted to the shooting of large numbers of hostages for real o alleged attacks on German officers and soldiers. The majorit of Parisians also suffered from shortage of fuel in winter an from chronic undernourishment, the extent of which could b gauged from a report issued in 1942 on French food rations pe week:

Bread 68 oz., meat $6\frac{1}{2}$-9 oz., sugar $4\frac{1}{2}$ oz., fats and oils $3\frac{1}{2}$ oz potatoes (irregular). A card system was introduced for clothing and shoes were doled out very sparingly. An applicant for a ne pair was required to prove that his old shoes were dilapidate beyond repair.

One of the first features of life in Paris that impressed the fe foreign visitors in 1941 and 1942 was the virtual disappearanc of motor vehicles, apart from German military cars and automo biles and trucks engaged in municipal services. The Metro o underground railway continued to function and was often jamme to capacity. Horse-drawn cabs reappeared, although the horses like the human inhabitants of France, suffered from very lea rations.

With all the undernourishment and privations, places of amuse ment continued to function as usual, except when they wer temporarily closed as a punitive measure by the German militar authorities. The Opera and the Opéra Comique gave their usua repertory; concerts took place and theatres, dance halls an moving-picture theatres remained open, although the latter wer handicapped by the shortage of new films.

A minority of wealthy people, speculators and "collaboration ists" who were of service to the Germans in various ways did no suffer from the general restrictions and were able to patroniz such fashionable restaurants as Maxim's, the Lido and the Boeu sur le Toit. The first named of these restaurants, incidentally had been bought up by a famous Berlin restaurant, Horcher's and this was symptomatic of a general tendency both in Paris an in France as a whole.

The Germans had been using the considerable surplus of th huge indemnity imposed on France ostensibly for payment o the costs of the occupation (first set at 400,000,000 francs a day later reduced to 300,000,000 francs) to buy control of most o the leading French industrial and commercial establishments Since the purchases were outwardly legal and not simple acts o expropriation, a very confused situation was created in relatio to many property titles. Renault was producing tanks for th German army and Citroën was making shells, grenades, bomb and army cars for German use. The Potez aeroplane factory a niens was working for the Germans, and it was estimated that ance in 1942 was supplying Germany with motor vehicles at rate of 38,000 annually.

Especially after Pierre Laval became premier in the spring of 42, there was a good deal of pressure on French workers to lunteer for work in Germany. Compliance with German de-nds in this field was represented as a means of obtaining the ease of some of the 1,500,000 French war prisoners still in rman camps.

After the establishment of the Vichy regime, Paris was the onghold of extreme French collaborationists of the type of arcel Déat and Jacques Doriot, an ex-Communist turned scist, who advocated complete French association with Ger-ny, stronger measures against the Jews and outright war inst the Anglo-Saxon powers. These collaborationists con-ntly prodded and reproached Vichy, before the Germans took er the unoccupied zone Nov. 11, 1942, for not going far enough bowing to the German will.

Paris witnessed a good deal of speculation in objects of perma-nt value, such as paintings, rare editions of books, furniture, mps and fine porcelain. Paper francs were viewed with distrust, d a U.S. dollar bill, before the beginning of war between Ger-ny and the United States, could realize 210 francs on the ack bourse," as against an official exchange value of 43.50 ncs. (W. H. Ch.)

rker, John Henry (1866–1942), U.S. army officer, was born Sept. 19 near Tipton, Mo., and duated from the U.S. Military academy in 1892. After serv- on active duty in the Spanish-American War, he went to Fort avenworth, Kan., where he organized the first model machine- detachment in 1903. His efforts to advance the use of the chine gun as an army weapon won recognition in 1904, when army incorporated the "model unit" into the regular army. ring World War I he was attached to General Pershing's staff machine-gun expert and organized the automatic weapons ools at Gondrecourt and at Langres, France. He was wounded ile on active service in France and received the D.S.M., the oix de Guerre and the D.S.C. with three oak leaves for gallan- in action. He was made a colonel in 1920, retired four years er, and in 1941 was made brigadier general, retired, in recogni-n of his services. He died in Reno, Nev., Oct. 13.

rks and Monuments: *see* National Parks and Monu-nts.

rliament, Houses of. The seventh session of the 37th parliament of the United King-m of Great Britain and Northern Ireland was opened by the g, accompanied by the queen, on Nov. 12, 1941. It was again simple ceremony without robes, state procession or prior nouncement.

During the session the strength and composition of the war inet was changed more than once. The number was reduced m nine to eight. Lord Beaverbrook and Arthur Greenwood t the government. Sir Kingsley Wood remained chancellor of exchequer but left the cabinet. Sir Stafford Cripps was ought in as Lord Privy Seal to act as leader of the House of mmons, but in November relinquished his seat in the war inet and became minister of aircraft production. Herbert orrison, the home secretary, entered the war cabinet in his place. iver Lyttelton came back from Cairo to a newly-created cabinet nistry of production. By consent of the Australian government, G. Casey joined the war cabinet at Cairo. This appointment, d the transfer of C. R. Attlee to the Dominions office, while remaining deputy prime minister, associated the dominions more directly with the conduct of the war. (*See* also Cabinet Members.) Later Lord Moyne went to Cairo as assistant minister. A new office, that of minister-resident in West Africa, brought Viscount Swinton into the ministry, and Col. Oliver Stanley succeeded Lord Cranborne as colonial secretary. Captain David Margesson and Lt. Col. John Moore-Brabazon were succeeded as war minister and aircraft production minister by Sir James Grigg and Col. John J. Llewellin respectively. The latter on being succeeded by Cripps went to Washington as minister-resident for supply. Sir Andrew Duncan returned to the ministry of supply and Hugh Dalton was transferred from economic warfare to the board of trade. (*See* also Government Departments and Bureaus.)

House of Commons.—Ten contested by-elections in the period up to Oct. 1942 brought a slight but significant change in party representation. Four seats (Maldon, Grantham, Wallasey and Rugby) were won against Conservative supporters of the government by Independents. One other Conservative seat (Cardiff East) was held for the government, but Sir James Grigg who was elected to it when he became secretary for war stood as the nominee of no party. Five other Conservative seats were successfully retained. Of 13 uncontested by-elections 11 were in Labour seats and the other 2 Conservative. Apart from by-election victories the Independents were increased to 18 during the year by the accession of Leslie Hore-Belisha, Sir Henry Morris-Jones and E. Granville from the National Liberals, Sir Richard Acland from the Liberals, and the withdrawal of the Conservative whip from Captain Alec Cunningham-Reid, who with two Independents formed a short-lived People's party. The regroupings left the Conservatives 354 strong, Labour 170, Liberal Nationals 28, Liberals 18. There were also 6 National Labour, 10 Ulster-Unionists, 5 Nationals and 1 Communist.

Twice the government was challenged on votes of censure in debates on the conduct of the war. In January they had a majority of 464 to 1; in July when the censure motion was moved by Sir John Wardlaw-Milne, a Conservative, the majority was 475 to 25.

House of Lords.—In the government changes Viscount Cranborne was summoned to the peers, taking the courtesy title he had borne as the eldest son of the marquis of Salisbury, to become leader and colonial secretary and later Lord Privy Seal. Viscount Wolmer was similarly raised when he became minister of economic warfare but on his father's death succeeded to the earldom of Selborne. Lord Margesson's was the only new viscounty but on ceasing to be archbishop of Canterbury Dr. Cosmo Gordon Lang was created a baron and other baronies were conferred on four members of the Commons. (L. Du.)

Parseval, August von (1861–1942), German aerostatics expert, was born Feb. 5 in Frankenthal, Germany. After serving in the reichswehr, he retired in 1907 to devote himself to the construction of nonrigid dirigibles. He perfected a captive observation balloon which was employed by the German army during World War I. This lighter-than-air craft, frequently called a "sausage" balloon, played a vital role in directing artillery fire during the war. He also experimented with motor-driven dirigibles. After the war, he became professor at the Berlin Technical academy and was the author of *Count Zeppelin and German Aviation* and *Mechanics of Bird Flight.* He died Feb. 23, according to a German broadcast.

Patents. The quest for inventions of purely military character or of value in the manufacture of materials needful to the armed forces of the United States and its allies continued to be one of the important activities of the patent office in 1942. All of the thousands of applications for patents pending and those received each day were examined by the experts of the office and those found useful for the army or the navy were brought to the notice of the military and naval branches of the government.

Applications filed by nationals of Germany, Italy and Japan and of the countries occupied by them were segregated by the patent office for seizure by the Alien Property custodian. Among these were many covering inventions of helpfulness in the prosecution of the war. In addition, the patent office effectuated public law no. 700 and public law no. 239 prohibiting the sending abroad of information that might come into the possession of the axis. These acts of congress are administered by the Patent Office War Division, under the direction of the commissioner of patents.

Applications filed in the 12 months from Nov. 30, 1941 to Dec. 1, 1942, totalled 51,035, of which 4,518 were for design patents. This recorded a further decrease, compared with the calendar year 1941 and the fiscal year 1940–41. The number of applications for registration of trade marks in the 12 months ended Nov. 30, 1942, was 8,075. There were 6,950 registrations.

Financial receipts of the office from Nov. 30, 1941, to Dec. 1, 1942, were $3,546,176.71. Expenditures in the corresponding period were $4,516,432.07. This was a decrease of $254,660.07 from the outgo in the preceding year. As in 1941, the decline in the number of applications filed, notably by foreign inventors, explained, in large measure, the diminution of revenues. (*See* also INTERNATIONAL LAW; LAW: *Patents.*) (C. P. Co.)

Patrick, Mason Mathews (1863–1942), U.S. army officer, was born Dec. 13 in Lewisburg, W.Va. He was graduated from West Point in 1886. During World War I, he was commandant of the Engineer school, Washington, D.C., 1917. Late in 1917, he was sent to France as chief engineer of lines of communications and director of construction of the A.E.F. In 1918, he was assigned to reorganize the army air force. Though he had no previous aviation experience, Gen. Patrick undertook the task and developed the air force to 45 squadrons by Nov. 1918. He was made first chief of the army air service in 1921, serving in that post until 1927, when he retired. Gen. Patrick died in Washington, D.C., Jan. 29.

Patton, George Smith (1885–), U.S. army officer, was born Nov. 11 in San Gabriel, Calif. He was graduated from West Point, 1909, began his army career as cavalry lieutenant, 1913, and was aide-de-camp to General Pershing in Mexico, 1916–17, and in England, 1917. In France during World War I, he trained at a French tank school in Champlieu and was the first man entered in the U.S. tank corps, Nov. 1917. An expert on mechanized warfare, he was made a tank brigade commander in July 1940. On Oct. 1, 1940, he was promoted to brigadier general, on April 4, 1941, to major general and two weeks later he was made commander of the 2nd armoured division. Soon after Pearl Harbor, he was made corps commander in charge of both the 1st and 2nd armoured divisions, organized the desert training centre at Indio, Calif., where he staged manoeuvres under conditions similar to the fighting in Egypt and Libya. Patton was commanding general of the western task force during the U.S. operations in Africa in Nov. 1942, and together with Adm. H. K. Hewitt (*q.v.*) handled the landing of American forces on the western coast of Africa. Riding in a tank, Patton personally led his forces into Casablanca and compelled the French forces there under Adm. Michelier to surrender.

Paul, Maury Henry Biddle (1890–1942), U.S. society editor, whose widely-read gossip column was syndicated in 60 U.S. newspapers, was bo April 14 in Philadelphia. He entered the University of Philad phia in 1910. Four years later, he convinced the editor of *Philadelphia Times* that a male society editor was needed to ke "drivel" out of the society columns. In 1915, he went to the *N York Mail*, and in 1919 he was hired by the *New York Even American*, a Hearst paper. Paul took over the title of "Cho Knickerbocker," a copyrighted name owned by the paper, and i mediately injected life into the hitherto dull society page. coined the phrase "café society" and started feuds with the cially prominent when he divided society into Class A and Cl B strata. His polished and ironic style won nation-wide pop larity. He stayed with the *New York American*, later the *Jo nal-American* until his death, July 17, in New York city.

Pavlovich; Dimitri, GRAND DUKE (1891–1942), Russi nobleman, was born Sept. 6 in Ily skoïé, near Moscow. Grand Duke Dimitri, former captain Russian cavalry, was a nephew of Tsar Alexander III and cousin of Nicholas II, last Russian tsar. He was said to ha been the accomplice of Prince Felix Yussupoff in the shooti in 1916 of Rasputin, the monk who had been a close adviser a exercised great influence over the last tsar's family. The gra duke was said to have been arrested in 1917 in a counterrevo tionary plot in Petrograd (Leningrad), but fled to Paris, whe he lived for many years. He died in Davos, Switzerland, March

Peaches. The 1942 peach crop in the United States was es mated Dec. 1 by the department of agriculture 65,345,000 bu., which was 19% above the 10-year (1930–3 average. The 1941 crop was 74,364,000 bu.; the 10-year avera 54,706,000 bu. The crop in California, the leading producer, co sisted of 17,543,000 bu. of clingstones, mainly for canning, a 9,918,000 bu. of freestones. The 1941 California production w 13,834,000 bu. of clingstones and 8,918,000 bu. of freestone the 10-year average, 15,143,000 bu. of clingstones and 7,836,c bu. of freestones.

U.S. Peach Production in Leading States, 1942, 1941 and 10-Yr. Averag

(In thousands of bushels)

State	1942	1941	10-yr. average	State	1942	1941	10-y aver age
California . .	27,461	22,752	23,006	Virginia . . .	1,936	1,860	89
Georgia . . .	6,177	7,100	5,177	Pennsylvania	1,771	1,845	1,65
South Carolina	3,500	4,095	1,424	New York . .	1,615	1,649	1,47
North Carolina	2,463	3,167	1,938	Texas	1,610	2,475	1,20
Arkansas. . .	2,337	3,042	1,742	Alabama . .	1,595	2,464	1,44
Washington .	2,168	2,000	1,241	Colorado . .	1,490	1,516	1,22
Michigan . .	2,150	3,864	1,897	New Jersey .	1,228	1,195	1,10

Production in all other states was less than 1,000,000 bu. apie in 1942. (S. O. R.)

Peanuts. Growers of peanuts in the United States respond to the urgent wartime need for increased producti in vegetable oils by almost doubling the peanut crop of 19 over that of 1941. The 1942 harvest for picking and threshi was estimated Nov. 1 by the department of agriculture 2,810,525,000 lb. compared with 1,476,845,000 lb. in 1941, a 163% above the 10-year (1930–39) average crop. Peanut oil, well as other oils and fats, was greatly needed to supply glyceri for the manufacture of munitions and also to add to the supp of oils for table and cooking fats. Peanut production for declined drastically after World War I, and in 1933 only abo 1,000 tons were crushed, because of low prices. In 1934 the d partment of agriculture launched a program to encourage produ tion of peanuts for oil under payments of $1,500,000 annua r diversion of peanuts to oil. From 1934 through 1939, under e diversion plan, the value of the crop averaged $39,813,000 nually and increased to $57,000,000 in 1940, at which time version payments had approximated $8,000,000. The yield in 42 averaged 673.5 lb. per ac. in the United States.

U.S. Production of Peanuts by States, 1942 and 1941

State	1942 lb.	1941 lb.	State	1942 lb.	1941 lb.
eorgia . . .	738,000,000	488,250,000	Florida	96,250,000	61,100,000
exas	556,500,000	168,000,000	South Carolina	47,250,000	13,650,000
labama . . .	462,000,000	224,000,000	Mississippi . .	38,250,000	15,515,000
orth Carolina	418,000,000	284,760,000	Arkansas . . .	28,800,000	10,500,000
irginia. . . .	216,000,000	157,500,000	Louisiana . . .	18,000,000	4,510,000
klahoma . .	183,000,000	40,825,000	Tennessee . .	7,975,000	6,080,000

(S. O. R.)

earl Harbor: *see* UNITED STATES; WORLD WAR II.

ears. Production of pears in the United States in 1942 was estimated Dec. 1 by the department of agriculture as ,212,000 bu. of which 15,896,000 bu. were Bartletts grown in lifornia, Washington and Oregon. Other varieties in the three cific coast states totalled 5,136,000 bu. The total United States op in 1941 was 29,530,000 bu.; the 10-year (1930–39) average, ,253,000.

J.S. Pear Production in Leading States, 1942, 1941 and 10-Yr. Average

(In thousands of bushels)

State	1942	1941	10-yr. average	State	1942	1941	10-yr. average
alifornia				Michigan	1,245	1,284	1,065
Bartlett. . . .	8,918	8,584	8,576	New York . .	1,234	848	1,284
Other varieties.	916	708	1,267	Virginia. . . .	528	435	304
'ashington				Mississippi . . .	519	462	289
Bartlett. . . .	5,063	5,200	3,766	Texas	508	376	345
Other varieties.	1,660	1,754	1,771	Georgia . .	507	400	291
regon							
Bartlett. . . .	1,915	1,774	1,294				
Other varieties.	2,560	2,276	2,013				

All other states produced less than 500,000 bu. each in 1942.

(S. O. R.)

eat. Lack of imported supplies stimulated peat production in the United States, which increased from 70,097 short ns in 1940 to 86,503 tons in 1941. Imports, which formerly were about the same magnitude as current production, shrunk in 40 to 21,689 tons, but increased to 22,127 tons in the first nine nths of 1941, mostly from Canada. About 75% of the supply used as a soil conditioner, 20% in mixed fertilizers, and 5% in her uses, including litter in barns and poultry yards, and pack- r material for fruits, vegetables and shrubs, so that practically entire supply is used in agriculture, and none as fuel, which is main use in the important European producing countries.

(G. A. Ro.)

cans: *see* NUTS.

mba: *see* BRITISH EAST AFRICA.

nnsylvania. One of the original 13 states of the United States, Pennsylvania is popularly known as "Keystone state." Area, 45,333 sq.mi. (288 sq.mi. water); pulation (1940) 9,900,180, of whom 973,260 were foreign-born ites, including 80,111 of German birth and 197,281 of Italian. pital, Harrisburg (83,893). Cities with a larger population Philadelphia (1,931,334); Pittsburgh (671,659); Scranton 40,404); Erie (116,955); Reading (110,568); Allentown (96,- 4); Wilkes-Barre (86,236).

History.—The congressional reapportionment act, based on the sus of 1940, reduced the representation of the state in the national house of representatives from 34 to 33. The state's general assembly, in biennial session in 1941, adjourned without redistricting the state. In order to provide for the election of members of the house of representatives by districts, Governor James called the general assembly in special session on Feb. 17, 1942, to take the necessary action. On Feb. 25 it passed a bill abolishing two districts, allowing the others to remain unchanged and providing for the election of two representatives-at-large on a state-wide ticket. The governor signed the bill at once.

In November the Republicans elected Edward Martin as governor, John C. Bell, Jr., as lieutenant governor and William A. Levengood as secretary of internal affairs; also as a justice of the supreme court and a judge of the superior court. In addition, the Republicans retained control of the senate and regained control of the house of representatives which they lost to the Democrats in 1940. They also elected 19 of the 33 members of the national house of representatives including the representatives-at-large.

EDWARD MARTIN, Republican governor of Pennsylvania, elected Nov. 3, 1942

The principal officers in 1942 were: Arthur H. James, governor; Samuel S. Lewis, lieutenant governor; Claude T. Reno, attorney-general; G. Harold Wagner, treasurer, and William I. Schaffer, chief justice.

Education. — There were in 1942 approximately 11,400 public schools, of which 1,277 were high schools. The total enrolment of pupils was 1,813,255, of whom 34,617 were in kindergarten, 1,088,591 in elementary and 90,047 in secondary schools. Current expenses for the fiscal year were $152,-939,741 and the total expenses for the maintenance of the system were $200,113,414.

Public Welfare, Charities, Corrections.—The average number of men, women and children dependent on public assistance or work relief in Oct. 1942 was 415,000, or 251,000 fewer than in Oct. 1941. Those receiving old age assistance numbered 98,808; relief was given to 168,552 dependent children and to 13,885 blind persons and 86,000 were dependent wholly or in part on WPA relief wages. The total expenditures for the month amounted to $6,354,000, of which $2,007,000 was provided by the federal government for old age assistance and dependent children.

Communications.—There were in the state 99,716 mi. of highways in 1942, 40,764 of which were classified as state roads and 22,764 as second-class township roads. The remainder were city and borough streets and county roads. There were 5,754 mi. of city streets, including 1,842 in Philadelphia. The average cost of maintenance for the three fiscal years ending June 30, 1942, was $16,524,000 a year. Highway improvements costing an average of $38,123,000 a year in 1939–42 had been paid for out of the motor licence fund. There were 11,966.33 mi. of main-line railroads in operation.

Banking and Finance.—On June 30, 1942, there were 396 banking institutions with total resources of $3,491,202,429 and deposits of $2,976,626,608. At the beginning of the year there were 1,207 building and loan associations with assets of $350,-

044,290. At the beginning of the fiscal year 1942–43 there were 681 national banks with assets of $3,943,118,000 and deposits of $3,474,266,000. The state appropriations for the biennium beginning July 1, 1941, were $331,147,595, which included $98,000,000 for public relief. The estimated receipts from taxation for the period were $414,141,822.

Agriculture.—The farmers received $5,723,000 in benefits from the federal government in 1940.

Table I.—*Leading Agricultural Products of Pennsylvania, 1942 and 1941*

Crop	1942	1941
Corn, bu.	56,898,000	56,594,000
Tobacco, lb.	48,716,000	53,293,000
Potatoes, bu.	17,696,000	23,674,000
Apples, bu.	10,031,000	9,313,000
Grapes, tons	21,500,000	16,500,000

Manufacturing.—There were 17,366 manufacturing establishments in the state, according to the census of 1940, employing 1,419,051 persons to whom $1,940,045,800 was paid in wages. The capital invested was $4,223,471,300 and the value of goods produced was $6,901,966,000.

Table II.—*Principal Industries of Pennsylvania, 1940 and 1937*

Industry	Value of Products	
	1940	1937
Metals	$2,944,848,400	$3,058,279,000
Textiles	795,457,200	819,402,500
Food	740,901,600	770,319,300
Chemicals	518,062,300	499,395,500
Paper and printing	372,074,400	350,436,600
Leather	174,963,900	175,288,000
Tobacco products	92,272,300	85,513,300

Mineral Production.—The federal bureau of mines reported the value of the mineral production of the state in 1939 at $552,355,651 as against $472,773,327 in 1938.

Table III.—*Principal Mineral Products of Pennsylvania, 1939 and 1938*

Mineral Products	Value	
	1939	1938
Bituminous coal	$188,900,000	$160,965,000
Anthracite	187,175,000	180,600,167
Pig iron	186,302,533	101,266,844
Petroleum	36,200,000	32,762,000
Natural gas	35,268,000	29,544,000
Cement	34,332,649	28,242,913

The department of the interior reported that the production of anthracite in 1940 was valued at $192,539,500 and the value of bituminous coal mined in that year was $218,504,200. On Dec. 31, 1940 there were 81,946 oil wells which produced 17,434,626 bbl. during the year. (G. W. Do.)

Pennsylvania, University of. An institution of higher learning at Philadelphia, Pa. Continuing the policy begun in 1941, the entire faculties, facilities and resources of the university were made available to the United States government for the national war effort. Research projects begun in 1941 were continued, and additional ones were initiated in 1942 in the various fields of chemistry, engineering, physics, medicine, psychology and surgery; about 75% of the projects had to do with war problems. The engineering departments and the Wharton school continued a program of training war workers for factories; several thousand persons took advantage of this instruction.

The entire university was placed on an accelerated basis with a full semester of work being offered in summer session, thus making possible graduation in three years or less, depending upon the course pursued. Approximately 3,140 students took advantage of this program in 1942. New classes were admitted to all schools of the university for the summer session, and convocations were held in February, May, June and September 1942 t meet the new program.

Two hundred forty-two members of the faculty entered th government service, the majority of these having been called t fill positions of administration or research in Washington o elsewhere.

Arrangements were completed for the establishment of a Pr Flight Preparatory school of the U.S. navy at the University o Pennsylvania in Jan. 1943, involving the training of 600 nav aviation cadets.

In the university museum, instruction in African languages and culture was offered to approximately 25 students. (T. S. G.)

For statistics of enrolment, faculty, endowment, library vo umes, etc., *see* Universities and Colleges.

Pensions, Army and Navy: *see* Veterans Administratio

Pepper: *see* Spices.

Péret, Raoul (1870–1942), French politician, was bor Nov. 29 in Châtellerault, France. A doctor o law, he joined the radical socialist party in the early 1900s and was deputy for Vienne, 1902–26. He was named to his first important cabinet post in 1914, when he held the telegraph and commerce portfolio. He was minister of justice in 1917 and president of the Chamber of Deputies in 1920, 1924 and 192 As minister of finance in 1926, he was instrumental in negotiatin the Franco-American and Franco-British debt agreements, bu he resigned later in the year when the chamber failed to suppo his formula for stabilizing the franc. In 1930, while minister o justice in the Tardieu cabinet, Péret was involved in the Oustr bank scandal, and was compelled to resign under the risin clamour of the opposition for political victims. In 1931, th senate, sitting as a high court, acquitted Péret of charges o dishonesty. Subsequently his political career waned. He died at Saint-Mandé, near Paris, July 22.

Performing Right Societies. Co-operative associatio s of composers, authors and publishers of music which function as clearing houses for the censing of public performance of members' copyrighted musi. Performing right societies exist in the principal countries throug out the world. They are founded on the principle of copyrig t law that the right to control the public performance is vested in the owner of music copyright. The extent of this right vari s under the laws of different countries. In the United States an u authorized public performance is not a copyright infringeme t unless the element of profit enters into the performance.

In certain other countries, where under the law the element of profit is not a consideration, no public performance of any kind may be had of a copyright work without permission of the cop right owner. Chief performing right society of the United Stat s and sole affiliate in the U.S. of the principal foreign societies i 1942 was the American Society of Composers, Authors and Pu lishers, familiarly known under the alphabetical designation of ASCAP.

Reciprocal collection of the international affiliation of the s societies was all but halted by the war. The only European s ciety to continue exchanging funds with ASCAP was the Performing Right Society of England. Aside from this physical exchang, the customary mutual collections became chiefly matters of boo keeping.

ASCAP's perennial difficulties with proposed state laws to r strict its operations largely disappeared following its signatu of a consent decree under which its operations were conduct

h approval of the federal government. Most of the difficulties
ulting from anti-ASCAP laws were solved, either by repeal of
laws or by conciliation with its licensees.
uring 1942, ASCAP increased its activities in the promotion
American music. It completed a survey made jointly with the
erican Composers' Alliance for the purpose of cataloguing all
erican music in the standard field, aiming thereby to supple-
nt the great catalogue already assembled in ASCAP head-
rters. In co-operation with the National Federation of Music
s it sponsored the inauguration of semi-monthly bulletins
igned to stimulate interest in American music in grade schools,
schools and colleges, a special edition of the bulletin being
pared for each of the three types of schools. It continued
Nathan Burkan Memorial competition in about 100 of the
ling law schools, with a $100 prize in each school for the
copyright essay. It elected some 200 new members, its
l at the end of 1942 being more than 1,600.
SCAP's distributable revenue for 1942 was approximately the
e as in its best year, 1940. Although gross receipts were less,
to decreased income from radio, reorganization of its business
hods effected savings to offset loss of income.
SCAP is conducted by a board of 24 directors, representative
ll classes of music, and divided equally between publishers and
ers. Its president in 1942 was Deems Taylor; general man-
, John G. Paine. Its chief offices are at 30 Rockefeller Plaza.

rkins, Milo Randolph (1900–), U.S. government official, was born Jan. 28 in
waukee, Wis. A salesman and part owner of a burlap bag
ness, Perkins became assistant secretary in the department
griculture in the early days of the New Deal, and by 1935
Secretary Henry Wallace's right-hand man. Named assist-
director of the Farm Security administration in 1937, he
lled the rehabilitation loan program and cut the cost of gov-
nent housing for farmers. In Jan. 1939 he was transferred to
Agricultural Adjustment administration as associate adminis-
or and was also named president of the Federal Surplus Com-
ities corporation. He originated the food stamp plan under
h surplus foods were distributed free to the needy, and he
blished, on a nation-wide scale, the school lunch and low-
e milk distribution plans. In 1941 he was appointed executive
l of the Economic Defense board, retaining that post when
agency was reorganized as the Board of Economic Warfare
.) on Dec. 17, 1941. In April 1942 he was given control of
government program to acquire critical war materials.

rrin, Jean (1870–1942), French physicist, was born Sept. 30 in Lille and was educated at the
le Normale in Paris. He received his D.Sc. in 1897, was made
ader in physical chemistry in the Paris university and was
ed professor of sciences there in 1910. Dr. Perrin won the
el prize for physics in 1926 for his work on the discontinuity
e structure of matter and for his discovery of the equilibrium
edimentation. His writings dealt mainly with the molecular
omena of oscillation and Brown's movement in kinetics. He
named to the French Academy of Sciences in 1923. In
3, he announced the existence of transuranium, a 93rd ele-
t heavier than uranium, which had been considered the
iest. Dr. Perrin was keenly interested in the social and
tical movements of his time and supported Leon Blum's
ular Front government, of which he was made undersecretary
tate for scientific research in 1936. He was again honoured
939 when he was made president of the government's high
mittee for scientific research. An intense anti-fascist, he left unoccupied France and went to the United States in Dec. 1941. He was actively engaged in the Fighting French movement and also was associated with a school of exiled French and Belgian scientists in the U.S. He died in New York city, April 17.

Persia: *see* IRAN.

Peru. A republic on the west coast of South America and extending into the Amazon basin. Area, 532,185 sq.mi. including some 100,000 sq. mi. in dispute during part of 1942 with Ecuador. Pop. (June 9, 1940 census): 7,023,111, officially computed as white and mestizo 52.89%, Indian 45.86%, yellow 0.68%, Negro 0.47%, others 0.1%. Capital, Lima (522,826 in 1940). Other cities: Callao (69,601 in 1940), Arequipa (est. 60,000), Cuzco (est. 44,080), Trujillo (est. 33,435). President (1942): Manuel Prado y Ugarteche.

History.—The most important single factor affecting Peru's history in 1942 was the settlement of the century-old boundary dispute with Ecuador. Although, early in 1941, both disputants had accepted the offer of mediation made by Argentina, Brazil and the United States, the insistence of Ecuador that arbitration should include the question of sovereignty over Túmbez, a coastal province under the effective occupation of Peru for more than a century, angered the Peruvians and prevented the immediate settlement of the matter.

With these factors in mind, the mediating powers utilized the Conference of American Foreign Ministers held in Rio de Janeiro in Jan. 1942 to bring a final settlement between the two nations. By that agreement Peru received full sovereignty over a major portion of the disputed Amazonian territories and its claims to Túmbez were upheld.

As a result of the settlement Peru was free to turn its atten-

PRESIDENT MANUEL PRADO of Peru laying a wreath on the tomb of George Washington at Mt. Vernon, Va., during his visit to the United States in May 1942

tion to some of the other problems facing the nation. Projects for the development of Peruvian agricultural and industrial resources, both as temporary expedients to relieve the economic distress during the wartime and as measures to avoid similar troubles in the future, received the full attention of the government. Several treaties affecting Peru's economic future were signed in Washington in April 1942 as a result of a series of conferences between Finance and Commerce Minister David Dasso and officials of the United States.

Signalizing the growing friendship between Peru and the United States was the May visit of President Prado to Washington.

Education.—In 1939 there were 4,727 elementary schools (492,989 enrolment), about 216 secondary schools, several technical schools and 5 universities.

Defense.—Peru had a standing army of 15,000 and reserves of 100,000 men, a 10-vessel navy and 150 planes in 1941.

Finance.—The monetary unit is the sol, valued at 15.4 cents U.S. during 1942. The national debt was 925,817,000 sols (external: 546,078,000 sols) in 1941, of which some $54,000,000 in bonds were held in the U.S.

Trade and Communication.—In 1940 imports (foodstuffs, textiles, machinery and other manufactures) were valued at $51,668,000 (1939: $47,960,000), supplied mainly by the United States, 53.1% (1939: 41.1%), Great Britain 9.2% (8.4%), Argentina, 7.8% (5.4%). Exports were valued at $65,782,000 (1939: $71,517,000), to the United States, 42.9% (1939: 30.4%), Great Britain, 12.1% (19.6%), Chile, 10.1% (7.8%), Japan 7.8% (2.4%). The leading exports were petroleum and its derivatives 24.8% (1939: 29.0%), copper 18.5% (17.7%), cotton 17.4% (19.7%), sugar 10.7% (10.8%), ores and mineral concentrates 7.6% (5.8%). In the first eight months of 1942, imports were lower by volume, but only slightly less by value. Exports were higher in both volume and value than for a similar period in 1940.

Peru normally has good maritime and excellent air communication (by Pan American Airways) with other countries, supplemented by a railway connection with Bolivia. The National Air lines and one private company provide extensive internal air service. The highway system, greatly expanded since 1937, was being extended and improved in 1942. Partially completed, with construction crews at work on the remaining miles, was an important highway connecting the Pacific coast and the Amazon basin, and planned eventually to reach Iquitos.

Agriculture.—Cotton and sugar are the leading agricultural products, with rice, coffee, maize, wheat, coca and vegetable ivory also important. Cotton production in 1942 was estimated at 73,225 tons (1940: 83,030 tons; 1941: 78,275 tons), with a 20% reduction in acreage planned for 1943. Domestic consumption, however, increased 23% in 1941 and showed a further increase in 1942 which somewhat offset export losses. Sugar exports (301,954 tons in 1940) decreased considerably in 1941 and 1942. Insect pests caused an approximate 40% decrease (as compared to 1941) in the rice crop.

Mineral Production.—Metal production in 1940 (in bars, ores and concentrates) was: antimony 896 tons, bismuth 383 tons, copper 38,557 tons, manganese 222 tons, gold 8,963 kg., silver 573,867 tons, lead 37,072 tons, vanadium 2,167 tons, molybdenum 364 tons, zinc 31,588 tons. Beginning in 1941, the United States by agreement purchased all surpluses of Peruvian antimony, copper, lead, tungsten, vanadium and zinc.

Petroleum is found in several sections of Peru, but production centres in the north coastal region. Oil production in Peru rose from 10,000,000 bbls. in 1931 to a 1937 high of 17,595,000 bbls. In 1941 estimated production was 12,800,000 bbls. Shipping shortages caused losses in 1942.

Rubber, formerly produced on a considerable scale, dropped in 1940 to a production of 70 tons. During 1941 and 1942 greatl renewed interest, along with improved transport facilities, brough stepped-up production. (*See* also HISPANIC AMERICA AND WORL WAR II.) (C. N. G.)

Pessôa, Epitacio da Silva (1865–1942), Brazilian poli tician and lawyer, was bor May 23 in Umbuzeiro, Brazil. He received his law degree i 1886 and was named secretary of justice in the state of Para hyba do Norte in 1889. He was minister of justice and of th interior, 1898–1901, served on the supreme court, 1902–1912 and was also senator and attorney general. He was Brazil's chie representative at the Versailles peace conference in 1919. Tha same year, he was elected president of Brazil. When his terr expired in 1922 he was elected a member of the Court of International Justice in The Hague. In 1932, President Hoover ap pointed Dr. Pessôa as non-national commissioner in the per manent Anglo-American arbitration commission. He died in Ri de Janeiro, Feb. 13.

Pétain, Henri Philippe (1856–), French soldier an statesman. See *Encyclopædia Br tannica* for his biography. He was called from virtual retiremen in 1939 to become French ambassador to Spain after Franco triumph in the civil war and remained in this post after the be ginning of war in 1939 until May 18, 1940 when, with France army falling back in a retreat approaching a rout, he was sum moned to Paris to act as vice-president of the government counc and adviser to the minister of war. On June 16, 1940, he suc ceeded Paul Reynaud as premier, and the next day he was force to sue for peace. He then began the painful task of reconstructio under the watchful eye of France's conquerors. Moving his gov ernment to Vichy July 2, he secured from the national assembl authorization to prepare a new constitution. On July 10, 194 Pétain assumed dictatorial powers.

Pétain in 1941 apparently followed a two-way policy in whic he alternately submitted to Germany, then resisted German de mands for the French fleet and for bases in North Africa. O April 7 he declared that "honour commands that we shoul undertake nothing against our former allies (Britain)." The nex month, however, he approved "in principle" the Hitler-Darla talks on collaboration. Again, on Aug. 12, he announced tha France would work with Germany in the European "new order' but on Jan. 1, 1942, he appealed to the Reich to ease the hars occupation terms. Germany subsequently agreed to a "conce sion"—the release of a number of French war prisoners if i return French workers would go to Germany to work in wa factories. This request, passed on to French workers by Pierr Laval, proved unpopular. Few workers voluntarily consented t go; the Vichy government later compelled many to emigrat Pétain protested bitterly against U.S. occupation of French Nort Africa in Nov. 1942 and severed diplomatic ties with Washingto Two days later, he protested the total occupation of France b German troops as a breach of the armistice terms. Shortly afte wards, he rebuked Adm. Darlan for joining the Allies; the latte however, insisted he was acting in the name of the Marshal, a "unwilling" prisoner of the nazis. On Nov. 18, Pétain hande over to Laval dictatorial powers to make all laws and decree

Petrie, Sir (William Matthew) Flinders

(1853–1942), British Egyptologist, was born June 3 in Charlto England. He spent 45 years exploring and excavating Egypti ruins and wrote about 75 volumes on his work, but in 1926 i left Egypt because the Egyptian department of antiquities wante rtual dictatorial powers over almost every phase of his work. e then went to Palestine, where he excavated ruins at the site ancient Gaza. His later works include *Seventy Years in Arch- ology*, an autobiography (1931), *Palestine and Israel* (1934), *gyptian Architecture* (1938), *Making of Egypt* and *Egyptian ience* (1939). He died in Jerusalem, July 28. (See *Encyclo- edia Britannica.*)

etroleum. As the year 1942 closed, Hitler's drive for Russian and near eastern oil had stalled, and his 42 score of conquest so far as oil was concerned was one issian oil field—Maikop—important but minor. The high barrier the Caucasian mountains still lay between the farthest advance the nazi wehrmacht and the rich Baku oil fields.

Russia ranks second only to the United States in oil produc- n, with a total output in 1941 of 238,150,000 bbl. (excluding khalin) accounting for about 11% of the total world produc- n. The Maikop-Kuban field, in nazi hands in 1942, has an nual production of about 17,000,000 bbl., or about 8% of the al Russian production.

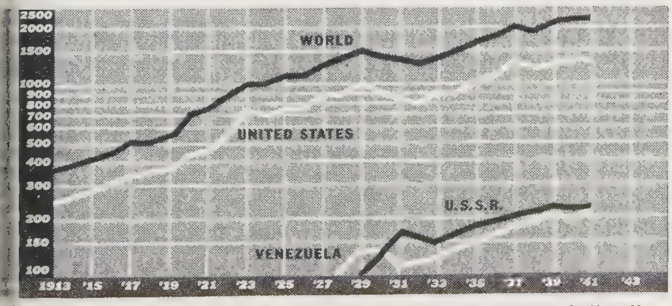
The bulk of Russian oil comes from the Baku-Azerbaijan fields the Apsheron peninsula which projects into the Caspian sea the eastern end of the Caucasus. They make up about 70% the soviet's total production. The Groznyi field, inland from Caspian and along the north bank of the Caucasus, also ded Hitler. This field produces about 17,000,000 bbl. annually. ikop-Kuban, Groznyi and Baku-Azerbaijan account for about % of Russia's annual production. The remaining 5% principally nes from the Emba field, northwest of the Caspian sea.

Not only had Hitler's drive fallen short of the Russian oil ze, but also of the rich oil fields in Iran and Iraq.

On the other hand, the score of oil conquest by the new axis tner Japan was highly impressive in 1942.

apan's domestic production is insignificant—2,659,000 bbl. in .1. By the conquest of the Netherlands East Indies, Burma, awak and Brunei, it gained control of countries having a total nual oil production of 68,366,000 bbl. Of course Japan was ble immediately to gain from these fields a production as large hat because of the demolition of wells, refinery equipment and like. But assuming that it retained its hold on this conquered itory, it had, in this one stroke, secured adequate petroleum ources to prosecute by force of arms its dream of a greater a. In one year it acquired control of fields with an annual duction greater than the total held and acquired by Hitler in ee years at war.

Germany had a total annual production of 4,438,000 bbl. in 1. When Hitler took Austria, Czechoslovakia and Poland in 9, he added an annual oil production of 692,000 bbl., 109,000 and 3,319,000 bbl. respectively. He added France, 479,000 ., in 1940; Hungary, 2,474,000 bbl., and Rumania, 38,147,000 , in 1941. Italy had a small production of 46,000 bbl. and ed Albania, 1,381,000 bbl., in 1941. Thus the petroleum production under German-Italian control totalled 68,327,000 bbl. (including Maikop production) as against 68,366,000 bbl. under Japan's domination.



AL WORLD PRODUCTION OF PETROLEUM and output of the three cipal producing countries, as compiled by *The Mineral Industry*

It may be assumed that during three years of war, Hitler drew heavily upon the oil reserves built up in preparation for the nazi blitz. The bulk of the increased demands for petroleum products created by his augmented mechanized armies, air fleets and sea craft had to be met by increased production of synthetic fuels and oils from coal; and these facilities would appear to be wholly inadequate to keep up with the war demands.

Even with the loss of East Indies oil, the Allies were in 1942 statistically far ahead of the axis partners in their control of oil production sources as shown in the following table:

Oil Sources, 1941 Production

Allies	Thousands of Barrels	Axis	Thousands of Barrels
Controlled by .	1,820,749	Controlled by .	136,693
Available to . .	269,394	Available to . .	none
Total	2,090,143	Total	136,693

The statistical picture of the relative positions of Allied and axis powers as to oil may, however, be entirely misleading. Control does not always mean availability, as for instance a source of oil may be cut off or reduced because of submarine blockade. There may be controlled sources which for all practical purposes are out of range of ready utilization. For instance, it was difficult for Russia to get all the oil it needed from some of its own fields in the Caucasus because the German advance cut off pipe lines and other transportation media.

Iraq was in 1942 under the control of the Allies; nevertheless shipment of Iraq oil to the Mediterranean was not resumed after the occupation of that country by the British because of the difficulty of Mediterranean oil transportation. On the other hand, the Iranian oil fields furnished increased amounts of oil because shipment could be made southward by way of the Persian gulf.

In this war of long supply lines, transportation, almost more than control, tells the story. Axis submarines took a terrific toll of Allied tankers. This and the diversion of tankers from civilian to war use were the direct cause of a shortage of gasoline and fuel oil in the east coast states of the United States, resulting in drastic rationing of motor fuel and furnace oil.

A year after Pearl Harbor found the United Nations turning of necessity their chief reliance for vital oil products upon the western hemisphere—chiefly upon the United States. It found the United States producing crude oil and natural gasoline at the rate of more than 400,000 bbl. per day and capable of producing more—for American production is prorated. Nevertheless, because of greatly curtailed drilling activity due to steel conservation and to the War Production board's Order M-68 issued in Jan. 1942, limiting oil well drilling to one well per 40 ac., the rate of discovery of new oil reserves greatly decreased.

From 1939 to 1941, on an average of 2,963 wildcat wells per year were drilled and these discovered an average of 387,000,000 bbl. in new fields. From 1936 to 1938, fewer wildcat wells by 22% were drilled, yet they discovered 78% more oil. Both the government and the petroleum industry agreed that something must be done to stimulate exploration and wildcat drilling. The industry asked a substantial increase in the ceiling on crude oil prices and corresponding increases in the wholesale prices of refined products and in the retail prices to the consumer. It also recommended that necessary production materials and supplies be made available.

Not until Pearl Harbor and the subsequent military events affecting oil supply and supply lines, was the American oil industry put to a test in meeting war requirements. In fact, during the first two years of the war in Europe, there was far less drain on American oil sources than had been anticipated. But in 1942—with America itself in the war—the American petroleum industry was called upon to supply the bulk of the 100-octane gasoline, toluene, aviation lubricants, materials for synthetic rubber, and many other critical petroleum products needed to insure victory for the United Nations.

After Pearl Harbor, the transportation bottleneck affecting the east coast area became more acute since Germany intensified its submarine campaign and directed it particularly against tankers. Movement of tankers moreover was dictated by military rather than by civilian requirements.

Gasoline.—To meet the needs of eastern United States, shipments of crude oil and of products by rail were increased, but they far from made up for the tanker shortage; therefore, rationing of gasoline throughout the east coast area went into effect not alone as a means to conserve gasoline but also rubber. This was in May 1942. Meantime the rubber shortage was coming to the fore in such a way as to foreshadow national gasoline rationing as a rubber conservation measure. In December, national rationing went into effect, and in the meantime a federal edict keeping driving to a maximum speed of 35 mi. an hour was promulgated by the president.

In June 1942 the War Production board approved the construction of a "big-inch"—24-inch—pipe line, the largest diameter oil pipe line on record—to run from Texas to Norris City, Ill This was planned by the end of the year to afford relief to the war-blighted east by increasing the flow by connecting eastern pipe lines, barge and tank car into that area. The line was la extended to the New York-Philadelphia refinery areas and completion date was scheduled for Feb. 1943. The capacity of line was planned to be 300,000 bbl. daily.

OBSERVING THE EFFECT of low atmospheric pressure on gasoline, which gives off vapour at 26,000 ft. above sea level. New types of tanks and feed lines were designed for flight at high altitudes as air warfare approached the level of the stratosphere in 1942

Under the authority vested in the Office of Petroleum ordination, the American petroleum industry went into a progr of "quick conversion" of refinery facilities to increase the outp of war materials. The major features of this program invol greatly increased production of aviation gasoline and of the r materials for synthetic rubber. Plants went to work on making of toluene for T.N.T.; benzene, isobutane, butadiene a codimer for aviation gasoline. Isobutylene production was stepp up for butyl rubber.

One of the most spectacular war jobs done by the Americ petroleum industry was that of multiplying production of 1 octane gasoline, which only a few years previously was largely laboratory product. This "super-fuel" could mean the mar of victory in the air—in the Pacific, in Africa, in Europe and China—according to Petroleum Administrator for War Har L. Ickes who stated that the United States was dangerously sh of capacity for making 100-octane gasoline; having at that ti a production of only about 40,000 bbl. a day, while one motored bomber could use several barrels in a single hour flying. The industry set out to double, then treble, then incre by fourfold the production of this fuel. Construction of n units, largely financed by the government, proceeded with speed and was continuing at the close of 1942. The output of ex ing facilities showed a phenomenal increase.

Rationing of fuel oil used for heat in homes went into eff in the fall, and fuel oil use in 30 states was ordered reduc $33\frac{1}{3}\%$, or 100,000,000 bbl. per year. Fuel oil shortage in the e was further complicated by the diversion of supplies from t east coast to north Africa in connection with American milita operations.

The American petroleum industry was adjusting its refin operations to fit into the synthetic rubber production progr under Rubber Coordinator W. M. Jeffers, and rubber pla using petroleum products as a base material were being c

*World Production of Petroleum by Countries, 1941**
(Figures are in thousands of barrels of 42 gal. each)

	Total production	% of total by volume
1. United States	1,404,182	63·06
2. U.S.S.R.†	238,150	10.69
3. Venezuela	223,784	10·05
4. Iran	64,000	2·38
5. Netherlands East Indies	53,704	2·41
6. Mexico	43,837	1·97
7. Rumania	38,147	1·71
8. Colombia	24,553	1·10
9. Argentina	21,763	·98
10. Trinidad	21,211	·95
11. Iraq	12,650	·57
12. Peru	11,922	·54
13. Canada	10,125	·46
14. Burma	7,762	·35
15. Egypt	7,659	·34
16. Sarawak and Brunei	6,864	·31
17. Bahrein Island	6,794	·31
18. Saudi Arabia	5,871	·26
19. Germany	4,438	·20
20. Sakhalin	4,000	·18
21. Poland	3,319	·15
22. Japan (including Taiwan)	2,659	·12
23. Hungary	2,474	·11
24. India, British	2,270	·10
25. Ecuador	1,557	·07
26. Albania	1,381	·06
27. Austria	692	·03
28. France	479	·02
29. Bolivia	230	·01
30. Czechoslovakia	109	..
31. Italy	46	..
Other countries	204	·01
TOTAL	2,226,836	100·00

*Source: *International Petroleum Trade*, vol. 11, No. 3, (March 31, 1942).
†Sakhalin is shown separately.
Authority: United States Bureau of Mines.

30-MI. PETROLEUM PIPE LINE from Longview, Tex., to Norris City, Ill., constructed in 1942 at the record rate of five miles a day. With a carrying acity of 9,000,000 barrels a month, the pipe line was the largest in the ld. The War Production board on Oct. 28, 1942, authorized extension of the line to New York city

ucted and were expected to be operated co-operatively by oil panies in several regions of the United States.

n Dec. 1942, President Roosevelt appointed Mr. Ickes peeum administrator for war. The new agency of Petroleum ministration for War supplants the former Office of Petroleum ordinator for War which Secretary of Interior Ickes headed on establishment May 28, 1941. The government's petroleum adistration for war was organized regionally and departmentally was assisted in an advisory way by petroleum industry comtees. Also assisting was the Petroleum Industry War council prising oil industry representatives who met regularly with Ickes' organization in Washington.

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(L. M. F.)

iladelphia. Third largest city in the U.S.A. and the largest city in Pennsylvania, Philadelphia had a popion of 1,931,334 by the federal census of 1940. This figure eased to an estimated 1,980,000 in 1942. Mayor (1942): nard Samuel.

he influx of workers in war industries was largely responsible the increase in population. The army quartermaster's depot, ch usually had employed about 3,000, had about 16,000 on ay roll in 1942. There was a similar increase in the number workers in the League island navy yard as well as a great ease in the number of employees of private corporations ened in war work.

he increase in population seriously affected the housing situn. The newcomers found it difficult to get living quarters when they offered high rent out of the high wages which they received. The payment of high wages led the local housing authority, which had built a large number of small houses and apartments for families with low incomes, to announce that when leases expired it would raise the rent of those families whose income had been increased and at the same time would lower the rent for those families whose incomes had remained stationary.

In preparation for a possible hostile attack, the Citizens Defense corps ordered frequent blackouts. A committee was appointed to superintend the evacuation of the city in an emergency.

In the election of Nov. 3, 1942, General Martin, the Republican candidate for governor, carried the city by about 600 and the Republicans elected three of the six members of the national house of representatives from the city, defeating two Democrats who sought re-election.

In order to provide additional revenue the city council levied a tax of 1½% on the earnings of all workers, a tax which the courts decided could be collected from federal employees as well as from nonresident workers.

(G. W. Do.)

Philately. Poland, although her territory had been completely dominated by hostile armies, issued new stamps pertaining to the war effort: and these were not only legal, but could be properly postally used. Philatelists found that this was because Poland's ships were still free, and post offices on these ships were, by international convention, Polish post offices.

During 1942, the total number of stamps listed as new emissions in the Standard catalogue dropped to a new low—scarcely 1,000 were listed and most of these classified as either purely postal or air mail issues.

Because of the success of the United States Philatelic agency at Washington, D.C., where postage stamps in select condition were furnished for philatelists, the treasury department opened a Revenue Philatelic agency, also at Washington, purveying revenue stamps for collectors.

The enormous accumulation and collection of the late Col. E. H. R. Green, son of the famous Hetty Green, posthumously dragged him into the limelight as a canny and astute philatelist. Seven sales of material were held during 1942, and brought much larger sums than many expected.

The War.—Impetus was given to the collection of censor markings and war postmarks, while at the same time the exigencies of national security reduced the collectible items. During World War I, few collected the various army post office markings, making some of them rather rare when, later, postal marking collectors began to look for them. In 1942, the trend was toward the elimination of all distinguishing markings, such as the A.P.O. numbers which made army post office markings distinctive. Even some overprints, such as the Canal Zone overprints of the United States, were omitted in some instances.

V for victory spread to philately. The Belgian lion upheld a V on a shield in a Belgian Congo issue. The only United States postal issue of the year had a V design formed by the wings of a challenging eagle. Cuba's V, with the word "Victoria," dominated an orange one-half cent stamp placed on every piece of mail.

Costa Rica permitted a huge V and torch of liberty to be blazoned atop of the national banner in one issue.

Savings Stamps.—At last, the Standard catalogue opened its pages to the listing of these issues of the United States. Though they could not be called postal items nor yet revenue stamps, they were, like the thrift stamps of 1917–19 and the war savings issues of other countries, of interest to the collector and their sale for collecting purposes was a net gain to the country of issue. It was rumoured that the treasury department was working on plans to permit these stamps to be cancelled when turned in for the purchase of war bonds and retained for collections. A complete set of United States war savings stamps cost $6.85 for singles (10c, 25c, 50c, $1 and $5 denominations).

Commemoratives.—Two new commemoratives of the United States were issued in 1942. One, the five cent China commemorative, with portraits of Dr. Sun Yat-sen and Abraham Lincoln, could be called a war issue. The other, for the centenary of Kentucky's statehood, was a definite commemorative, in keeping with the series of statehood issues inaugurated some years ago (1927–28) with the Vermont, Massachusetts and Charleston-Carolina issues.

The Argentine republic, probably with some idea of emphasis on Pan-American solidarity, issued a Columbus lighthouse commemorative stamp on Columbus day (October 12). Switzerland's trilingual issue was an appeal for collection of scrap materials. To conserve paper, the Union of South Africa drastically reduced the dimensions of its stamps. The triumph of United Nations arms in Syria was signalized by Fighting French overprints on the familiar Syrian issues. Cuba issued a series warning against the fifth column of spies.

Literature.—The war forced continued conservation of materials, and the Standard Catalogue, in the United States, was published in sufficient quantity to meet advance orders, and no more. The result was a definite shortage of catalogues. This is interesting, because for the first time, the catalogue appeared in three forms instead of one—a volume covering the whole stamp-issuing world, as previously, and also in two limited volumes: one for the issues of the United States, the British empire, and the American colonies; the other for the rest of the world.

Clarence W. Brazer won the Eidsness award of the Washington (D.C.) Philatelic society for his new volume, *Essays for U.S. Adhesive Postage Stamps.* It was issued as a handbook of the American Philatelic society. (M. HA.)

Philippines, Commonwealth of the.

The Philippin Islands exten between north latitude 4° 21′ and 21° 10′, and lie approximatel 800 mi. to the east of French Indo-China. The northernmost the islands are in the Bashi channel immediately south of Fo mosa, while the southernmost group, usually known as the Sul archipelago, approaches to within 20 mi. of British North Borne The number of islands is well over 7,000, with a total area 115,600 sq.mi. By regular steamship routes, Manila is 631 naut cal miles southeast of Hongkong, 1,757 mi. southwest of Yok hama, 1,370 mi. northeast of Singapore, 4,838 mi. west of Hon lulu and 6,929 mi. southwest of San Francisco. The census 1939 showed a total population of 16,000,313, including the fo lowing principal non-Filipino nationalities: Chinese, 117,48 Japanese, 29,057; Americans (U.S.), 8,709; Spanish, 4,627; Ge mans, 1,149; British, 1,053. The estimated population at the en of 1942 was 17,600,000. Principal religions: Roman Catholi 12,603,365; Aglipayan, 1,573,608; Mohammedan, 677,903; paga 626,008; Protestant, 378,361. Capital, Manila (623,492), on th northern large island of Luzon. Other chief cities: Cebu (146 817), Iloilo (90,480), Legaspi (41,468).

Organic laws are the Philippine Independence act, 48 Stat. 45 as amended by various subsequent laws, the most important bei the Philippine Economic Adjustment Act of 1939, 53 Stat. 122 and the Quota Suspension Act of 1941, 55 Stat. 853; and th Philippine Constitution of 1935 adopted in accordance therewit as amended in 1939 and 1940. The commonwealth president an vice president are elected at large; the amendments of 1940 pr vided for a congress with a senate elected at large and represent tives elected by districts, superseding the previous unicamer national assembly. The Philippines are a commonwealth und the sovereignty of the United States until July 4, 1946, wh independence is provided for by the Philippine Independence ac The chief officer is a representative of the president of the Unit States known as the United States high commissioner to t Philippine Islands. The principal commonwealth officers in 19 were Manuel L. Quezon, president, Sergio Osmena, vice-presiden and J. M. Elizalde, resident commissioner to the U.S., who sits congress with the right of debate, but without vote.

History.—On July 26, 1941, President Roosevelt had call General Douglas MacArthur from retirement and his position military adviser to the commonwealth, and placed him in co mand of all U.S. army forces in the far east. Under his co mand some 90,000 of the commonwealth army (including 3 re ments of constabulary) and about 30,500 U.S. regulars (includi some 10 regiments of Philippine scouts) were mobilized.

Coincident with Pearl Harbor and Hongkong, the Philippi were attacked by Japan on Dec. 8 (far eastern time), 1941. series of aerial attacks during the following week destroyed t Cavite navy base, and the Clark, Iba and Nichols air fields, t gether with most of the defending planes. Immediately landi were attempted at numerous points on Luzon island, particula along the "Ilokano" or northeastern coast, and several bea heads were successfully established before the middle of cember. Defensive land action continued throughout Decemb The principal theatre was the central plain of Luzon north Manila. Within a comparatively short time the overwhelmi numerical superiority of the enemy, favoured with powerful na and air protection, forced the stubbornly resisting U.S.-Filipi forces toward Manila from both the north and the south. Dec. 24, 1941, High Commissioner Francis B. Sayre, Gene MacArthur, and President Quezon, together with their sta were evacuated to Corregidor. Manila was declared an open ci

The forces defending southern Luzon slipped around Lagu de Bay and joined the main northern forces on a line extendi om the Pampanga swamps into Bataan peninsula. With enor- ous superiority in the air, the Japanese gradually forced the fenders through the peninsula toward Corregidor, off the south- n tip across a two-mile strait; this fortress guarded the rear d denied use of Manila bay and harbour to the enemy. Davao southern Mindanao was invaded on Dec. 20, and the Japanese tered Manila from the south on the night of January 1–2, 1942. ıring the last week in Feb. 1942, the high commissioner and e commonwealth president with their staffs were evacuated, and March General MacArthur moved his headquarters to Aus- ılia.

Subsequent to the fall of Bataan on April 9, 1942, the enemy entlessly attacked Corregidor and its sister forts with artillery ounted on the Bataan and Cavite coasts and with a heavy con- ntration of air forces. Corregidor fell to the Japanese on May 1942. In the meantime, the enemy had invaded key points the Visayan islands; Cebu on April 10 and Iloilo on April 16. e invasion of Parang and Tagaloan on the island of Mindanao s effected on April 29 and May 3.

The outnumbered Americans and Filipinos threw back repeated acks by veteran Japanese troops with resourcefulness and acity and greatly delayed the enemy's southern thrust.

After Manila had been declared an open city and evacuated by defenders, the Japanese subjected it to repeated bombings in ich churches, schools and residential sections as well as docks l other installations of military significance were destroyed. many parts of the archipelago undefended cities, towns and lages of no military value were ruthlessly bombed and machine- nned from the air. Sternly repressive measures were taken in ling with the civilian population.

By the end of 1942 presumably all important coastal points in principal inhabited islands were under enemy control, but iable reports indicated sporadic attacks from a number of errilla bands operating from isolated or mountainous up-country nts. A large prisoner-of-war camp was established at Camp Donnell, 60 mi. north of Manila. More than 3,500 civilians pproximately 2,500 Americans and 1,000 British and Dutch) re held in Manila at Camp Santo Tomas. Other civilian con- ntration camps were located at Baguio, Legaspi, Cebu, Barolod, ilo, Davao and Malabalay.

Filipinos, allowed limited freedom of residence, occupation and igion, were subjected to a carefully designed policy of attrac- n. The Japanese re-opened a considerable number of elemen- y schools, but all textbooks were censored and the curricula re distorted to include the Japanese language and to suppress S. and native history, civics and culture. Elaborately hedged omises of independence, with the Filipinos as reliable adherents Japanese policy in the far east, were made.

Jorgé Vargas, formerly executive secretary to President Que- n, with cabinet rank, was appointed late in Jan. 1942 by the panese commander-in-chief in the Philippines to be chairman the executive commission. This commission assisted the Jap- se military authorities in the establishment of "Central Ad- nistrative Organs and Judicial Courts" which apparently con- ed of 7 departments and 40 or more bureaus and courts. The partments were reportedly headed by Filipinos formerly hold- high positions in the commonwealth government.

Political Developments.—In accordance with the constitu- nal amendments of 1940, commonwealth officers and members congress had been elected in Nov. 1941. President Quezon and e-President Osmena were inaugurated for their second terms Dec. 30, 1941, at Corregidor. However, the congress was able to sit by reason of the invasion. In March 1942 High mmissioner Francis B. Sayre arrived in Washington, where his ce was temporarily established. On Sayre's resignation, the president of the United States, by executive order of Sept. 16, 1942, transferred the duties, powers and functions of the high commissioner and his office to the secretary of the interior. The temporary office in Washington consisted of an economic adviser and a financial expert with limited clerical assistance principally engaged under a presidential directive in preparation of plans for the financial and economic rehabilitation of the Philippines.

President Quezon and Vice-President Osmena arrived in Washington in May 1942 to set up the official executive establishment of the commonwealth. President Quezon signed the United Nations pact for the commonwealth and represented it in the Pacific war council. Under the terms of the 1940 amendments to the Philippine constitution, President Quezon would serve until late in 1943, when he would automatically be succeeded by Vice-President Osmena.

Education.—Public schools, March 1940: number, 12,057; enrolment, primary, 1,572,639; intermediate, 277,574; secondary, 90,579; collegiate (normal and technical), 3,777; total, 1,944,569. Private schools, June 30, 1940: number, 439; enrolment, kindergarten, 2,844; primary, 41,861; intermediate, 22,578; secondary, 51,055; collegiate, 31,153; total, 149,491; in addition, recognized schools (136) offering special vocational courses had 9,188 enrolment.

Finance.—The monetary unit is the peso, fixed at a mint par of U.S. $0.50; exchange rates showed only negligible fluctuations from the par rate in 1941. Estimated general fund balance, June 30, 1942 on deposit in the U.S., 100,000,000 pesos. Total bonded indebtedness, June 30, 1941, 149,507,000 pesos; total sinking fund reserve 77,484,863 pesos. Currency dollar reserves on deposit in the U.S. as of June 30, 1942: cash surplus exchange standard fund plus cash balance treasury certificate fund U.S., $134,169,734. Currency in circulation and available per circulation as of Sept. 30, 1941, 222,407,808 pesos, including notes of the Bank of the Philippine Islands (1,358,385 pesos) and of the Philippine National Bank (2,299,816 pesos).

Trade and Communication.—During 1941, Philippine overseas markets, except in the U.S., were virtually closed on account of limited tonnage and restrictive control of foreign exports and funds. Overseas trade values Jan. 1 to Sept. 30, 1941 were: Shipments to U.S., 227,000,000 pesos (of which 77,000,000 pesos were gold and silver bullion and concentrates); exports to foreign countries, 41,000,000 pesos; total outward, 268,000,000 pesos; shipments from U.S. 180,000,000 pesos; imports from foreign countries, 43,000,000 pesos; total inward, 223,000,000 pesos. The total overseas trade value, 491,000,000 pesos, was 11% in excess of that for the same period in 1940 and only 16% under the total for the entire year of 1940. Outward values of principal commodities, Jan. through Sept. 1941: coco-nut oil, 22,000,000 pesos; copra, 17,000,000 pesos; desiccated coco-nut, 9,000,000 pesos; abaca, 29,000,000 pesos; cordage, 3,000,000 pesos; embroideries, 6,000,000 pesos; logs, lumber, 7,000,000 pesos; gold and silver bullion and concentrates, 77,000,000 pesos; other minerals, 12,000,000 pesos; centrifugal sugar, 48,000,000 pesos; refined sugar, 7,000,000 pesos; cigars, 4,000,000 pesos; pineapples, 3,000,000 pesos. Similarly for inward commodities: wheat flour, 10,000,000 pesos; rice, 1,000,000 pesos; other foodstuffs, 25,000,000 pesos; iron and steel, 15,000,000 pesos; automotives, 8,000,000 pesos; machinery, 17,000,000 pesos; non-metallic minerals and chemicals and manufactures thereof, 43,000,000 pesos; textiles, 50,000,000 pesos.

Communication.—In 1940: railroads, 840 mi.; highways (kilometres) first-class, 11,771.9; second-class, 7,393; third-class, 3,795.1; trails, 4,912.1. Motor vehicles registered: automobiles, 33,898; trucks, 20,236, motorcycles 630. Airways: 1,171,453 passenger miles; 20,407 passengers; 3,083,415 lb. air express;

THE LAST U.S. COMMANDER ON BATAAN, Maj. Gen. Edward P. King, Jr., as he waited with his aide at Lamao in April 1942 to discuss terms of surrender with the Japanese

OFFICE of the *Manila Herald* burning during a Japanese air raid shortly fore the fall of the Philippine capital Jan. 2, 1942

MARIVELES, at the southern tip of Bataan peninsula across a narrow strait from Corregidor Island, was the tiny port through which the U.S.-Filipino defenders received their meagre supplies before the surrender of April 9, 1942

855 lb. air mail. Telephones, 31,419. Telegraph lines, 14,716,- o kms. Broadcasting stations, 6.

Agriculture.—The total estimated value of crops in 1938 was 7,144,000 pesos. Area planted and value, leading crops: palay ough rice) 1,912,000 hectares, 136,423,000 pesos; sugar cane, 8,000 hectares, 113,559,000 pesos; coco-nut, 643,000 hectares, 126,000 pesos; abaca, 508,000 hectares, 22,672,000 pesos; corn, 3,000 hectares, 19,424,000 pesos; bananas, 92,000 hectares, 10,- 2,000 pesos; tobacco, 75,000 hectares, 4,125,000 pesos. Live- ck and poultry (1939) were valued at 141,514,451 pesos. mber and value: carabaos, 2,918,730, 78,826,516 pesos; hogs, 48,515, 26,100,326 pesos; cattle, 1,349,264, 20,077,610 pesos; ckens, 25,365,102, 8,994,591 pesos; horses, 340,433, 6,222,661 os; goats, 402,173, 874,155 pesos; ducks, 690,868, 418,592 os.

Manufacturing.—Chief manufactures are centrifugal sugar, ora, coco-nut oil, desiccated coco-nut, cordage, cigars and cigar- es and embroideries. Production of sawmills in 1940 was 332,- 3,721 bd.ft.; number of mills, 148.

Mineral Production.—Total estimated value of minerals pro- ced in 1940 was 91,626,384 pesos. Chief products: gold, 1,- ,745 fine oz., 76,563,888 pesos; iron, 1,221,126 long tons, 33,728 pesos; copper 20,014,918 lb., 3,487,701 pesos; chromite, ,919 long tons, 2,661,764 pesos; silver, 1,394.736 fine oz., 74,094 pesos; manganese, 48,036 long tons, 1,287,011 pesos; d, 2,080,381 lb., 117,927 pesos; platinum, 6.03 troy oz., 271 os. (*See* also Japan; World War II.) (E. D. H.)

ilosophy.

Two of the most important philosophical events of 1942, at least for western readers, re the translations into English of *The Gospel of Ramakrishna* Swami Nikhilananda and seven books of Søren Kierkegaard Walter Lowrie, David Swensen and Alexander Dru. Both are nslations of most significant but very different religious inter- tations of reality.

The Gospel of Ramakrishna belongs among the great works of stical and devotional literature. An impoverished Brahmin, makrishna transcended not only the caste distinctions of India the creedal variations and conflicts of the major religions h which he came in contact. He embraced all of the main hs of India along with Christianity and the religion of Islam, he is not eclectic. On the many paths to God he finds one tral thing, an object of love, a destination, a focus of mystical tasy, that is the same for all faiths. His approach to God is ely religious in this sense. It is a devotional attitude in respect which specific contents and creeds become irrelevant.

Ramakrishna renounces the world of action. He repudiates orm, or helping the world. Leave that to the Lord, he says. one loves God more he will do less in the world of action. deep devotional concern leads him astray in this respect, at st to western eyes. But the profundity of his devotion is ortant. Like all India he turns to mystical identities and stantives rather than to causation and process.

The English translations from the Danish of seven of Kierke- rd's works brought to a large public a tense, religious mind y different from the serene surrender of Ramakrishna. Though h the Indian saint and Kierkegaard are religious, non-rational either mystical or subjective in their approach to the world, storm and passion and the struggle of the one and the ine passivity of the other are the west and east all over again.

Other books of philosophical interest published were: *The isis of Our Age* by P. A. Sorokin, a swashbuckling, over-con- ent synthesis of history on a cyclical pattern, but withal chal- ging; *Introduction to Semantics* by Rudolph Carnap; *Social usation* by R. M. MacIver; *World Hypotheses* by Stephen C. Pepper; *Experience and Substance* by DeWitt Parker; *The Philosophy of Alfred North Whitehead*, edited by Paul A. Schilpp; *Foundations for a Science of Personality* by Andras Angyal; *The Intent of the Critic* by Wilson, Foerster, Ransom and Auden; *Reason and Revolution* by Herbert Marcuse, a study of Hegel and the rise of social theory; *The Philosophy of Edmund Husserl* by E. Parl Welch, though largely paraphrase and extracts, valuable because Husserl was virtually unknown in America; *A Dialectic of Morals* by Mortimer J. Adler, an account of the author's conversations with his class at the University of Chicago. (B. B.)

Phoenix Islands: *see* Pacific Islands, British.

Phosphates.

Mine production of phosphate rock in the United States in 1941 was 4,920,843 long tons, deliveries 4,688,312 tons, and consumption is estimated at 3,594,000 tons, all material increases over 1940. There were no imports, and exports increased, the 820,396 tons exported in the first nine months of 1941 being greater than the total for the year 1940. Mine production having increased more than sales, producers' stocks were at the highest level in a decade.

Production data from countries supplying about half of the normal output showed an increase of 11% over 1940, to 5,635,800 tons, but it is probable that other major producers, especially in Africa, were not able to maintain their 1940 level, and it is questionable whether the 1941 world total was any greater than the 10,000,000 tons estimated for 1940. The 1941 Tunisian output was estimated at 720,000 metric tons, and that of Curaçao at 125,000 tons, as compared with 4,736,546 tons in the United States. (G. A. Ro.)

Photography.

During 1942 all branches of photography were directly affected by war production. Great quantities of photographic materials were produced in Great Britain and the United States for immediate use on all war fronts. As it became increasingly important to maintain large photographic supply depots throughout the world, the scarcity of cameras, films, papers and other photographic products became a reality among the nonmilitary classes which included the professional photographers as well as the amateurs. The war between the United Nations and the axis accelerated the production of certain essential photographic products. New lenses, films and equipment were being made for exclusive military use.

Industrial Photography.—Photo tracings were used in many industrial plants to shorten the time required for making line drawings. Photographers and engineers in the aircraft industry pioneered in work for reducing cost and time in the making of templates. The Eastman Kodak company produced matte transfer paper in addition to their matte transfer film for use in the aircraft and other industries for making photo templates. Still and motion picture high-speed photography was finding widespread use in testing laboratories for recordings of vibrations, photo-elastic stress analyses, spectra and other physical phenomena. The X-ray pictures of castings, wells, small assemblies and other objects eliminated flaws and sped up production. The high-speed X-ray was valuable in ballistic studies. A new X-ray tube developed by Dr. C. M. Slack and his assistants of the Westinghouse Lamp Division Laboratories made high-speed X-ray pictures at a millionth of a second. Infra-red photographs of welded parts showed greater contrast between the joined metals, a clear definition of the outlines and the extent of defects and impurities.

Colour Photography.—Ansco colour film was introduced and offered to the armed forces and government departments. This multi-layer film was the first one which could be exposed, developed and projected by the user without the need of special equipment. It is manufactured for use in daylight and tungsten light.

Kodacolor roll film and prints were announced in January. Kodacolor is a process by which colour negatives can be made in ordinary roll film cameras and printed to give colour prints on paper. The finishing is done by the manufacturer, because best results cannot be obtained without proper chemical and photographic control. The Kodacolor process resembles Kodachrome in one sense, in that the film is coated with three layers which respond to blue, green and red light. It differs, however, in two fundamental respects. In Kodachrome the colours are formed by using special developers in which the dye-forming couplers are dissolved. In Kodacolor the couplers are actually incorporated in the sensitive coatings of the film. They are dissolved in minute droplets of organic material which is dispersed in the emulsions. Further, Kodachrome is developed by the reversal method to give a positive transparency, while Kodacolor is developed directly to give a film negative, and this is then printed onto a paper coated in a similar manner to give coloured prints.

Minicolor prints 8X were made available, in addition to Minicolor prints 2X and 5X previously announced. Minicolor prints in sizes up to 30x40 in. were furnished on special order. Minicolor prints were made from 35-mm. Kodachrome originals on white pigmented cellulose acetate support coated with Kodachrome emulsion.

Pan-Chroma-Relief film was an entirely new product intended for producing imbibition matrices for making colour prints from positive colour transparencies, such as Kodachrome, or complementary colour negatives, such as Kodacolor, without the use of intermediate separation negatives or positives.

The same material served the dual purpose entirely satisfactorily when processed with radically different techniques. Briefly, working from positive transparencies the Pan-Chroma-Relief film is exposed emulsion toward light source, developed and the silver gelatin image etched out by a special peroxide solution, thus giving positive from a positive.

Working from a negative in complementary colours, the film is exposed base toward light source, developed and the silver image turned into a relief by hot-water treatment, giving a positive from a negative. The colour prints are then made by the methods familiar to all workers in imbibition or wash-off relief processes.

Special tricolour gelatin filters were worked out for this product which required an approximate 1:1:1 exposure ratio when a standard enlarging bulb was used.

Kodachrome continued to be the most widely used colour film, with increasing use in the military and industrial fields. By the end of 1942 priorities and military demands showed that it would be increasingly difficult for the ordinary consumer to get Kodachrome film.

Microphotography.—Within the previous two to three years the technique of microphotography permeated many phases of business and industry and likewise achieved an important place in scientific and cultural work. As a technique, it achieved a high status of mechanization and, like the photocopying or photostat machine, it became not an end in itself but rather a means to an end, or in other words, a valuable tool for many diverse types of work. Significantly enough, all of the large film manufacturers in 1942 provided two or more specialized emulsions designed for use in microcopying. Microphotography reproduction in full colour, with the exposures made and film processed in any ordinarily well-equipped laboratory, was a reality. Equipment manufacturers developed highly-mechanized semiautomatic an automatic cameras, special film printers and continuous processing machines modelled somewhat after those used in the motio picture industry but fitted with precision controls and other devices required for processing microphotographs. A large numbe of continuous automatic enlargers, capable of reproducing enlarged paper facsimile prints from negative microfilms on a production line basis, were manufactured largely for use with th V-mail or "soldier's mail" program. These are also applicable t other projects.

In response to existing demand, general purpose equipment wa superseded to some extent by specialized machines intended fo particular applications. Coincidentally, however, a particularl successful attempt was made to bring low-cost simplified equipment within the reach of the average individual. A small microfilm reading machine was available in 1942 which cost no mor than a typewriter. The microprint process, wherein 100 pages o text are placed on a sheet of paper no larger than an ordinar book page, gave promise of becoming a popular publicatio method so that a library of 10,000 volumes in microprint for together with a reading machine would occupy a space no large than an ordinary office desk.

Under the direction of the committee on scientific aids t learning, the Spencer Microfilm Reader was made available. Th was designed to fill the low-priced market and yet give goo optical results.

In the federal government microphotography became an accepted method of records control in administration. By law (5 Stat. 958) microphotographic copies prepared in the prescribe manner must be judicially noticed and might replace origina documents that had been destroyed. Special courses of instruction in microphotography were being given in at least two larg universities (Chicago and Columbia) for technicians and administrators.

V-Mail.—In April 1941 the British adopted the Airgraph system to solve the problem of getting mail to and from the force in the near east. In 1942 the system was put into operation fo the American forces, scattered over the world, under the nam of V-mail. The process was worked out by the Eastman Koda company, originally with the object of using it for the rap transit of mail by aircraft in peace time. Arrangements wer made for its operation with Pan American Airways and Britis Overseas Airways, and when war came the service was offered t the American and British governments. The method employe is to write a letter on a special sheet of paper. This is photographed on a 16-mm. film and flown in this form to its destination. There it is enlarged onto a sheet of paper, folded, sealed i an envelope and sent to the addressee. Eighty-five thousand letters, which would normally weigh about 2,000 lb., weigh only 2 lb. in film form.

Still another important development in the copying field wa the continued use of reflex copy paper. Kodak put their produc on the market during 1942. This photographic paper is used b placing directly in contact with a book page or other materi and then a light is turned on and the exposure is made directl through the back side of the reflex copy paper.

Agfa Direct Copy film was introduced by Agfa some years ag and had found wide application for duplicating negatives or positives in one step. A new Direct Copy film was made availab which has greater speed and more latitude. The new film can b more universally used and is less critical in regard to exposu and darkroom handling than the product formerly made.

Sensitized Translucent Waterproof Paper.—Several attempts to introduce such a material as a negative medium ha been made in the past. They were unsuccessful, however, du her to deficiencies in the base paper or to prohibitive cost. In the latter part of 1941, the Defender Photo Supply Comny, Inc., in co-operation with an American waterproofing firm, ceeded in developing a satisfactory and moderately priced oduct which was made commercially available and which found reasing acceptance as a supplement to conventional film negaes in planographing, duplication of blueprints, and diazotypes, otographic reproduction of pencil and ink tracings, auxiliary atives in template processes, etc. Chief advantages as comed with film products are resistance to tear, low shrinkage and etch, and moderate cost.

Photographic Lighting.—Probably the most important deopment in 1942 as regards photographic lamps and in fact all es of light sources was the simplification and limitation of lamp es imposed upon the industry by the War Production board's p order L-28A. By the end of the year photolamps were ainable only by various government branches, including the itary, and publishers, such as newspapers and periodicals. At end of the year no provision was made for releasing lamps to mercial photographers.

This curtailment of photographic lamps included all flash ps for civilian use. Until after the war flash photography for general public was to be suspended.

ne of the most significant developments in the field of flash tography was the production of the Ilex built-in-shutter flash chronizer mechanism. Cumbersome flash synchronizer atments were, normally, mounted on the camera body and out camera shutters. With this new Ilex synchronized shutter, rything is built right into the shutter mechanism. Electric rent is drawn only for igniting the flash lamp. Time delays n zero to about 23-milliseconds can be set as quickly and ably as the speed of the shutter. This range covers all avail lamps, such as the Kodatron Speedlamp, the SB bulb and standard flash bulbs. It was the first synchronizer made ilable for universal use.

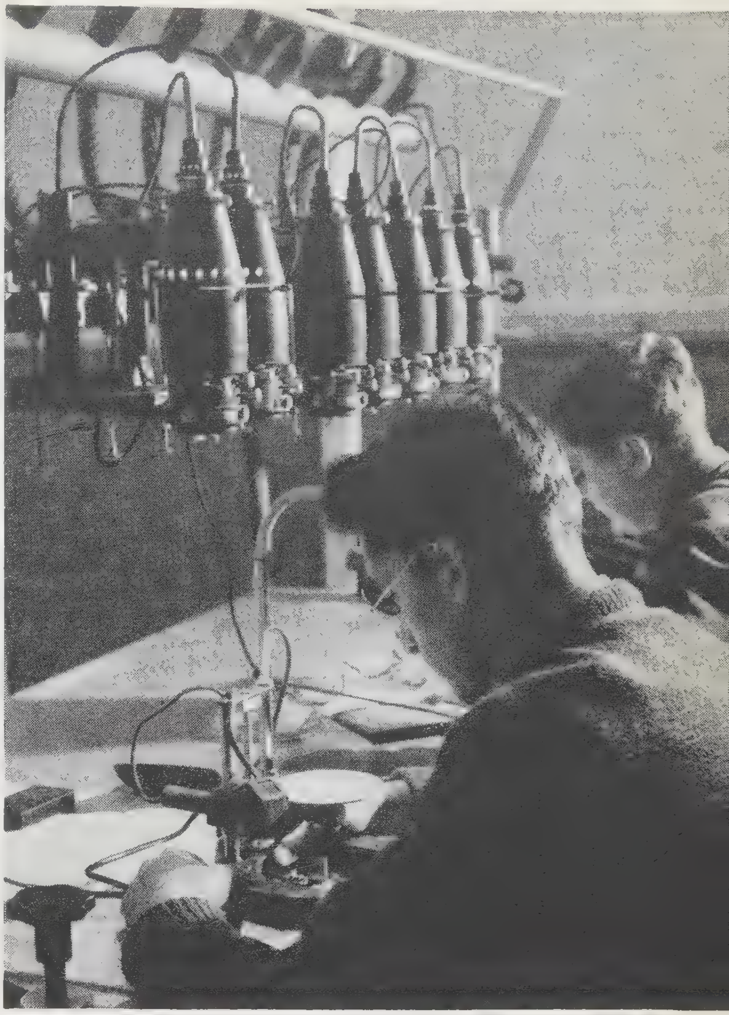
light aerial photography by flash bombs in the military field continued on a greater scale. This work was greatly accelerl by the introduction of new aerial films of extremely high ed and new lenses of high aperture, particularly one of 12-in. l length and an aperture of f./2.5 containing the new Kodak s.

Miscellaneous Developments.—In 1942 Defender embarked n the commercial manufacture of optical gelatin filters. Two s were offered: namely, conventional and lacquer-coated rs. The latter variety is a noteworthy improvement over viously obtainable filters, due to their resistance to adverse ospheric conditions and ruggedness against wear and tear se.

uring 1942 Defender concluded experimental work resulting water-resistant basic paper stock which, suitably sensitized, be used for aeromapping and quick finishing, such as reed in aerial reconnaissance. A new type waterproofing layer, eved to be superior in water and moisture resistance as well exibility over conventional nitro and acetate cellulose lacquers, used in the manufacture of this product. This was available to the armed forces.

mong the new lenses brought out during 1942 were the Kodak ra lenses in focal lengths of 8½ in., 10 in. and 12 in., suppleting the earlier 14-in. Ektra. The Eastman High Speed nera, Type 3, for making 16-mm. high-speed motion pictures o 3,500 frames per second was another significant developt of the year.

odak fluorescent water colours were introduced. They were ially designed for the use of commercial artists and illusors in the making of sketches to be reproduced by photomechanical methods in which colour correction is applied photographically.



TO GIVE AERIAL PHOTOGRAPHS a third dimension and thus locate contours, U.S. army engineers use a special multiplex machine

The Kalart company produced its new Model E De-Luxe camera range finder exclusively for military use. Also this firm introduced the Focuspot, a light beam focusing device that is projected through the range finder to facilitate quick focusing camera adjustments.

The Ansco-Sweet Densitometer was described in various scientific journals. A few instruments were made available for defense and government agencies.

The Mallinckrodt Chemical Works placed the production of ammonium thiosulphate on a commercial basis in a purity suitable for photographic work. This chemical may be used in place of hypo (sodium thiosulphate). Ammonium thiosulphate gives a faster working solution for ordinary negative development such as certain types of aerial reconnaissance as well as in the industrial field. The expanding use of X-ray methods of inspection of castings produced another demand for more rapid processing of the X-ray film. X-ray developer and X-ray fixer in concentrated liquid form were made available as Liquadol and Liquafix.

The Electron Microscope.—During 1942 electron microscopy advanced in two directions—a great increase in the number of centres of microscope research, and a broadening of the scope of the electron microscope by the application of new procedures and accessory apparatus. RCA electron microscopes were in operation in various laboratories and hospitals in addition to a few privately constructed ones. Many original observations and discoveries resulted from electron microscope research. However, these findings were not made public for military reasons. The electron microscope is finding many new uses in the entire photographic field. This equipment will undoubtedly be included in many new research departments and photographic laboratories in the future.

In the bacteriological field, the study of bacterial morphology and bacterial reactions—in particular reactions of bacteria and their antibodies and "staining" effects of heavy-metal salts—were carried further. Certain bacteriophages (parasites of bacteria), once believed to be macromolecular in nature, were shown by Drs. S. E. Luria and T. F. Anderson to consist of head and tail, the former with a characteristic granular structure. A definite complex structure could also be demonstrated in the case of the elementary bodies of the virus of vaccinia (cowpox), suggesting a closer relationship to bacteria than to the truly molecular plant viruses such as tobacco mosaic virus.

In the study of relatively thick specimens, such as biological sections, progress was made possible by the use of electrons accelerated through very high voltages—up to 300 kv. Thus Drs. A. G. Richards and T. F. Anderson were able to shed new light on the structure of insect cuticle and of insect tracheae or air tubes. Stereoscopic pictures, obtained with a special specimen holder, aided considerably in the interpretation of the observations

In the chemical field, the possibility of using the RCA electron microscope as a high-precision electron diffraction camera added greatly to its utility. A specimen which has been observed in regular fashion may be quickly transferred to a second position in the microscope, where it gives rise to an electron diffraction pattern. For finely divided material the latter, recorded on a photographic plate, consists of a series of concentric rings, whose diameters are determined by the separations between the atoms, or by the crystal structure of the material. Thus the diffraction unit performs a microanalysis of the specimen observed in the electron microscope.

Finally, the electron microscope was adapted for surface observation, essential in metallurgy, in two different manners: (1) by the preparation of very thin plastic replicas of the surface to be studied which are then examined in the standard instrument by transmission, and (2) by the development of a "scanning electron microscope" for the direct examination of surfaces. The latter combined the techniques of electron microscopy and electric picture transmission (facsimile) to obtain greatly magnified recorded images of surfaces.

The standard electron microscope, recently redesigned, was found to have an optimum resolution of the order of 30 angstroms, corresponding to a useful magnification of 100,000. A much smaller electron microscope, operating on similar principles, was developed. With a microscope column measuring only 16 in. in length, versatility and high initial magnification were sacrificed to compactness.

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Physics.

It used to be difficult for some competent physicis to find positions in which they could use their abi ties to the full. In 1942, the situation was reversed. Governme departments and laboratories, industrial organizations, the arm forces, colleges and universities were all prepared to employ phy cists if they could be found. Physics went to war. The first n tional committee, designed to advise local draft boards concer ing the deferment of essential workers, was set up in Washingt to ensure that the current supply of physicists be conserved, a to ensure that physicists-in-training would, later on, be locat in positions where they could give the greatest help to the w effort. Circumstances drew physics and physicists out of secl sion to play a key role in the war. A necessary consequence this change in the national position of physics was that most cu rent research was of a confidential nature, whose immediate di closure would be inimical to the best interests of the countr The developments which are summarized below therefore deal, the main, with special aspects of research programs which we initiated several years ago, and upon which work had in 19 practically ceased.

Thermal Diffusion.—Several methods of separating isotop had been tried in the previous 20 years. Of these, the mo promising was that involving thermal diffusion. This phrase d scribes the process whereby, in a mixture of gases, a temperatu gradient creates a concentration gradient, making the lighter pa ticles more numerous in one place than another. A separati of the light and heavy components is thus theoretically possib The theory of the phenomenon is not simple, and the mathema cal predictions, which must be based on some arbitrary but reaso able assumption concerning the forces between molecules, do n give much more than a qualitative agreement with experimen One interesting point in the theory is that if the force between pair of molecules be taken as proportional to the inverse fif power of their distance apart, then a temperature gradient in gas mixture does *not* create a corresponding concentration grad ent. Hence the fact that isotopes can be separated implies tha

THE 4,900-TON CYCLOTRON of the University of California at Berkel Calif., was turned to military uses in 1942 the theory be correct, the forces between molecules do not y with distance in quite the way this simple inverse power suggests. In spite of the many defects of the theory, the cess of thermal diffusion is, in practice, an effective sepa- or of isotopes. Clusius and Dickel, whose work was mainly ponsible for the renewed attention given to the subject, used nultiple-tube unit with an effective length of 36 metres, and ained from ordinary hydrogen chloride samples which con- ned about 99.5% of the light (35) isotope of chlorine, and ers which contained the heavy (37) isotope to the same de- e of purity. The case of chlorine happens to be a fairly easy , for the two stable isotopes differ by 6% in mass, and occur urally in comparable amounts—actually almost in the ratio ee to one. Since thermal diffusion occurs also in liquids, it expected to be used by those who seek to develop practical rces of atomic energy in an effort to separate the remarkable isotope from ordinary uranium.

he Nucleus.—The laws of conservation of energy and of mentum are so well established that physicists are unwilling admit their failure even in nuclear processes. Several years , a study of the beta ray spectra of radioactive elements ught to light an apparent violation of these laws. But rather n admit their failure, Fermi invented a new particle, the trino, which he assumed took part in beta ray disintegration, such a way as to permit the two laws to remain valid. The blem thereafter was to detect the neutrino, for the properties ch the theory demanded of it were nearly all negative. It ded no mass, in this respect resembling the photon; it needed charge, like the neutron; it needed no magnetic moment; it ded a spin of one-half. The only feasible way of detecting it by the recoil it gave to another particle, for, like the photon, an carry momentum.

he experiments designed to detect the neutrino had been ewhat inconclusive. New experiments by J. S. Allen were h more clean-cut. He chose a reaction in which only one r particle, a Li^7 nucleus, was involved, which carried away the momentum of the neutrino. Actually, he was able to de- the recoiling Li^7 nuclei as positive ions, a condition in which were reasonably easy to handle. These Li^7 ions, flying along vacuated tube, were controlled by a retarding potential, which n large enough, prevented the ions from reaching an amplify- device. Hence, when the current generated by the amplifier reduced to zero, it was considered that the retarding potential large enough to turn back the fastest of the ions. From , the velocity of the ions could be calculated, and hence the nentum carried away by the neutrino. Allen found that 30 tron volts represented the energy which the Li^7 ions gained n the neutrino. This information, by itself, does not deter- e uniquely the properties of the particle. It does not, for ance, guarantee that its mass is zero. Indeed, if the mass e as large as one-fifth of that of the electron, Allen's experi- t would have been unable to tell the difference. Although in respect the result is inconclusive, the experiment increases ormously the probability that the neutrino really exists.

Cosmic Rays.—The most interesting new development was tained in a paper by Millikan, Neher and Pickering, who co- nated the results of a world-wide survey extending over sev- years to arrive at a new hypothesis concerning the origin he rays. Experiments showed that cosmic rays do not come n the stars, but from a much more uniform distribution of rces in the nearby universe. Yet the energy which cosmic carry is so great that no other process save atomic annihila- can provide it. Millikan, Neher and Pickering assumed that rays arise during the annihilation of atoms in interstellar ce, giving rise to charged particles of some kind, and proceed to test this theory as far as they can. The most common atoms in space (which is not quite, though nearly, devoid of matter) are hydrogen, helium, carbon, nitrogen, oxygen and silicon, which occur approximately in the ratios 100, 10, 1, 1, 1, 1. There were good reasons for believing that the radiations from hydrogen annihilation are too weak to penetrate to the earth through the screening magnetic fields of the earth and sun, but the heavier atoms mentioned can produce annihilation radiation capable of reaching sea level at certain parts of the earth. The exact process by which the annihilation occurs is not known, but the energy is calculable in each case, being due merely to the disappearance of mass and the appearance of another form of energy in accordance with a well known equation set up by Einstein. From current knowledge of the earth's magnetic field, it can be predicted that the radiation from silicon could be observed all the way from the equator to the magnetic poles. The weaker radiations from the other elements, being more easily deflected, can be observed from the poles only as far as certain latitudes which are determined by the particular energies in question. Hence, in proceeding northward or southward from the equator, plateaus should be discernible on a graph showing the varying cosmic ray intensity as a function of latitude. This is exactly what the world-wide survey showed. It had not been possible to date to test the theory quantitatively with any great precision, nor to relate it closely to other types of cosmic ray theory. It gives little information as to the nature of the primary particles or their absorption in matter, but it will serve as a good qualitative hypothesis until more experimental results are available.

X-Rays.—The focus of interest in 1942, as it was in 1941, was the interpretation of the anomalous diffuse spots which are found in the diffraction patterns of crystals. Raman and his school in India still maintained that they are due to a quantum phenomenon analogous to the optical Raman effect, while the majority of workers in other English-speaking countries believed that no quantum phenomenon is involved. Be that as it may, something very useful was emerging from the work. As Lonsdale hinted nearly two years previously, the diffuse spots are very closely related to the elastic properties of the crystal. The original theory of Waller concerning the heat motions of atoms in a crystal was extended by Jahn in such a way as to connect the appearance and size of the spots with the elastic constants of the crystal. The pattern for tungsten, a highly elastic metallic crystal, is sharp and small, whereas those for sodium and lead are fuzzy and spread out. Measurements of such patterns are in good agreement with Jahn's calculations. The importance of the work lay in the fact that it promised to open up a new method of determining the elastic constants of a substance without bending or twisting it. (*See* also X-RAYS.)

Active Nitrogen.—This form of nitrogen can be created by certain types of electrical discharge. It glows with a yellowish light which persists for a long time after the excitation ceases. First discovered in 1900, its exact nature had been a mystery. But thanks to a fine series of experiments by Lord Rayleigh, and a neat summing up by Debeau, the main details of its behaviour were established. Rayleigh first found by photometric measurements that only about one molecule out of every 1,000 in a volume of strongly activated nitrogen actually gave out radiation. What, then, were the other 999 molecules doing? In his most recent series of experiments, he observed that pieces of metal foil immersed in active nitrogen were raised to incandescence or were even melted. By measuring the power emitted from the foil in the form of temperature radiation, he was able to deduce that the energy concentrated on the foil was so large as to require *every* molecule in a volume of active nitrogen to transport some 5 or 10 electron volts of energy to it. This suggested that active nitrogen is almost completely dissociated. The finishing touch was applied by Debeau at the University of California, who proved, by repeating an old experiment of J. J. Thomson's, and by some new experiments of his own, that active nitrogen is really in the atomic form. He then interpreted the subsequent behaviour of the gas so as to account for the observations of Rayleigh. It appeared very probable that the first step in the return of active nitrogen to the normal form is the formation of a "collision complex," a grouping of two atoms in a manner different from the ordinary molecular binding. This collision complex can return to the ordinary form of molecular nitrogen by one of two paths. Either light is emitted, or else the excess energy is given up in the form of heat at a suitable surface in the gas. The former occurs only about once to every thousand of the latter. Hence, from the point of view of energy, the glow of active nitrogen, on which most of the experimental work has been done, is almost insignificant.

Other topics of interest were the scattering of protons and neutrons by nuclei, and the behaviour of ions and electrons in crystals, particularly in their application to photoconductivity and the photographic process. A useful summary and brief bibliography of physics in 1942 were given in the *Journal of Applied Physics*, Feb. 1943. More detailed information and references to related research in foreign countries can be found by working from the indexes of the *Physical Review*, vols. 61 and 62.

(T. H. O.)

Physiology.

Treatment of Shock and Haemorrhage.—The most important single feature in the treatment of both wound shock and haemorrhage is restoration of the blood volume. In haemorrhage, whole blood is lost from the body; in wound shock, blood plasma (whole blood minus the blood corpuscles) is lost into the tissue spaces. It was found that the replacement of the blood volume is much more important than the replacement of red blood cells, even after extensive haemorrhage. This fact is of military importance because whole blood is perishable, and difficult to transport and store, whereas blood plasma is capable of long storage and easy transportation in the liquid, frozen or dried state. Dried human plasma was adopted as the official blood substitute by the U.S. army and navy. The navy also used dried human albumen (one of the blood proteins). Experiments were carried out in regard to the possible use of bovine or horse serum albumen as a blood substitute for human use. This would supply a cheap and unlimited source. However, a product sufficiently pure and non-toxic was not prepared. The army and navy require about 2,500,000 pints of blood yearly for the production of dried plasma during the present emergency.

Nerve and Muscle.—The events which transpire at the neuromuscular junction have long been of interest to physiologists. Each voluntary muscle fibre is supplied by a motor nerve filament which terminates upon the muscle fibre in a specialized structure known as the motor end plate. Excellent photomicrographs of these motor nerve endings were obtained. It was found that the motor end plate expands when the muscle fibre contracts, and retracts when the muscle fibre relaxes. The demands of increased functional activity appear to produce an expansion and extension of the motor end plates by active ameboid motion. This increase in surface of the end plate may favour transmission of the nerve impulse to the receptive substance of the muscle. These findings were interpreted as favouring the chemical theory of neuromuscular transmission. During starvation, the motor endings expand and finally appear to become separated from the muscle fibres.

The fact that an increase in acidity causes a marked accentuation in after-discharge phenomena (*i.e.*, a muscle continues to respond after the stimulus is removed from the nerve) fits in well with the chemical theory of synaptic transmission. It was thought that the increase in hydrogen ion concentration prevents the d struction of acetyl choline and thus allows its accumulatio Acetyl choline was thought to be the chemical mediator in neur muscular transmission. Acid-neurohumeral interplay may infl ence all physiological processes and also pathological manifest tions where acetyl choline is involved, *e.g.*, mountain sicknes tetany, coma, etc.

Vitamins.—The relationship of vitamin deficiency to gray ha received considerable attention. A deficiency of pantothenic ac (a member of the vitamin B complex) was found to cause gra ing of the hair in experimental animals. This could be co rected by the administration of pantothenic acid. A lack of th substance was also found to cause a loss of pigment in chic feathers. Some claimed that para-aminobenzoic acid would al darken gray hair in rats and in human beings. This was denie by others. The ratio between the para-aminobenzoic and pant thenic acid present in the body may be the important factor, relative increase in the former promoting graying of the hai Some believed that para-aminobenzoic acid stimulates the grow of certain intestinal bacteria which destroy pantothenic acid.

Studies indicated that a deficiency in certain members of th vitamin B complex may cause high blood pressure in the rat. was suggested that the vitamin deficiency blocks the action certain enzymes which are essential to make oxygen available the kidney cells. Massive doses of vitamin A were reported lower the high blood pressure produced by renal ischemia in th dog. (*See* also VITAMINS.)

Radioactive Elements.—By the use of radioactive carbo atoms produced in the cyclotron it was shown that animals utili carbon dioxide in metabolism. It had long been known that pla cells use carbon dioxide in the synthesis of carbohydrates, b this was not known to occur in animal cells. It was shown, how ever, that pigeon liver tissue utilizes carbon dioxide in the sy thesis of certain complex organic compounds related to the carb hydrates and perhaps also to the proteins.

Aviation Physiology.—The effect of exposure to altitude o the human body received an immense amount of investigatio during 1942. Much of this investigation was of a confidenti nature The problems of greatest importance and regarding whic important discoveries were made may be enumerated as follow (a) The development of oxygen supply equipment and oxyge masks and helmets; (b) The study of factors which increa tolerance to oxygen lack; (c) The incidence of the symptoms decompression sickness in aviation cadets (the cause and preve tion of such symptoms as the "bends" and "chokes" is of muc importance and progress has been made); and (d) The amelior tion of the "blackout" or loss of vision and later the loss of co sciousness which occurs when an aviator makes a sudden turn high speed.

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g-boats: *see* SUBMARINE WARFARE.

Iron: *see* IRON AND STEEL.

gs: *see* HOGS; LIVESTOCK.

tsburgh. Tenth largest city of the United States; Pittsburgh, Pa., had a population of 671,659 by the eral census of 1940. It is in the southwestern part of Pennsyl- ia, at the junction of the Monongahela and Allegheny rivers. a, 54,295 sq.mi. (excluding rivers). Mayor (Jan. 1, 1943): nelius D. Scully.

he story of Pittsburgh in 1942 was one of industry geared to t the demands of modern warfare. Steel mills raised their ot production to the all-time high of more than 20,000,000 . The Westinghouse Electric & Manufacturing company de- red in 1942 some $500,000,000 worth of apparatus, practically of it for war work. This output was about 35% ahead of the esponding production for 1941. The Aluminum Company of erica nearly completed in 1942 its $250,000,000 expansion gram. Industrial payrolls for 1942 were more than 230% ve those of the boom year 1929, and upwards of 100,000 more ons were employed. Production for civilian consumption was minimum, as was shown by a drop of 50% in the production plate glass.

n addition to supplying the materials of war, Pittsburgh was re, in 1942, of its responsibility for providing the funds for prosecution of the war. During the Victory Loan drive in . 1942 Pittsburgh and Allegheny county subscribed $274,000,- $4,000,000 more than the quota assigned to the district. er the leadership of H. J. Heinz II, Pittsburghers contributed 00,000 to the United War fund, $300,000 more than the quota

our major flood control dams in the district, constructed after disastrous St. Patrick's day flood of 1936, did not entirely eed in preventing a flood stage of water in the rivers late in . 1942. For a brief period some of the plants located along banks of the Monongahela, Allegheny and Ohio rivers were ed or had their production hampered by a crest-stage of ft. (J. G. Bo.)

s XII (1876–), the 262nd successor to St. Peter in the See of Rome, was elected pope by the assembly ardinals on his 63rd birthday, March 2, 1939, and was en- ned on March 12. (For details of his early life, see *Encyclo- ia Britannica.*) As pope he is held to be the vicar of Jesus st on earth, and his spiritual power extends over an estimated 000,000 Catholics scattered throughout the world. These to be found in 1942 in all the warring nations, and his con- for them was universal, regardless of their racial or civil iance.

in preceding years, the pope's words and actions in 1942 directed solely toward the attainment of peace in a war-torn d, but a peace founded on justice and charity. His policy as poral ruler of the independent Vatican City state continued to hat of the strictest neutrality; nevertheless, his denunciations ie evils of totalitarianism and his assertion of the inviolability uman and divine rights and liberties continued with redoubled e.

is propagandists endeavoured to make capital over the estab- nent of diplomatic relations between the Holy See and Japan, it was explained by Radio Vatican that these relations were established at the request of Japan. In an address to the men of Italian Catholic Action the pope said that the new order sought by the fascists was not in reality a new order.

On Dec. 8, 1942, the pope officiated in St. Peter's at a ceremony of expiation and intercession, praying for world peace. The Immaculate Conception of the Blessed Virgin was designated as Patroness of the Military Ordinariate of the United States. St. Albert the Great was proclaimed Patron of the Studies of Natural Science. In May the pope called the world to prayer for peace. He celebrated his silver jubilee of episcopal consecration May 13.

The pope granted the following unusual permissions in 1942: He renewed the permission given for the midnight mass to be offered on the afternoon of Christmas Eve where blackouts prevailed; he granted to bishops the right of dispensing their subjects from the rule of fast and abstinence for the duration of World War II; he granted permission to military chaplains at the front to offer mass without the usual altar stone. In July the pope sent $40,000 for relief of Malta and later $20,000 for reconstruction of bombed churches. In a letter to the English bishops the pope said: "We stand horrified before the spectacle of the growing violence and fury of this war." On Dec. 8 the pope read the prayer of consecration to the Immaculate Heart of Mary, and afterwards imparted the papal benediction from the loggia of St. Peter's.

On May 12, 1942, eve of the silver jubilee of his episcopal consecration, the pope made a broadcast to the world, and a plea to the warring nations. On Sept. 27 he broadcast in Portuguese to the Fourth National Eucharistic Congress of Brazil at São Paulo, in which he included a special prayer for Russia. On Nov. 1 he broadcast in Portuguese on the anniversary of the Apparition of the Blessed Virgin Mary at Fatima, consecrating the world to the Immaculate Heart of Mary. On Nov. 26 he broadcast in Spanish to the Eucharistic Congress at San Salvador, voicing a prayer for peace among men.

On Dec. 24, 1942, the pope's Christmas message was broadcast to the world. He denounced totalitarianism, insisted upon the need of a juridical order for society and co-operation between classes. He assailed the peril of the godless state, and added five fundamental points for the order and pacification of human society: respect for the human person and human rights; integrity of the family; honour for labour; restoration of the juridical order; and an ethical basis for the state. (*See* also ROMAN CATHOLIC CHURCH; VATICAN CITY STATE.) (J. LAF.)

Plague, Bubonic. Plague infection of man was reported during the first nine months of the year[1] in Africa, Asia, Asia Minor and South America, and among field or domestic rodents in Alberta, Canada, and in the United States, including the Territory of Hawaii, from which 82 infected rats were collected during this period. More than two-thirds of 2,127 reports of human cases originated in Kenya, Uganda, Madagascar and Morocco.

The epidemic which prevailed in Nairobi during 1941 abated during Feb. 1942 after 354 patients died among 547 who were hospitalized; 431 of the latter were bubonic cases and 131 were septicaemic or pneumonic. Health officers of Kenya used Dagenan 693 (sulphapyridine) as treatment of 693 patients and observed that 12% died after administration of large doses early in the course of the disease and 87% died among those similarly treated during its later stages.

In view of the endemicity of plague among various field rodents of western United States the federal government continued its surveys by mobile field laboratories, and in an effort to determine the eastern boundary of the infection among rodents collected approximately 85,000 of 26 genera between the 100th and 105th meridians, west. No infection was found although susceptible rodents abound and harbour parasites whose capability as vectors was experimentally proven. New foci of infection and recrudescence of old foci occurred throughout California and in Nevada. The disease was found for the first time in Oregon west of the Cascade mountains in ground squirrels (*Citellus douglasii douglasii*), and probably represented an extension from that detected during 1941 in the northern counties of California.

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[1] Reports for the last three months of 1942 were not received, or not published.

Infected fleas were collected on two occasions from rats trapped on the waterfront of Tacoma at an establishment visited by foreign shipping. Plague was not found previously in this port.

Collections from 13 of the western states included one or two species of rats (*R. Alexandrinus, R. rattus rattus*) in addition to the Norway rats (*R. Norvegicus*) from each of six states. Eighteen species of fleas were taken from the rats aside from the three which usually infect those animals in the United States. Seven of the 18 served as vectors under experimental conditions.

Manoeuvres and encampments of military forces in areas which are sparsely settled and in which the disease is endemic amongst rodents necessitated the prosecution of measures to reduce the probabilities of its dissemination to man by destroying rodents in and around the military and civil communities.

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Plant Industry, Bureau of.

Comprising only two-tenths of 1% of the corn belt corn acreage in 1933, hybrid-corn acreage grew to 13% by 1937 and then rose to 26% in 1938, 39% in 1939, 52% in 1940, 65% in 1941, and 72% in 1942. Grown on only about 144,000 ac. in 1933, it was used in 1942 on about 41,000,000 ac. Its wartime importance is indicated by the calculation that use of hybrid seed added 300,000,000,000 bushels to the 1942 corn crop, enough to produce about 3,300,000,000 pounds of pork—about half the total tonnage of red meats estimated as needed in the 1942 marketing year for military and lend-lease uses.

An example of plant-science mobilization to solve wartime problems was the corn breeders' development of a substitute for the tapioca starch no longer available from the orient. Secret of this success was the hybridizing of American corn with a waxy corn with starch similar to that of tapioca, through procedures similar to those followed in developing hybrid corn. The original waxy corn came to the department of agriculture from a missionary in China and was for years grown mainly as a curiosity. In 1936, hybridizing experiments began, and when the war came these were accelerated to such an extent that in 1942 a waxy corn crop was raised on 326 ac. for trial by commercial mills. Production of seed for future crops was so intensified that the 1942 seed crop was expected to make possible the planting of 60,000 ac. of the commercial crop in 1943, which was expected to produce more than 2,500,000 bushels of waxy corn. Of even greater importance, the 1942 preparations were to make possible the 1943 planting of 3,000 ac. for seed to be used for the 1944 commercial crop.

Other crops in which great development was achieved as a result of the work of the bureau of plant industry and its co-operators in 1942 included soybeans, tomatoes, peas, beans, corn, sugar beets, forage crops, guayule and other rubber-producing plants, sugar cane, sorghums, drug plants, castor beans, and hemp to replace the abaca, or manila hemp, formerly imported from the far east. (*See* also FERTILIZERS.)

The bureau of plant industry played a prominent part in efforts to increase the planting of legumes for winter cover crops in the South as a means of adding to the nitrogen content and fertility of crop lands and participated in nationwide efforts to increase gardening at home, promoting victory gardens both on farms and in small city and suburban areas.

Research with plants is concerned with reducing production hazards and improving the quality of crops. One of the principal ways of doing this is by breeding new strains or varieties that are resistant to diseases, heat, cold or drought. Many of the new forms result from the foreign exploration work of the bureau and the domestic introductions that follow. Efforts to control plant diseases involve studies of the causative organisms and their life histories and a knowledge of how they are spread to new territory. Other studies are concerned with weed control and methods of planting, harvesting, transportation and storage of crop plants.

In 1942, the bureau maintained experimental farms, greenhouses and laboratories at its Beltsville, Md., headquarters, conducted research in co-operation with all the state agricultural experiment stations, and administered the National arboretum at Washington, D.C. During the 1942 fiscal year it contributed 14 new publications to the department of agriculture series, and in addition members of the bureau contributed about 600 articles to outside scientific, agricultural and commercial publications.

In connection with a reorganization of the department of agriculture for more effectiveness in the war, the bureau of plant industry was included in a newly established Agricultural Research administration, and its former chief, E. C. Auchter, was made administrator. Effective April 9, 1942, Robert M. Salter was appointed chief of the bureau, its sixth head since the agency was established in 1901. (H. Z.)

Plasma: *see* PHYSIOLOGY.

Plastics Industry.

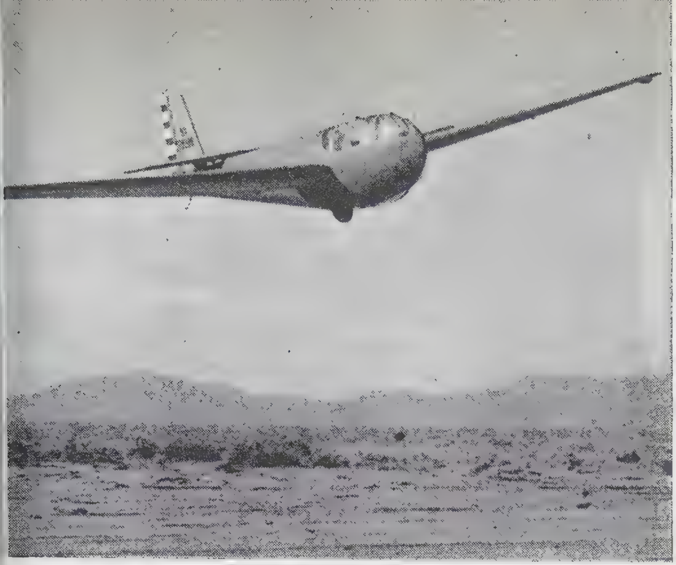
Production figures from enemy countries were not available, nor from Allied Nations, but based upon United States figures, the 1942 world production of plastics and plastic resins was estimated to have reached the staggering figure of 1,000,000,000 lb. Estimates placed the value of plastics in the United States in 1942 at more than $450,000,000. Reasonably accurate figures for the production of plastics and plastic resins in the United States for 194 showed approximately 500,000,000 lb. with a value of $160,000,000.

It is difficult to say in what field plastics were of greatest value in the prosecution of war but it is certain that in aircraft construction a great deal of aluminum was saved and much plastic was used where no metal was suitable. It was conservatively estimated that the average aeroplane contains about 200 plastic parts, mostly phenol or urea formaldehydes.

With the above resins as bonding adhesives, large quantities of plywood were used in wings and fuselages in trainer planes, in pulleys, gears, instrument parts and interior fittings. Another important and ingenious replacement was that of aeroplane engine parts previously made of sheet aluminum. These were made of cotton impregnated with phenol formaldehyde and moulded into the desired form.

Moulded phenolics, usually strengthened by fabric fillers, found extensive use in range finders, oil pump bearings and propellers. Various parts of machine tools applied to aircraft making were also made from moulded phenolic.

The use of acrylic resin in the form of methyl methacrylate which had already found wide application in aeroplanes was greatly extended. This material became practically indispensable as the transparent sheeting for forming bomber noses, turret tops, domes, cockpit enclosures and other special equipment. It protects the pilot and crew from the weather and the rushing wind and at the same time enables them to enjoy complete vision i



E FIRST ALL-PLYWOOD PLASTIC GLIDER landing after a test flight near Angeles in 1942

STIC HOSE NOZZLES were another example of metal replacement in 1942. outer sleeve and nut are made of ethocel; the nozzle end and tip of styron

LDING SARAN PIPE, a thermoplastic resin fabricated in iron pipe sizes. welding operations can be accomplished in one minute

BOMBER NOSE of lucite, a methyl methacrylate plastic

AIRCRAFT RADIO BATTERY CASE fabricated of styron in 1942

all directions.

In addition to aircraft applications, many other war and essential civilian needs were supplied. For example, plastic-bonded plywood was used for helmet liners, warship steering tubes and pigeon crates. Phenol formaldehyde was made into washing machine agitators, electric fans, water meter disks, school desks and chairs.

The vitally important application of nylon as replacement for the silk formerly used in parachutes, while not strictly a plastics application was well supplemented by the use of nylon monofilament in aeroplane engine polishing brushes, paintbrushes for the army and navy, surgical sutures and other essential bristling applications.

Cellulose acetate butyrate, because of its resistance to moisture, enjoyed a large market with an estimated United States production of 7,000,000 lb. This thermoplastic resin, as well as cellulose acetate, found application in many aircraft parts where the strength of fabric-filled phenol formaldehyde was not required. Cellulose acetate in the form of transparent sheeting was used in glider and motorcycle windshields, windows for blimps, and because of the scarcity of methyl methacrylate, acetate was used for the transparent enclosures of trainer and observation planes and in many auxiliary and secondary construction points.

The application of styrene to the manufacture of synthetic rubber started the construction of styrene plants with a capacity of over 200,000 tons per year. These plants were not producing to any great extent in 1942 and consequently a considerable portion of styrene normally available for plastics was used for pilot plant production of synthetic rubber. A large amount of polystyrene did, however, find its way into moulded combs for the armed forces, into signal lenses and into instrument dials.

One of the large plastic production groups is that of the vinyl resins which as polyvinyl chloride or as the chloride acetate copolymer found increased use as rubber substitutes. Approximately 12,000,000 lb. of these resins were thus used in the first six months of 1942 with a resultant saving of 18,000,000 lb. of rubber. These applications were special protective paints, paper coatings, certain chemical tank linings, printing plates and stirrup pump hose. Germany made great strides in the use of polyvinyl chloride for valves, tubes and conduits.

Polyvinyl acetate was not only used as an intermediate in the manufacture of polyvinyl alcohol, polyvinyl acetals and vinyl chloride copolymers, but in its own right became a commercially important resin used primarily as an adhesive in water emulsion. Another vital use of this material was in the manufacture of sulpha drugs in which approximately 7% of the current production was used.

Polyvinyl alcohol made from polyvinyl acetate was used for solvent resistant tubing, foot pedal coverings, pulley facings, aircraft and refrigerant hose. Polyvinyl acetal, a condensation product of polyvinyl alcohol and aldehyde, was used for the waterproofing of raincoats and hospital sheetings, fuel tank liners, and shatterproof glass for tanks and armoured cars.

Because of the necessity for secrecy, a great many uses of plastic in the war effort could not be mentioned but these uses were expected to result in amazing revelations after the war has ended. As in World War I, the intense pressure of necessity in World War II, compressed into months developments which might have taken years to achieve under less urgent conditions. (*See* also CHEMISTRY; PAINTS AND VARNISHES; RAYON AND OTHER SYNTHETIC FIBRES; RUBBER AND RUBBER MANUFACTURE.) (H. W. PA.)

Platinum.

There was little information on world platinum production after the beginning of World War II. The U.S. Geological Survey estimated the 1941 output in Alask at 25,400 oz. of crude, containing about 22,630 oz. of platinu against 31,300 oz. of crude, containing 27,230 oz. of platinu in 1940. Operations at Goodnews Bay were expanded, and th 1942 output was expected to be greater. No Canadian figur were made public, but it was officially reported that the nick output had increased each year, and presumably the recove of the associated platinum metals increased proportionatel The Colombian total was not announced, but the chief produc reported 30,548 oz. of crude, containing 26,204 oz. of platinu in 1941, a marked increase over 1940. The 1941 total for Sout Africa was not received, but figures for 10 months indicated figure of the order of 90,000–95,000 oz. of platinum group metal containing 55,000–58,000 oz. platinum.

An order of the War Production board dated May 30, 194 placed platinum under priorities control, and required reports c sales, stocks and inventories. The reason was not so much a shor age of supply, as a desire to restrict as much as possible th chances of acquisition of platinum by the enemy, by smuggling out of the country, as well as by improper domestic use. (G. A. Ro.)

Plums and Prunes.

Fresh basis production of plums i 1942 was 72,000 tons in Californ and 5,300 tons in Michigan, compared with 71,000 tons in Ca fornia and 6,900 tons in Michigan in 1941; the ten-year (193 39) average was 64,600 tons in California and 5,370 in Michiga

Table I.—*U.S. Production of Prunes in Tons, by States, 1942 and 1941*

State	1942 (fresh basis)	1941 (fresh basis)
Western Oregon	61,000	54,000
Eastern Oregon	15,300	15,400
Eastern Washington	17,200	14,800
Western Washington	7,400	7,500
Idaho	17,800	21,000

No reports were available in 1942 from crops in central Europ a major prune-producing area. The department of agricu ture reported the United States prune crop, fresh basis, as 118,7 tons in 1942 and 112,700 tons in 1941, with a ten-year average c 159,320 tons, all in three states, Oregon, Washington and Idah

Table II.—*Quantities of Prunes Used Fresh, Canned and Dried*, in Tons*

State	1942	1941
Used fresh (fresh basis)		
Oregon	19,000	13,800
Idaho	17,800	21,000
Washington	13,900	10,600
Canned (fresh basis)		
Oregon	21,700	29,600
Washington	8,100	9,300
Dried (dry basis†)		
California	174,000	178,000
Oregon	7,000	6,500
Washington	200	400

*Includes quantities sold and used on the farm for household consumption.

†The drying rate in Oregon and Washington ranges from 3 to 4 lb. of fresh fruit to 1 l of dried; in California, 2½ lb. fresh fruit to 1 lb. dried.

California production, dry basis, was 174,000 tons in 1942. was 178,000 tons in 1941; the ten-year average was 207,100 ton (S. O. R.)

Pneumonia.

During 1942 there was a marked decrease the occurrence and fatality of pneumococ pneumonias, due, possibly, to the use of chemotherapy which, l prompt destruction of the pneumococci, diminished the numb of carriers. This was associated, however, with the increase the number of patients with pneumonia from whom it was im possible to obtain pneumococci and which were not responsi to sulphonamide therapy. These were grouped as "atypical" "virus" types. Some of these cases were undoubtedly due tacosis and other bird- or animal-borne viruses. Some pigeons New York city were infected with a psittacosis-like virus. l F. Meyer designated as ornithosis, psittacosis-like viruses ch infect domestic fowl and other birds.

clearer concept of the action of serum and chemotherapeutic ts developed. Chemotherapy acts on pyococcic organisms by rfering with their growth and the production of capsular sub- ce. Serum acts by neutralizing the capsular substance and itizing organisms so that they may be phagocyted, an entirely rent mechanism of healing. Sulphonamides may be ineffective use the organisms are fast to the drug or because substances h neutralize sulphonamide action develop in the body. Among e inhibiting substances is para-amino-benzoic acid and some o acids. By suitable observation of blood and sputum, the onse of the patient to his infection and the state of the in- ng coccus may be known. Frisch observed disappearance of nisms or chaining and phagocytosis when autogenous immu- develops. Reticulation of strands of capsular substance may resent and offer a grave prognosis. Serum has not been sup- ted by sulphonamides. Each remedy is used appropriately on occasion, one supplements the other. The combination bstitution may lower mortality.

lphadiazine was still the drug of choice for most pneumo- ic pneumonias. The virus pneumonias are a heterogenous p which, for the most part, are not influenced by chemo- apy but the diagnosis is often improperly made after in- uate study. (*See* also CHEMOTHERAPY; EPIDEMICS AND LIC HEALTH CONTROL; MEDICINE.)

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umonitis: *see* X-RAY.

try: *see* AMERICAN LITERATURE; CANADIAN LITERATURE; LISH LITERATURE; FRENCH LITERATURE; LITERARY PRIZES; UGUESE LITERATURE; PUBLISHING (BOOK); RUSSIAN LITER- E; SPANISH-AMERICAN LITERATURE; SPANISH LITERATURE.

and. A republic in northeastern Europe, invaded and conquered by the Germans in 1939. Area (Sept. 1,) *c.* 150,820 sq.mi.; pop. (official est. Jan. 1, 1939, including hen) 35,090,000. Capital: Cracow (280,000). Other chief : Warsaw (1,300,000); Lodz (690,000), Lwow (350,000); an (290,000); Vilna (225,000). Prime minister (1942): Wladislaw Sikorski.

Sept. 29, 1939, after the conquest of the country was virtu- completed, Germany and the U.S.S.R. partitioned Poland set up a new boundary which, running from north to south, ly followed the Pissa, Bug and San rivers. The Germans divided their territory into two sections: one, including the nces of Pomorze, Posen, Upper Silesia and Lodz, was di- annexed to the reich; the rest was constituted as the ernement General of Poland, under German administration, Cracow as the capital. After the Russian-occupied terri- s had been taken by German forces, eastern Galicia was in- d in the Gouvernement General on Aug. 1, 1941. Wolyn ynia) was left as a separate district. The northeastern parts oland, with Estonia, Lithuania and Latvia, and parts of J.S.S.R., were incorporated in a new German creation known stland.

story.—The signing of the Anglo-soviet alliance (*see* .R.) founded on the principles of the Atlantic charter, was of major importance to Poland in 1942, following as it did the soviet-Polish declaration of Dec. 4, 1941, and Stalin's statement that the soviet government wished to see a free, independent and powerful Poland. In the execution of their joint declaration of Nov. 11, 1940, the governments of Poland and Czechoslovakia signed in London on Jan. 23, 1942, an agreement settling the terms of their confederation, and expressed the hope that this would embrace other states of the European area with which the vital interests of Poland and Czechoslovakia were linked. On Jan. 21, Dr. Marjan Seyda (National party), one of the three members who had resigned in July 1941 after the signing of the Polish-soviet agreement, returned to the cabinet and became minister for postwar reconstruction. Waclaw Komarnicki (National party), minister of justice, and Jan Kwapiński (Socialist), minister of commerce, industry and shipping, were appointed to the other two posts vacated, and thus the government again became one of national unity. A new Polish national council was appointed on Feb. 9, composed of 31 members representing the four main political parties—Socialist, Peasant, National Labour and National. Professor Stanislaw Grabski was the speaker of the council.

The Struggle Outside Poland.—More than 100,000 Poles were fighting in 1942 with the allies in Britain and in the middle east, and Poland's army stood as fifth strongest among the United Nations. She had one armoured and motorized army corps in Scotland and one autonomous army in the middle east. The Polish air force was in 1942 twice as strong as it was in 1939. From Nov. 1, 1941 to Oct. 31, 1942, Polish fighter squadrons destroyed 86 enemy aircraft, raising the total since their arrival in Britain to 496. Polish bomber squadrons executed during the same period 2,960 operational flights against the enemy, bringing their total since June 1940 up to 3,992; and the Polish navy, too, was stronger.

Under German Occupation.—After the establishment in March 1942, under Alfred Rosenberg, of a ministry for the occupied eastern territories, Poland was divided into three great zones: the northwestern districts incorporated in the reich; the central parts and eastern Galicia included in the so-called Gouvernement General; the eastern area divided between two reich commissariats—Ostland (*q.v.*) and Ukraine. Speaking in Cracow on Oct. 26, on the third anniversary of his office, Hans Frank, the governor general, announced that the new epoch of the east in German history had begun, and further claimed that a considerable part of the Polish population understood the demands of the epoch and had accepted German leadership. The facts, however, belied his boasts. Stanislaw Mikolajczyk, the Polish deputy

POLISH CIVILIANS, released from Russian prison camps, en route to Tehran, Iran, in 1942 to volunteer for service with the United Nations prime minister, stated in London on July 9 that the number of Poles executed, murdered and tortured to death during nearly three years of German occupation amounted to 200,000; while the number of massacred Jews exceeded 200,000. Moreover, the Germans had tried many times to form a puppet Polish government but without success. Their disappointment was obvious when the reich press chief, Otto Dietrich, in Berlin in Feb. 1942, blamed the Poles for unleashing World War II, for their uncompromising resistance to victorious Germany and for their united efforts in obstructing and sabotaging Germany's economic efforts. By such suicidal behaviour, he affirmed, Poland had erased herself from the map of Europe. (K. Sm.)

Banking and Finance.—(In thousands of zlotys): revenue (est. 1939–40) 2,428,700; expenditure (est. 1939–40) 2,486,500; public debt, March 31 ,1939, 5,317,800; gold reserve (Aug. 31, 1939) 443,000. Bank notes in circulation (Aug. 31, 1939) 1,928,000. Exchange rate (1938 av.) 1 zloty=18.86 U.S. cents; (Aug. 1939) 1 zloty=18.75 U.S. cents.

Trade and Communication.—Foreign trade (in thousands of zlotys): imports, merchandise (1938) 1,299,600; (Jan.–July 1939) 762,300. Exports, merchandise (1938) 1,184,400; (Jan.–July 1939) 781,500. Communications: Roads (1937) 36,689 mi.; railways, main lines (1937) 11,223 mi.; shipping (July 1, 1939) 63 vessels, totalling 121,630 tons gross; shipping (Gdynia) net tonnage entered (monthly av. 1938) 542,000; (June 1939) 622,000; net tonnage cleared (monthly av. 1938) 542,000; (June 1939) 600,000.

Agriculture, Mineral Production, Manufacturing.—(In metric tons) (1939): wheat 2,270,000; barley 1,480,000; rye 7,630,000; oats 2,880,000; (1938) maize 126,200; potatoes 34,558,200; beet sugar 387,000; coal 38,104,000; petroleum 507,000; pig-iron and ferro-alloys 968,000; steel 1,542,000. Industrial production (monthly av. 1938) (1929=100) 118; (June 1939) 127. Unemployed (monthly av. 1938) 347,509; (June 30, 1939) 241,464.

Polar Regions: *see* Exploration and Discovery.
Pole Vaulting: *see* Track and Field Sports.

Police.

The year 1942 intensified the effects of World War II upon police forces everywhere. In the vicinity of the fighting fronts civil police either disappeared altogether or were virtually absorbed into the support of armies actively engaged in conflict. In occupied territories established police forces continued their duties of civil protection and law enforcement, but operated under the vigilant surveillance and control of the occupying troops. On the "home fronts" of more than a score of other belligerent nations, police continued to enjoy their usual civil status, but found themselves collaborating more and more with the military arms in the enforcement of wartime regulations, in joint manoeuvres of a defensive character, and in measures aimed at espionage and sabotage. In all countries, including a few remaining neutrals, civil police were confronted with new problems originating in war at home or abroad.

Police activity in general was also enlarged by the appearance of increasingly greater components of military police. These performed patrol duties in many areas that had formerly been the exclusive province of civil police. Manpower shortages in some instances required, as in Great Britain, that women be organized as uniformed police units for the performance of many tasks, particularly the regulation of traffic and the maintenance of routine observation patrols. Shortages in durable goods raised difficult problems in maintaining an uninterrupted supply of police equipment, and particularly in the United States, where many of the larger police developments revolved around the adaptation of mechanical devices to the special requirements of police.

Auxiliary police, consisting chiefly of part-time aides to regular police establishments, were widely organized. In United States, such special recourses were so extensively adop that they threatened to overburden the regular police by the sh weight of their numbers and inexperience. A summary of ratios and distribution of some 75,000 auxiliary police enrolled the service of 408 American cities on April 30, 1942, appears Table I. It shows such wide and inexplicable variations in ratio of enrolled auxiliaries as to raise serious question whet public policies in this area of police development rested upon a coherent plan or purpose.

As was to have been expected with the advent of wartime c ditions, the number of regular police increased somewhat in 19 despite increasing difficulties in recruiting young, able-bodied a intelligent males to the police service, when the same men w the particular objects of military recruiting programs. The ra of police to population, in 1942 as compared with 1941, appe in Table II.

Table I.—*Quotas of U.S. Auxiliary Police by Geographic Divisions and Population Groups, 1942*

Number of Auxiliary Police per 1,000 Inhabitants by Geographic Divisions	Population Groups of Cities (000 omitted)				Total
	I Over 250	II 100 to 250	III 50 to 100	IV 25 to 50	
New England	4.24	3.69	4.70	4.96	4.37
Middle Atlantic	1.45	4.22	3.58	4.87	2.19
East North Central	1.36	3.83	3.50	2.67	2.11
West North Central	2.64	3.45	1.81	1.87	2.59
South Atlantic	3.86	4.44	4.94	5.19	4.44
East South Central	5.87	2.30	15.22	3.11	6.02
West South Central	2.49	3.58	2.83	2.48	2.75
Mountain	1.67	10.00	2.08	1.77	3.25
Pacific	6.73	8.61	4.79	6.12	6.74
General Averages	2.47	4.37	4.24	3.89	3.1

Table II.—*Numerical Strength of U.S. Municipal Police Forces, 1941-42*
(Number per 1,000 inhabitants)

Population Groups of Cities	1941	194
Group I—Over 250,000	2.12	2.13
Group II—100,000 to 250,000	1.45	1.50
Group III—50,000 to 100,000	1.37	1.46
Group IV—25,000 to 50,000	1.23	1.29

The index of police effectiveness, as represented by the prop tion of reported crimes that were "cleared by arrest," continu in general to decline, as it had each year since the peak est lished in 1938. Table III shows the comparison of 1941 w 1940, the two latest years for which index figures are available.

The number of policemen killed by criminals constitutes index of law observance attitudes. In 1941 there was an incre in such cases in American cities, although not sufficiently large overtop the levels reached in recent years, and far below records compiled during the prohibition era. Table IV prese

Table III.—*Per Cent of Crimes Cleared by Arrest in U.S. Cities, 1940-41*

Uniform Classification of Crimes	1940	1941
Murder and non-negligent manslaughter	88.7	88.1
Negligent manslaughter	83.4	86.6
Rape	79.4	76.2
Robbery	41.8	40.4
Aggravated assault	73.7	75.0
Burglary; breaking or entering	33.1	32.0
Larceny (theft)	23.4	22.7
Auto theft	23.8	24.4

Table IV.—*Police Killed by Criminals—Rates per 5,000,000 Inhabitants in U.S. Cities over 25,000 Population, 1937-41*

Year	Rate	Year	Ra
1941	1.33	1938	3.0
1940	1.24	1937	3.0
1939	1.79		

nparisons for 1937–41.

The annual congress of the International Association of Chiefs Police was held in New York city in Sept. 1942. Questions sidered were largely confined to problems arising out of war-e conditions. Special attention was directed at the establish-nt of professional standards for dealing with the suppression prostitution and venereal disease as a military efficiency meas-. During the year, the association continued its efforts di-ted at extending the system of police mobilization already ablished in a number of states. (*See* also CRIME; KIDNAPPING; RET SERVICE.)

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liomyelitis: *see* INFANTILE PARALYSIS; NERVOUS SYSTEM.

litical Parties, U.S.: *see* COMMUNISM; DEMOCRATIC TY; REPUBLICAN PARTY; SOCIALISM.

litis, Nicolas Socrate (1872–1942), Greek jurist and diplomat, was educated at the versity of Paris, and at the age of 27 became professor of rnational law at Aix-en-Province university. He held similar s at the universities of Poitiers and Paris. He was permanent etary-general in the ministry of foreign affairs of Greece, 4–16, and minister of foreign affairs, 1916–20. Thereafter, permanent delegate to the League of Nations, he became one he leading spirits at Geneva, and was president of the as-bly in 1932. During his long service with the League, he oured for peace and repeatedly warned that the League's ar-ation program would fail unless it was backed up by force. was one of the chief designers of the Geneva protocol, and also headed the committee that set up the World Conference Limitation of Armaments in 1929. He served again as foreign ister of Greece for brief periods in 1922 and 1936 and was ister to France, 1924–36 and 1938–40. He died in Cannes, nce, March 4.

o. Soon after the entry of the United States into World War II, the United States Polo association suspended national championships and other formal matches played er its auspices and, with most of the polo players and all of officers of the association in active service, what polo there during the year 1942 was of a purely informal nature. The championships decided during the year were intercollegiate, Yale winning the indoor tournament held at West Point and ceton taking the outdoor title played at college fields, defeat-Yale in the final round.

olo in the eastern United States was confined to two or three s. There was considerable play in Texas and the middle west the cavalry training centre at Fort Riley in Kansas was a re for several months because a good many high ranking s passed through during the course of their military training.

y executive committee action, F. S. von Stade was appointed erve as acting chairman of the association in place of Lt. E. T. y, on duty with the army air force, and W. T. Kissel to e as acting secretary-treasurer in place of Lt. Commander I. Carnochan, on active duty with the navy. (R. F. K.)

rten, Hein ter (1887?–), Dutch army officer, was trained at Holland's Royal Military emy. One of the first Netherlands officers to obtain a pilot's ce, Poorten long advocated increasing the air arm of Dutch es, and made several visits to the United States to study air-. and purchase planes. A veteran of 30 years service in Holland's Asiatic colonies, he was made commander in chief of the Netherlands East Indies army and head of the war department in Oct. 1941. After Japanese invasion forces landed on the island of Borneo in late Dec. 1941, he called upon the Allies for more bombers, fighting planes and anti-aircraft guns. On March 2, 1942, he was given command of United Nations armies in Java, but eight days later the Japanese had conquered Java and Poorten was captured and interned in an enemy army camp.

Population, Movements of: *see* REFUGEES.

Populations of the Countries of the World: *see* AREAS AND POPULATIONS OF THE COUNTRIES OF THE WORLD.

Porras, Belisario (1856–1942), president of Panama was born Nov. 28 in Las Tablas, Panama, and attended the universities of Colombia and Brussels. Dr. Porras served in the Colombian government as consul in Brussels in 1881. He was professor of law at the University of San Salvador. A dynamic personality, Dr. Porras led a successful revolt on Chiriquí and proclaimed himself leader of the Isthmus in 1900. Although he objected to the new Republic of Panama in 1903, he was finally persuaded to lend his talents to the Panamanian administration, and he served as president 1912–16, 1918–19 and 1920–24. Later, he also served as Panama's minister to France, Great Britain and Italy, and he represented his country at the League of Nations. He died in Panama City, Aug. 28.

Porto Rico: *see* PUERTO RICO.

Portugal. A republic of western Europe, forming part of the Iberian peninsula and bounded on the N. and E. by Spain and on the S. and W. by the Atlantic ocean. Area (including Azores and Madeira), 35,670 sq.mi.; pop. (census Dec. 12, 1940) 7,702,000. Chief towns: Lisbon (cap. 594,300), Oporto (232,280). President (1942): Gen. Antonio Carmona; premier, Dr. Oliveira Salazar (*q.v.*); language: Portuguese; religion: Christian (mainly Roman Catholic).

History.—The year 1942 opened with discussions between Portugal and Britain, following the occupation of Portuguese Timor (Dec. 17, 1941) by Allied troops in view of the imminent invasion by Japan. As a result, the Portuguese government announced (Jan. 23) that troops would be sent to Timor from Lourenço Marques immediately. Before they could arrive, however, Timor was invaded by the Japanese and the troops were recalled. In a strong protest to Tokyo, Dr Salazar observed that Japan must have known that Portuguese troops were on the way and had thus no excuse for her action; he also paid tribute to the loyalty and goodwill of the British government during the discussions.

Friendly relations between Portugal and Spain continued. On Feb. 12–13 their heads of government and foreign ministers met for discussions at Seville. A Portuguese-Spanish scientific congress was held at Oporto (June 18–24). On Feb. 8 General Carmona, 72 years of age, was re-elected, without opposition, to the presidency.

Upon the opening of the North African campaign Nov. 8, President Roosevelt sent President Carmona a formal assurance that the military operations were in no way directed against Portugal or its possessions. In his reply dated Nov 12, Carmona expressed his gratitude for the message, "another proof of the unalterable and confident friendship existing between our two nations."

In June, as a further precaution against inflation, the government, which had again issued a balanced budget, launched a new 3% loan of 1,000,000,000 escudos. Since 1939 the cost of living had risen by 44% without a corresponding rise in wages and salaries. As a first step toward the alleviation of hardships, Dr. Salazar promised workers' deputations a system of family allowances. On June 25 he broadcast to the nation on "Defense: economic, moral and political." In September it was announced that all school clubs, societies, etc., must be incorporated into the national youth movement of Portugal. A series of strikes, accompanied by some unrest, broke out in Lisbon in late October, but these were quickly settled.

War conditions during 1942 greatly affected Portuguese life. Fuel shortage reduced lighting and decimated train services. Lack of gasoline and rubber almost stopped private motoring. Dearth of sulphates threatened the port wine industry. The price of wolfram, one of Portugal's metals, was fixed. Black marketing in food was being dealt with. War profits were taxed. In August stocks of olive oil were requisitioned. A scheme of civil defense was prepared against possible emergency; test exercises were held in Lisbon.

Plans were approved for the erection at Coimbra of a "university city" covering 200,000 sq.m. The budget for 1942 included a large item for the restoration and upkeep of historical monuments. (E. A. P.)

Education.—Elementary (1938–39) schools 7,962; scholars 462,854; secondary schools 42; scholars 18,242; universities 3; students 5,182.

Banking and Finance.—Revenue, ordinary (est. 1942) 2,132,900,000 escudos; expenditure, ordinary (est. 1942) 2,126,600,000 escudos; public debt (Dec. 31, 1940) 6,489,700,000 escudos; notes in circulation (June 30, 1942) 4,511,000,000 escudos; gold reserve (June 30, 1942) 1,372,000,000 escudos; exchange rate (average 1941) 1 escudo = 4.002 cents U.S.

Trade and Communications.—External trade 1941 (merchandise): imports 2,642,700,000 escudos; exports 2,896,200,000 escudos. Communications and transport (Dec. 31, 1937): roads, first and second class 8.858 mi.; railways, open to traffic, 2,187 mi.; motor vehicles licensed (Dec. 31, 1937): cars 34,442; commercial 11,410; cycles 4,536; shipping (June 30, 1939) 269,000 gross tons.

Agriculture and Minerals.—Production 1940 (in metric tons); wheat 285,100; maize 367,900; wine 5,187,000 hectolitre coal 310,000; rye 76,100; oats 25,000; rice (1939) 71,600; barl 26,200; potatoes 616,700; olive oil 34,500; sea fisheries (exclu ing cod-fishing) 195,000. (*See* also PORTUGUESE COLONIAL E PIRE.)

Portuguese Colonial Empire.

Total area (approx 839,506 sq.mi.; tot population (est. Dec. 31, 1939) 9,930,000, excluding Portug the Azores and Madeira. Certain essential statistics of the coloni possessions of Portugal (*q.v.*) are given in the accompanying tab

History.—In June, Dr. Vieira Machado, minister for the col nies, visited Angola, Mozambique, Belgian Congo and the Uni of South Africa. In Mozambique he took formal possession of t territories of Manica and Sofala, previously held by the Charter Company of Mozambique, which, on July 18, reverted to sta administration. This transference marked the end of the la Portuguese chartered company and completed the unification the Portuguese empire.

Despite the war, colonial development continued. Angola w proceeding with the construction of the port of Loanda an Mozambique with the construction of the Tete railway and t irrigation of the Limpopo river. The Portuguese governme established the first centres of overseas colonization, in whi selected families were to be settled, financed and provided wi machines and tools necessary to them.

Strong reinforcements were sent, not only to Timor, but other colonial stations of strategic importance—notably to t Azores, Cape Verde Islands and Angola. (E. A. P.)

Portuguese East Africa: *see* PORTUGUESE COLONIAL EMPIR
Portuguese Guinea: *see* PORTUGUESE COLONIAL EMPIRE.

Portuguese Literature.

The years 1939–42 were pr ductive, both creatively a critically. Aquilino Ribeiro, perhaps the greatest living *prosad* in Portugal, published two short novels, *O Servo de Deus* an *A Casa roubada*. Among other novels were Castro Soromenh

Portuguese Colonial Empire

Country & Area sq.mi. (approx.)	Population est. Dec. 31, 1939 (000's omitted)	Capital, Status, Governors, Premiers, etc.	Principal Products (in metric tons)	Imports & Exports 1940 (in thousand escudos)	Road, Rail & Shipping 1939	Revenue and Expenditure est. 1940 (in thousand escudos
AFRICA Angola (Portuguese West Africa) 481,351	3,500	Luanda, colony, *governor-general:* Manuel de Cunha e Costa Marques Mano.	maize (1938–39) 316,800 cane sugar (1940–41) 40,600	imp. 228,331 exp. 364,128	rds. 22,708 mi. rly. 2,080 mi. shpg. (1936) entered, 5,330,087 tons	rev. and exp. 256,50
Cape Verde Is. 1,546	170	Praia, colony, *governor:* José Diogo Ferreira Martins.	(export 1937) salt 29,843 preserved fish 325 coffee (E. 1939) 137,000 kg	imp. 110,981 exp. 156,279	rds. 493 mi. shpg. (1939) cleared, 3,127,315 tons	rev. and exp. 18,48
Portuguese Guinea 13,946	420	Bolama, colony, *governor:* Luiz António de Carvalho Viegas.	(export 1940) ground-nuts 29,300; palm kernel oil, 2,800	imp. 27,864 exp. 49,407	rds. 1,863 mi. shpg. (1940) cleared, 70,482 tons	rev. and exp. 29,48
São Tomé and Principe Isl. 386	60	S. Tomé, colony, *governor:* Amadeu Gomes de Figueiredo.	cacao, coffee, coco-nut	imp. 21,327 exp. 43,030	rds. 179 mi. rly. 10 mi. shpg. cleared, 339,638 tons	rev. and exp. 11,75
Mozambique (Portuguese East Africa) 297,729	4,500	Lourenço-Marques, colony, *governor-general:* General Tristão de Bettencourt	cane sugar (1936–37) 115,100; ground-nuts (export 1940) 18,600	imp. 431,891 exp. 171,126	rds. 17,504 mi. rly. 1,128 mi. shpg. (Beira) cleared, 2,377,713 tons	rev. and exp. 629,10
ASIA Portuguese India 1,538	600	Nova Gôa, colony, *governor-general:* José Cabral.	fish, spices, salt	imp. 104,933 exp. 1,646	rds. 730 mi.; rly. 51 mi.; shpg. (1938) cleared 1,729,866 tons	rev. and exp. 78,8
Macao 8	200	Macao, colony, *governor:* Gabriel Mauricio Teixeira.	fish, cement, preserves	(1936) imp. 108,158 exp. 62,818	shpg. cleared, 3,117,571 tons	rev. and exp. 48,95
Timor 7,332	480	Dilly, colony, *governor:* Alváro Eugenio Neves de Fontoura.	coffee, sandalwood, wax	imp. 3,880 exp. 4,154	(1938) rds. 677 mi. shpg. cleared, 91,215 tons	rev. and exp. 12,2

omens sem caminho and Bernardo Teixeira's partly epistolary *tónio*. João de Castro Osório, author of a *Cancioneiro sentintal,* published the first drama in what was to be a Maeterckian tetralogy (*Tetralogia do Príncipe imaginário*) under the le *O Ramo de flores sem flores.* Of verses, in which Portugal always prolific, outstanding collections were the modernist rnando Namora's *Mar de sargaços,* Fernanda de Castro's *39 emas* (containing both old and new) and *33 Poesias* by a less own poet of great promise, Cabral do Nascimento.

Collections of essays appeared in great number and variety. table were António Ferro's sidelights on contemporary history itled *Homens e multidões;* the *Ensaios* in which B. Xavier utinho leads us down bypaths of history and comparative litture; Professor Mendes Correia's historical essays and articles; *Raça e do espirito;* and an *ideário,* more personal in character, *imas Aventuras,* by the well-known historian of Portuguese rature, Dr. Fidelino de Figueiredo, who was in 1942 in Brazil. eiroz Veloso's critical biography, *Fernão de Magalhães,* apred appropriately in the wake of the 1940 celebrations. uardo Brazão's *Relance da história diplomática de Portugal* ers the period from 1640 to 1942 with special attention to the h century.

)f the classics, Gil Vicente came in for preferential attention, a popular biography by Queiroz Veloso, a critical study by o de Almeida (*Notas para uma edicão de G. V.*) and two edis from Coimbra: Dr. Paulo Quintela's, of *Auto da emcaçáo da glória,* and Dr. A. J. da Costa Pimpão's of the *gicomédia pastoril da Serra da Estrêla.* Apropos of the ero de Quental centenary were Manuel Mendes' *A. de Q.* (a ular life), A. C. Monteiro's edition, *Cartas* (of A. de Q.) *a ónio de Azevedo Castelo Branco* and F. Ramos' *A Expressão liberdade em Antero e os Vencidos da vida.* Other editions e two of Vieira's sermons by Mário Goncalves Viana, who wrote a slight but significant study *Os religiosos e os místicos literatura portuguesa;* A. C. Pires de Lima's *Poesias selectas Frei Agostinho da Cruz* and José Pereira Tavares' edition of ther of Portugal's *clássicos esquecidos,* Filinto Elísio. Three lies of more modern authors were: *O Talento e os desvarios Guerra Junqueiro,* by the veteran politician and voluminous er António Cabral; Norberto Lopes' life of Sr. Teixeira nes (*O Exilado de Bougie*) and Eduardo Coelho's *Ricardo ge* (*Recordações*).

he first volume of an important new *Bibliografia Geral tuguesa* appeared, dealing with the 15th century. (E. A. P.)

tuguese West Africa: *see* PORTUGUESE COLONIAL EM-.

st Office.

The audited revenues of the post office department for the fiscal year 1942, as stated in the rds of the comptroller general of the United States, amounted 859,817,490.88. This was the highest in postal history and 989,755.17 higher than in 1941, which was the next highest. here were also reported to the treasury department the items ed in the act of June 9, 1930, indicating the estimated post- that would have been collected if the services had been on a ılar pay basis, in the case of penalty and franked mail, free-inıty mail, differentials in second-class mail matter and free ter for the blind. These amounted to $73,916,128.

he expenses of the department for the fiscal year as audited unted to $873,956,527.57, of which amount $24,324,210.89 on account of prior years. There was $22,010,360.11 to be on account of the 1942 fiscal year. This left a total exe for the fiscal year 1942 of $871,642,676.79, resulting in a s operating deficiency on an accrual basis of $11,825,185.91.

Effective March 27, 1942, free mail privileges were granted to members of the armed forces. It was estimated that 154,885,703 pieces of first-class mail were mailed during the three months ending June 30, 1942 by U.S. soldiers and sailors. The revenue which would have been derived from this mail at the rate of 3 cents apiece would have amounted to $4,646,571.

The tremendous increase in the volume of mail handled by the post office department for other branches of the government had been a matter of concern to congress and the department for a number of years. Thousands of tons of forms, pamphlets, circulars and supplies were being sent by government departments and establishments free of postage under the "penalty privilege." Congress enacted laws prohibiting, with certain exceptions, the sending free of postage of books, reports and bulletins without a request therefor. Congress also required that reports be submitted each quarter from the various executive departments and independent establishments of the government to the post office department showing the weight, by classes, of matter mailed free. The records disclosed that during the fiscal year 1942 there were mailed free 1,516,015,444 pieces, weighing 236,529,015 lb., an increase of 392,451,723 pieces and 84,852,924 lb. over the previous year.

The intensive bond and stamp sales program, inaugurated May 1, 1941 in co-operation with the treasury department, was greatly expanded after U.S. entry into the war On June 30, 1942, war savings stamps were on sale at 33,878 post offices. Sales from May 1, 1941, to June 30, 1942, amounted to $314,708,228.55. Sales during the period from Dec. 1, 1941 to June 30, 1942 aggregated $283,197,574.45, or an average of $40,456,796.35 per month for the first seven months of the war.

From March 1, 1935, when the United States savings bonds were placed on sale at post offices, to June 30, 1942, there were sold through the postal service 35,128,618 bonds, having a sale value of $4,309,937,575. During the fiscal year ended June 30, 1942, 19,204,630 bonds, having a sale value of $956,754,675, were sold. At the close of the year bonds were on sale at 19,956 post offices, including 1,102 branches and stations, a net increase of 3,200 over the preceding year.

The post office department was charged with the distribution of War Manpower commission forms for voluntary registration of women over 18 years of age for war work. This work called upon carriers to leave one form at each household on their routes "unless they have reason to believe that two or more women over 18 years of age reside in the household, in which case a form for each woman should be delivered" The forms were not to be delivered to offices, stores, factories or any other place of business.

Through its 43,406 post offices and 4,802 stations being conducted under contract agreement, as well as 1,678 classified stations and branches, there were received, transported and delivered approximately 30,207,000,000 pieces of mail matter during the fiscal year, having a weight of 3,228,000 tons, representing an increase over the previous fiscal year of 971,000,000 pieces of mail and 103,000 tons.

On June 30, 1942, there were 4,802 stations being conducted under contract agreement. The average cost per contract unit was $352 and the total cost of operation during the fiscal year amounted to $1,689,000, whereas the receipts from the sale of stamps at these contract stations amounted to $38,822,000 during the calendar year 1941.

During the fiscal year, city delivery service was established in 49 additional cities, thereby increasing to 3,347 the number of cities in which this service was in operation. It was extended to 34,338 blocks of territory serving 636,050 families and 26,817 new places of business.

Postmasters.—During the fiscal year there were 1,974 postmasters confirmed by the senate and appointed without term by the president. There were 1,132 presidential postmasters reappointed upon the expiration of their commissions and 240 reappointed due to advancement of their offices from the fourth class to the presidential grade, which necessitated new appointments. Of the postmasters appointed, 1,259 were due to the expiration of four-year terms, 285 to advancement of offices from the fourth class to the presidential grade, 131 to resignations, 140 to deaths, 75 to removals, 25 to retirement, 56 to transfers to other classified positions, 2 to failure of postmaster to qualify after appointment, and 1 to the establishment of a new presidential post office. Fourth-class postmasters were commissioned at 2,177 offices during the year as vacancies occurred through various causes.

Dead Letters.—During the year 14,990,943 letters were impossible of delivery, an increase of more than 9% over the previous year. This increase reflected to some extent the increased volume of mail handled but was due more to the large number of incorrectly addressed letters for the military and naval forces and for civilians who moved incident to changes in location due to war work. A total of 2,637,490 letters were returned to the senders, of which 278,345 were found to contain valuable enclosures and 79,475 of them contained money, amounting to $133,077. A total of 12,271,677 letters were destroyed as undeliverable. Money found loose in the mails amounted to $31,440. There were also 237,100 unclaimed parcels and articles found loose in the mails. These parcels were sold at public auction and $61,000 realized.

Air Mail.—On June 30, 1942, there were 44,623 mi. of domestic air mail routes in operation, an increase of 1,212 mi. over 1941. The number of miles flown was 89,410,021, which was 14,154,813 more miles than in 1941.

A number of transport aircraft available for mail service on domestic routes was transferred to the military service near the close of the fiscal year 1942 but a program for the most extensive use of the remaining equipment was organized which permitted the maintenance of essential routes and schedules and the transportation of an increased volume of air mail with reasonable expedition.

While foreign air mail routes were necessarily curtailed, extensions on the other hand were made to certain areas and the frequency of service was materially increased to the Latin American countries and to Hawaii and Alaska.

Rural Delivery.—The rural delivery routes in operation on June 30, 1942 required a total daily travel of 1,420,971 mi. by rural carriers in providing service to approximately 29,200,000 patrons. The policy of consolidation of rural routes to absorb vacancies was continued. Operation of the rural delivery service resulted in an expenditure of $91,631,650 for the fiscal year as compared with $91,501,569 for the previous year, an increase of but $130,081 over 1941. The amounts saved through consolidation of routes were utilized to establish new routes and provide extension of existing routes. Thereby 9,218 more miles were covered by rural carriers at the close of the fiscal year 1942 than in 1941. Rural delivery service was transferred from the jurisdiction of the second assistant postmaster general to the first assistant postmaster general on July 1, 1942, to co-ordinate it better with other delivery services.

Postal Savings.—The postal savings system continued to merit a widespread public demand for its services; the depositors numbered 2,812,806 for 1942, a decrease of 2.43% from the preceding year. The balance due depositors represented by outstanding certificates of deposit was $1,315,410,402, an increase of $11,257,128, or about nine-tenths of 1%. In addition, there was held in trust for depositors $166,341,239.40, represented by outstanding postal savings stamps, now called war savings stamp accrued interest of $38,556,979.69, and unclaimed deposits $112,930, making a total of $1,520,421,551.09. At the end the year, postal savings certificates were on sale at 8,063 d positories, including 852 branches and stations; but savin stamps were on sale at all post offices and practically all branch and stations.

Buildings.—During the fiscal year 1942, 58 new governmen owned post office buildings were placed in operation, 7 extensio to existing buildings were completed, and 6 new federal buildin replaced a similar number of old buildings. Through reassig ments of space within these buildings, agencies of the gover ment which were or had intended occupying commercial quarte were accommodated, with a saving of $17,255.60. Due to t war, the public building program was suspended. Expiring leas numbering 1,023 were renewed in 1942. Where necessary meet increased service needs, larger quarters and superior faci ties were obtained, and in other cases necessary improvemen were secured in the occupied quarters. The square foot cost renewing leases was reduced from 77.2 cents in 1941 to 73.8 cen in 1942. One hundred and nineteen new leases were made, i cluding 105 for offices previously occupying space on a month rental basis, the new contracts providing improved quarters a in many instances complete new equipment. (I. Gg.)

Great Britain.—The 1942–43 budget estimate of expenditur £102,523,000, showed an increase of £8,800,000 but, addition war expenditure being met from vote of credit, comparisons a difficult. The revenue estimate, £112,523,000, was £14,000,0 above the estimate for 1941–42 (£3,000,000 above actual r ceipts). These figures exclude wireless licences, which were to accounted for separately but include war surcharges, estimated £14,500,000. Commercial accounts were suspended to save wor

Inland posts suffered less dislocation from bombing than 1941. Overseas mails, despite attacks on shipping, successful adjusted themselves to the ever increasing number of troo serving abroad. Airgraphs were extended at a charge of 8*d*. civilian correspondence to and from Canada, South and Ea Africa, the middle east, India and Ceylon and before the end 1942 the total traffic to and from troops and civilians reach 2,000,000 pieces weekly. A 6*d*. "air letter" to the troops supe seded the 3*d*. air postcard at the end of 1942.

Telephone and telegraph services carried increasing loads fro the fighting and defense services, vital war industries and vario other sources. All urgent traffic was handled expeditiously n withstanding widespread dilution of operative and engineeri staff and extensive work on replacement of circuits withdra for fighting operational purposes. Long distance circuits we more than doubled after the outbreak of war and various ne facilities introduced in the overseas telegraph services to me strategic needs and to give British and Allied troops means rapid communication home.

While war restricted some postal traffic, mainly by reduci circular advertising, the heavy increases mentioned combined wi new work at the public counters required further intake of sta In Oct. 1942, the number employed was 293,000. The pre-w total was 283,000 of whom 65,000 (including 1,200 women) h joined the forces and 4,900 were on loan to other government d partments. These movements were balanced by the employme of temporary staff, mostly women, raising the pre-war total 64,000 women to 121,000. (*See* also PHILATELY.) (S. R. C.)

Potash.

With the bulk of the world potash output within immediately adjacent to the war zone, there w little information on the industry after 1939. German expo overseas, of course, stopped and shipments within Germany a e occupied areas were seriously handicapped by the shortage of our, materials, and shipping facilities, and these conditions ere intensified by the absorption of the Alsatian mines after e fall of France. Nothing whatever was heard from the Rus- n industry, or of that of Poland. The Spanish industry, which s closed by the civil war, was reopened in 1940, but the output s reduced well below its former level by the lack of markets in ance and Great Britain.

In the United States the 1941 output increased 38% over 1940, 524,875 short tons of K_2O, while sales increased 35% to 531,- 6 tons of K_2O. Sales exceeded production, and stocks were luced slightly. Imports during the first nine months of 1941 had clined to the rather nominal figure of 45,581 long tons of salts, ile exports were 70,169 tons, leaving the domestic supply more n self-sufficient. (*See* also FERTILIZERS.) (G. A. Ro.)

tatoes.

The highest per-acre yield on record was made by the United States potato crop of 1942, when pro- ction averaged 135.7 bu. per ac. This is 5 bu. more than the rage acre yield of 1941 and 9 bu. above the five-year (1937– average. The 1942 crop was estimated Nov. 1 by the depart- nt of agriculture as 379,624,000 bu. compared with 357,783,000 in 1941 and a 10-year (1930–39) average of 370,045,000 bu. e department of agriculture announced a program in March 2 to support prices, to induce growers to increase the 1942 eage planted to potatoes by 10%. The area seeded to potatoes 1942 was 2,844,700 ac., about 1.8% over the 1941 acreage of 93,000 ac. Increased production was urged because it was esti- ted that United States starch requirements in 1942 might ex- d 4,000,000,000 lb. The largest production of potato starch the United States was 54,500,000 lb. from 8,000,000 bu. in crop year of 1940–41. Prices for potatoes were subject to a ximum by government regulatory order of Nov. 9, 1942. ato consumption improved, under wartime demand in 1942, rking a change from the steady trend of declining per capita sumption for more than 20 years owing to competition from er vegetables, particularly frozen foods, and because of the lely current belief that potatoes are fattening. Although a wing use of dehydrated foods to save space in shipments over- s was reported in 1942, such development did not affect atoes or other vegetables because there were not enough de- rating plants in the United States in which to process potatoes any material quantity.

weet Potatoes.—The 1942 sweet potato crop in the United States was 69,814,000 bu., as indicated Nov. 1 by the department of agriculture. The 1941 crop was 63,284,000 bu.; the 10 year (1930–39) average, 73,208,000 bu. Average per-acre yield was 92.2 bu. in 1942. It was 84 bu. in 1941; the ten-year average, 83 bu.

Table I.—*U.S. Production of Potatoes by States, 1942 and 1941*

State	1942 bu.	1941 bu.	State	1942 bu.	1941 bu.
surplus late					
potato states					
aine	45,375,000	45,360,000	Vermont	1,500,000	2,059,000
aho	30,360,000	28,560,000	New Hampshire	1,207,000	1,472,000
w York	27,313,000	28,078,000	Rhode Island	975,000	814,000
nnesota	19,350,000	17,982,000	Arizona	562,000	392,000
rth Dakota	18,250,000	15,010,000	New Mexico	382,000	432,000
nnsylvania	17,696,000	23,674,000	*7 intermediate*		
chigan	17,290,000	20,600,000	*potato states*		
lorado	16,415,000	12,775,000	New Jersey	10,320,000	9,790,000
braska	12,876,000	9,490,000	Virginia	7,665,000	7,007,000
lifornia	11,520,000	11,470,000	Kentucky	4,700,000	3,760,000
sconsin	10,720,000	16,608,000	Missouri	4,520,000	5,995,000
shington	8,610,000	8,600,000	Kansas	2,232,000	2,860,000
egon	7,400,000	8,460,000	Maryland	2,020,000	2,342,000
th Dakota	3.360,000	2,015,000	Delaware	370,000	323,000
oming	2,660,000	2,185,000	*12 early*		
ah	2,074,000	1,836,000	*potato states*		
ontana	1,610,000	1,840,000	California	11,550,000	10,335,000
vada	391,000	330,000	N. Carolina	9,213,000	6,723,000
other late			Texas	5,520,000	6,076,000
potato states			Florida	4,350,000	3,306,000
io	9,790,000	13,000,000	Alabama	3,900,000	5,400,000
va	7,076,000	6,099,000	Tennessee	3,483,000	2,745,000
diana	5,720,000	4,324,000	Arkansas	3,465,000	3,139,000
st Virginia	4,140,000	3.960,000	S. Carolina	3,108,000	2,730,000
nois	3,774,000	3,312,000	Louisiana	2,714,000	2,684,000
nnecticut	3,078,000	3,402,000	Oklahoma	2,310,000	2,170,000
ssachusetts	2,945,000	2,726,000	Mississippi	1,917,000	1,365,000
			Georgia	1,848,000	1,140,000

TENANT FARMERS FROM VIRGINIA were rushed to Connecticut by the U.S. department of agriculture in the fall of 1942 to harvest the potato crop, which was about to rot for lack of farm hands

Table II.—*U.S. Sweet Potato Production by Leading States, 1942 and 1941*

State	1942 bu.	1941 bu.	State	1942 bu.	1941 bu.
Georgia	8,400,000	7,194,000	South Carolina	5,890,000	5,525,000
North Carolina	8,064,000	6,960,000	Louisiana	5,412,000	6,138,000
Alabama	7,332,000	7,840,000	Texas	5,100,000	5,580,000
Mississippi	6,935,000	6,935,000	Tennessee	4,180,000	5,192,000

(S. O. R.)

Poulsen, Valdemar

(1869–1942), Danish engineer, was born Nov. 23 at Copenhagen. He invented the telegraphone in 1898 and devised the Poulsen arcs used in radio. With Prof. Reginald Aubrey Fessenden, U.S. physicist and engineer, Dr. Poulsen was credited with the invention of a wireless telephone system. His death was reported in New York city, Aug. 6, by the National American Denmark association. (See *Encyclopædia Britannica.*)

Poultry.

The 1943 goal for production of dressed poultry in the United States was placed by the Office for Agricultural War Relations as 4,000,000,000 lb. of chickens and 560,000,000 lb. of turkeys. The 1942 goal for chickens, 3,118,000,000 lb., was attained. The 1942 production for turkeys was 485,000,000 lb., which was 15,000,000 lb. short of the prescribed goal. At the beginning of 1942 the number of chickens on farms was estimated by the department of agriculture as 473,933,000 compared with 422,909,000 a year earlier; turkeys, 7,710,000 at the beginning of 1942 and 7,252,000 a year earlier. Production during 1942 was the heaviest on record, and operations of commercial hatcheries, beginning with Nov. 1942, were on a scale which indicated a still larger production in 1943. The output of commercial hatcheries in Nov. 1942 was at the record top for that month—25,000,000 chicks, 2,300,000 more than the Nov. 1941 hatch. The hatch would have been still higher except that it was impossible to obtain more eggs. Ceiling prices were placed on turkeys Nov. 9, 1942, and on chickens Dec. 18, 1942. Prices were at ceiling levels at the end of 1942. Exempt from the price control were stock for breeding purposes, baby chicks, ducklings, goslings and poults. The high production of chickens asked in 1943 was considered dependent on an increase of 10% in chickens raised on farms for flock replacements and an additional 125,000,000 young chicks raised in general farming areas. The hatching season was unfavourable for turkeys in 1942, and increase in 1943 depended on farmers retaining turkey hens for egg production. If commercial broiler producers were to shift their output to marketing heavier birds, the 1943 production would thereby be increased from 150,000,000 to 200,000,000 lb. Commercial broiler producers in 1942 marketed approximately 200,000,000 birds. To reach their proportionate part of the 1943 goal they would have to market 275,000,000 birds of average weight of not less than 3 lb. (*See* also EGGS.) (S. O. R.)

Presbyterian Church.

The Reformed churches holding the Presbyterian system, within the United States of America, were 12 in number and included in 1942, 18,561 ministers, 18,534 churches, and 3,891,292 communicant members with approximately 7,500,000 adherents. Outside of continental United States they had 2,148 American foreign missionaries and 13,951 native workers in a total of 21 countries with a communicant membership of 240,528.

All of the churches of the Presbyterian family affirming "that we are a people with a national heritage that makes for free men and that this heritage is opposed by those who contend against us in the present war," united in pledging themselves to pray and work for a right victory and an enduring peace. Facing their present war-emergent tasks they enlarged and further implemented their wartime activities. Over 700 of their ordained ministers volunteered and were commissioned as chaplains with the armed forces. Almost $2,000,000 in special funds were raised and used for spiritual work among soldiers and sailors, for the special religious needs in national defense industry areas, and for foreign relief causes. The General assembly of the Presbyterian Church in the United States of America appointed a committee to study the vital matter of a righteous peace based on "the principles of the Christian religion."

In the oecumenical field, provisions were made for celebrating the 300th anniversary of the historic Westminster assembly which convened in Westminster abbey, July 1643, and formulated the doctrinal standards used by Presbyterian churches throughout the world. Continued progress was made in negotiations looking toward closer relations and eventual union between the Presbyterian Church in the United States of America and the Protestant Episcopal Church, and between the former church and the Presbyterian Church in the United States (Southern).

The western section of the World Presbyterian alliance, representing the Presbyterian and Reformed churches in the United States and Canada with representatives from Europe and Asia, held its annual meeting in Atlantic City, N.J., Feb. 10–11, 1942.

Europe.—A new sense of vitality and hope distinguished all the reports from the Reformed churches in Europe. The Reformed Church in France continued to keep alive the sense of its absolute solidarity looking to the time when the true independence of the country would be restored. The decision wa made that the churches of the occupied zone, instead of meetin in a General assembly, would meet in an interregional synod en dowed with all administrative powers within the framework of th decisions of the national synod. In spite of the arrest of man of its outstanding leaders and the general restrictions upon it freedom, the congregations of the Reformed churches of Hollan and Belgium continued their work.

The general convention of the Hungarian Reformed Churc was held in Budapest in May. The Vienna arbitration divide the Transylvania Reformed Church in two—two-thirds of th parishes went to Hungary, the rest, comprising 251 parishe with about 238,000 persons, remained in Rumania. The scant news from Bohemia and Moravia indicated that the Czechoslova Church was still hard at work. The Reformed churches in Eastern Europe, particularly in Poland, Lithuania and the Ukrain as organized bodies practically disappeared. Very few report emanated from the church in Germany, but there was ample ev dence in them of "the vast passive support" given to the opp sition churches. (W. B. PU.)

THE RIGHT REV. JAMES H. COCKBURN, moderator of the Church of Scotlan visited the U.S. in Feb.-April 1942, preached at several churches, including th Washington cathedral, and was received by Pres. Roosevelt

esidents, Sovereigns and Rulers.

The following list includes the names of those holding chief sitions in their countries at the beginning of 1943.

Country	*Name and Office*	*Accession*
hanistan	Muhammad Zahir, Shah	1933
bia, Saudi	Abd-ul-Aziz ibn Sa'ud, King	1926
entina	Ramón S. Castillo, President	1942
tralia	Alexander Gore Arkwright, Baron Gowrie, Governor General	1936
	John Curtin, Prime Minister	
rium	Leopold III, King (German occupation)	1934
via	General Enrique Peñaranda del Castillo, President	1940
il	Dr. Getulio Vargas, President	1931
garia	Boris III, King	1918
	Bogdan Philoff, Prime Minister	
ma	Sir Reginald Hugh Dorman-Smith, Governor (Japanese occupation)	1941
ada	Earl of Athlone. Governor General	1940
	W. L. Mackenzie King, Prime Minister	
e	Juan Antonio Ríos, President	1942
a	Lin Sen, President of National Gov't	1932
	Gen. Chiang Kai-shek, President of Executive Yuan	1939
mbia	Dr. Alfonso López, President	1942
a Rica	Rafael A. Calderón Guardia, President	1940
	Col. Fulgencio Batista y Zaldivar, President	1940
hoslovakia	Dr. Eduard Beneš, President (German occupation)	1940
mark	Christian X, King (German occupation)	1912
minican Rep.	Rafael Leónidas Trujillo Molina, President	1942
dor	Carlos Arroyo del Río, President	1940
t	Farouk I, King	1936
	Dr. Douglas Hyde, President	1938
	Eamon de Valera, Premier	1932
pia	Haile Selassie I, Emperor	1930
nd	Risto Ryti, President	1940
ce	Henri Philippe Pétain, Chief of State, Marshal of France (German Occupation)	1940
hany	Adolf Hitler, Fuehrer and Reich Chancellor	1933
t Britain	George VI, King and Emperor	1936
	Winston Churchill, Prime Minister	
ce	George II, King (German occupation)	1935
emala	Gen. Jorge Ubico, President	1931
	Elie Lescot, President	1941
luras	Gen. Tiburcio Carías Andino, President	1933
gary	Admiral Nicholas Horthy de Nagybánya, Regent	1920
	Nicholas von Kallay, Premier	
nd	Sweinn Björnsson, Regent (U.S. Protection)	1941
	Marquess of Linlithgow, Viceroy, Governor General	1936
	Muhammed Reza Pahlevi, Shahinshah	1941
	Feisal II, King (Regency)	1939
	Victor Emmanuel III, King	1900
	Benito Mussolini, Premier, Chief of Gov't, Sec'y of State	
n	Hirohito, Emperor	1926
	Gen. Hideki Tojo, Premier	
non	Alfred Naccache, President	1941
ia	Edwin Barclay, President	1932
tenstein	Franz Joseph II, Sovereign Prince	1938
mbourg	Charlotte, Grand Duchess (German occupation)	1919
choukuo"	Henry Pu Yi ("Emperor Kangte")	1934
co	Manuel Avila Camacho, President	1940
co	Louis II, Prince	1922
cco	Sidi Maulay Mohammed, Sultan	1927
erlands	Wilhelmina, Queen (German occupation)	1890
oundland	Sir Humphrey T. Walwyn, Governor	1936
Zealand	Sir Cyril Newall, Governor General	1941
	Peter Fraser, Prime Minister	
agua	Gen. Anastasio Somoza, President	1937
ay	Haakon VII, King (German occupation)	1905
	Sir Sayyid Sa'id bin Taimur, Sultan	1932
tine	Sir Harold Alfred MacMichael, High Commissioner	1938
ma	Ricardo Adolfo de la Guardia, President	1941
uay	Higinio Morínigo, Provisional President	1940
	Manuel Prado y Ugarteche, President	1939
pines	Manuel Luis Quezon, President (Japanese occupation)	1935
d	Wladislaw Raczkiewicz, President (German occupation)	1939
gal	Gen. António Oscar de Fragoso Carmona, President	1926
	Dr. António de Oliveira Salazar, Premier	
nia	Mihai, King	1940
	Ion Antonescu, Premier-Dictator	
dor, El	Gen. Maximiliano Hernández Martínez, President	1931
akia"	Joseph Tiso, "President"	1939
Africa	Sir Patrick Duncan, Governor General	1937
	Gen. Jan C. Smuts, Premier	
	Gen. Francisco Franco Bahamonde, Chief of State, Prime Minister	1936
	Lt. Gen. H. J. Huddleston, Governor General	1940
en	Gustaf V, King	1907
erland	Dr. Enrico Celio, President	1943
	Taj-ed-Dine-el-Hassani, President	1941
and	Ananda Mahidol, King (Regency) (Japanese occupation)	1935
-Jordan	Abdullah ibn Hussein, Emir	1928
ia	Sidi Moncef Pasha, Bey	1942
ey	Ismet Inonu, President	1938
U.S.S.R.	Mikhail Ivanovich Kalinin, President	1936
	Joseph V. Stalin, Premier	
United States	Franklin D. Roosevelt, President	1933
Uruguay	Dr. Juan José Amezaga, President-elect	1943
Vatican City	Pius XII, Pope	1939
Venezuela	Gen. Isaias Medina Angarita, President	1941
Yugoslavia	Peter II, King (German occupation)	1934
Zanzibar	Seyyid Sir Khalifa bin Harub, Sultan	1911
	Sir Henry Guy Pilling, British Resident	1940

Price Administration, Office of.

During 1942, OPA placed controls over the prices of almost everything the people of the United States eat, wear and use—from the first shipment of raw material to the final finished product and its sale at retail. Rent regulations controlled the prices for living quarters in areas in every state in the nation except North Dakota. Rationing regulations distributed the national supplies of sugar, coffee, gasoline, typewriters, bicycles, automobiles, fuel oil and tires.

The first 10 days after the Dec. 7, 1941, attack on Pearl Harbor were days of frantic effort to check prices of many commodities affected directly or indirectly by the prospect that imports from the far east would be seriously curtailed or entirely cut off.

Preventive action of one kind or another was taken to hold down the prices of refined sugar, wheat, butter, soybeans, eggs, flaxseed, millfeeds, soybean and cottonseed meal, wool, coffee, cocoa, pepper, flashlights (there was a buying panic and profiteering along the west coast), leather, and some 1,800 fats and oils. It was this latter move—a temporary 60-day ceiling over fats and oils—that turned the tide. By noon on Monday, Dec. 15, 1941, basic commodity prices had receded to levels somewhat under the closing prices of Monday, Dec. 8.

The declaration of economic war came on Jan. 6, 1942, when President Roosevelt outlined his "Blueprint for Victory" that called for production of armaments on a record-breaking scale. Expenditures of from $5,000,000,000 to $6,000,000,000 a month for war as indicated by the president's message meant that civilian purchasing power, if uncontrolled, would be swollen far beyond already history-making levels and would collide head-on with a drastically curtailed production of civilian goods. All previous concepts of the size of the pending job were scrapped. Planning of new measures of the broadest kind began.

The Emergency Price Control act of 1942, giving OPA statutory authority, became law on Jan. 30, 1942.

Tire rationing early in Jan. 1942 fell to OPA's already overloaded staff. Other rationing programs followed swiftly—automobiles and sugar—and before the winter was over OPA had emerged from relative obscurity and had become a familiar symbol in every home in America. With the establishment of ration boards in every county of each of the 48 states, nearly 30,000 volunteers were added to the staff.

March saw the first attack on high rents in defense areas, the initial major action under the Emergency Price Control act signed by the president Jan. 30. Price actions came fast thereafter and reached a climax April 28, when the General Maximum Price Regulation was issued, an omnibus order that took in everything congress had not excluded from control or was not already covered in earlier regulations.

The "General Max" was timed to follow immediately the president's anti-inflation message, containing a 7-point program that called for legislation involving heavy taxation and restoration of the parity principle instead of the 110% of parity formula contained in the Price Control law. Success of the "General Max" was immediate and dramatic. It brought to a dead stop 19 months of continuous advance in the cost of living.

This success, however, was not to continue for long. There were two major reasons. First, and most important, was the fact

PRICE FREEZING of most U.S. commodities at the levels of March 1942 was announced by Price Administrator Leon Henderson at a press conference in Washington April 28, 1942

that extra parity provisions for farm products in the Price Control law left uncontrolled nearly 40% of the items in the average family's food budget. Second, implementation of the other anti-inflation measures recommended by the president was slow; in fact, as to two major points—heavy taxation and wage stabilization—it was completely lacking.

During the summer, the price control situation deteriorated. Propelled by abnormally large increases in prices of the food stuffs exempt by law from OPA control, the cost of living resumed its upward march. As new crops of uncontrolled fresh fruits and vegetables reached the market for processing and canning at prices greatly ahead of those of the previous year, cracks began to appear in the OPA's over-all ceiling.

Fighting hard to hold the line, OPA was forced to make "adjustments"—increases in ceiling prices so that necessary commodities could continue to be sold. Most of these were accomplished by the expedient of removing the affected group of products from the confines of "General Max" and setting it up in a separate regulation with provisions that lifted the ceiling above the levels of March, 1942.

Retreat in each case was made grudgingly and only after OPA had exhausted every weapon at its command. Two things were needed—return to parity and the use of subsidies. Congress had not acted on the president's request that the parity concept be restored and had not provided funds for subsidies.

Resumption of the rise in living costs did not go long unnoticed, and as the summer of 1942 waned it became more and more evident that demands for higher wages could not be resisted much longer. On Sept. 6 the president asked congress to furnish the administration with a revised and workable piece of anti-inflation legislation. In less than 30 days both houses passed an amendment to the law. Almost immediately the president created the Office of Economic Stabilization and drafted as its director James F. Byrnes, who resigned from the United States supreme court to accept the new post.

OPA again moved swiftly. Within 24 hours after the issuance of the new executive order, practically all of the hitherto exempt food items that had so nearly wrecked the price control program were brought under control. Many items covered at first by the General Maximum Price Regulation were later placed under individual regulations specifically tailored to the practices of particular trades and industries.

Rent control likewise moved ahead swiftly. On June 1, 194 the rents in 20 areas previously designated came under actual federal control. By October the list of rent controlled areas had increased to 190 and by Dec. 1 to 354.

Leon Henderson served as administrator of the OPA throughout 1942 but submitted his resignation in December. Prentiss Brown of Michigan was named early in 1943 to succeed him.

(*See* also CANADA, DOMINION OF; MUNICIPAL GOVERNMENT; PRICES; PRIORITIES AND ALLOCATIONS; RATIONING; WAR PRODUCTION, U.S.) (L. HN.)

Prices.

Commodity prices in most markets throughout the world continued to advance during 1942. Widespread warfare on all the continents and on the high seas created exceptional demands for commodities and, at the same time, curtailed the movement of commodity supplies and limited the production of various commodities. The operation of these factors created unusual upward pressure on prices and price advances were moderated only by governmental controls.

In some countries prices were lower for commodities whose markets were curtailed. These instances were fewer than in 19 because, with the United States actively at war, heavier purchases were made in Latin America, Africa and the South Pacific to the raw material needs of the United States and for financial a to those countries.

The United States during 1942 joined the major countries which had previously undertaken broad national control over commodity prices. In certain of these countries, where exceptional economic conditions had strained their resources, as China, France and Italy, national measures to restrain price nces appeared to have been ineffective.

In most countries prices and fiscal problems generally were garded, in view of military events, to be of subsidiary impornce. Price changes to determine distribution of commodity supies were generally replaced by direct allocation of industrial aterials and equipment, and by rationing of essential consumer ods. Conversion of manufacturing and transportation facilities war purposes, use of raw materials and foodstuffs for military eds, and naval blockades sharply reduced supplies available for vilians and living costs rose steadily.

United States.—Commodity prices in the United States conued to advance rapidly during the early part of 1942, as shown figs. 1 and 2. War appropriations, which totalled about $65,0,000,000 in Nov. 1941, doubled soon after the United States tered the war. Actual war expenditures expanded sharply witht a corresponding rise in taxes or savings. Consumers and instrial buyers bought heavily at that time with purchases often ing made for protection against further price increases and ssible scarcities. To maintain orderly price conditions, a gen.l maximum price regulation was issued at the end of April to it wholesale and retail prices of most goods and services to highest levels reached in March. Maximum rent ceilings were up for an increased number of localities in an effort to staize the cost of living.

Prior to this action, authorized by the Emergency Price Conl act of Jan. 1942, maximum price controls were largely on ected basic materials and products at wholesale. They were igned to limit increases in manufacturers' costs and thereby irectly to hold down the cost of the defense program and the t of living. After the United States entered the war, action s broadened to include ceilings on wholesale and retail prices certain consumer goods, like automobiles, tires and electrical pliances, production of which had been discontinued or re.cted by the war program. It was evident, however, that the jor cause of the rise in prices of civilian goods was the growth consumer incomes rather than the rise in manufacturers' costs. nsequently, price increases in retail markets could only be preited by direct control.

The general regulation controlled retail prices of approximately)-thirds of the leading cost-of-living items. A number of foods e exempted, however, including fresh products which were ticularly difficult to control or other products which were sely related to prices of farm commodities that were allowed rise further according to the provisions of the Price Control . For several months after the general regulation was issued, ces of farm products showed little change. This reflected a kening in speculative interest, marketing of large crops, and idation of accumulated stocks of processed farm products. August mounting consumer incomes were reflected in the rkets for farm products, which were in short supply, and ces began to rise again.

Retail prices of uncontrolled foods and wage rates, also, coned to advance during the summer, resulting in new legislation Oct. 2, 1942, authorizing the president to issue a general order oilizing prices, wages and salaries, affecting the cost of living. s legislation permitted the establishment of maximum prices farm products and their manufactures at levels lower than vious statutory limitations. Controls which had covered retail es of 60% of the food budget were extended over 90% of the l. A tax measure was also enacted which called for a large ease in federal taxes, the bulk of which would represent a ndrawal of disposable income from consumers.

Prices of commodities other than farm products and foods e relatively stable during the year, as shown in the table, owing part to the broad extension of price controls. Another important factor was the high level of stocks of many consumer goods. Output of most civilian goods had continued at a high level after the beginning of the year. By the time production was curtailed in selected lines, heavy stocks had been accumulated by producers, distributors and consumers. Particularly during the latter half of the year a greatly increased proportion of expanding consumer income went into savings, chiefly by purchasing war bonds, paying off instalment and other debts, and accumulating currency and deposits. This withholding of current income from expenditures on consumer goods limited the rise in the cost of living to about 10% during the year. Supplies of most consumer goods, except metal and rubber products, were still generally available at the end of 1942 although scarcities were increasingly apparent, including some important foods. Rationing programs had been adopted to provide equitable distribution of scarce essential commodities.

Wholesale Prices in the United States to Dec. 26, 1942

	Index numbers, 1926=100		Per cent rise to Dec. 26, 1942, from	
	Jan. 3, 1942	Dec. 26, 1942	Jan. 3, 1942	Aug. 26, 1939
All commodities	94.3	101.2	7	35
Farm products	96.9	115.2	19	89
Foods	91.9	104.6	14	57
Other commodities	94.1	96.2	2	20
Hides and leather products	115.7	118.4	2	28
Textile products	91.6	96.6	5	43
Fuel and lighting materials	79.0	79.9	1	9
Metals and metal products	103.4	103.9	—	11
Building materials	108.3	110.0	2	23
Chemicals and allied products	95.1	99.5	5	34
House-furnishing goods	102.5	104.1	2	20
Miscellaneous commodities	87.5	90.4	3	24
Raw materials	93.4	106.6	14	61
Manufactured products	95.5	100.1	5	26

Source of data: Bureau of Labor Statistics.

United Kingdom.—Commodity prices in the United Kingdom were more stable in 1942 than in 1941, as shown in figs. 1 and 2. To a greater extent, however, price quotations were nominal and price indexes failed to reflect the restricted supply of civilian goods more than in the previous year as rationing and other controls over the distribution of resources were increased.

Most of the direct price controls and other measures indirectly affecting prices undertaken in the earlier years of the war were broadened and improved in 1942. Steps to assure production and distribution of essential goods like utility clothing at reasonable prices became an important factor in the markets. Receipts of large supplies of foodstuffs from the United States under lend-

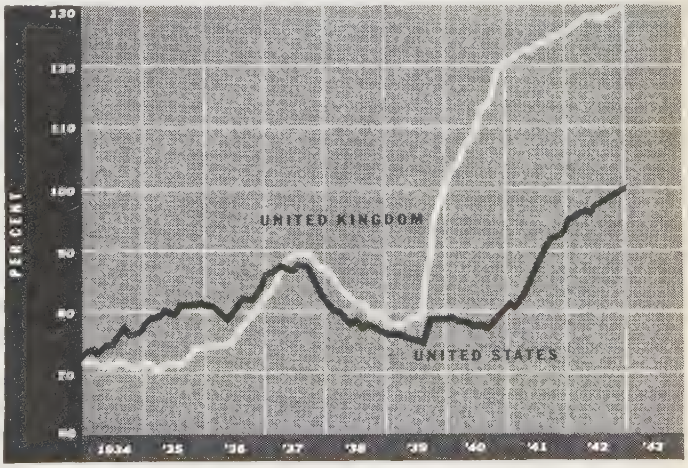


Fig. 1.—WHOLESALE PRICES IN THE UNITED KINGDOM AND THE UNITED STATES, 1934–42 (Source: United Kingdom—Board of Trade, converted to 1926 base; United States—Bureau of Labor Statistics). War conditions in the United Kingdom made many price quotations nominal; undoubtedly the index for that country understates the price rise after August 1939

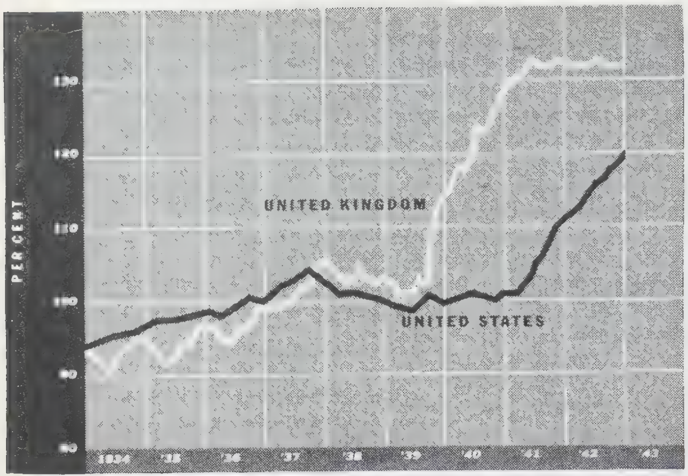


Fig. 2.—RETAIL PRICES IN THE UNITED KINGDOM AND THE UNITED STATES, 1934–42. (Source: Cost of living indexes. Ministry of Labour, converted to 1935–39 base, first-of-month data; Bureau of Labor Statistics, mid-month data, selected dates before Sept. 1940.) Because of the war, the price rise shown for the United Kingdom after 1939 and, to a lesser extent, for the United States after 1941, is probably understated.

lease were of primary importance in the retail food price situation. It had been announced that arrivals of these foods totalled 1,000,000 tons in 1941 and the tonnage probably increased considerably in 1942, particularly of high protein foods. This development, the continuation of food subsidies, and the increased prosecutions (4,150 in October) of distributors violating food orders resulted in some reductions in retail food prices in 1942 as compared with 1941. These reductions were offset by increases in retail prices of fuels and other commodities and the total cost of living showed little change. (*See* also AGRICULTURE; BUSINESS REVIEW; CANADA, DOMINION OF; CONSUMER CREDIT; COTTON; PRICE ADMINISTRATION, OFFICE OF; and articles on individual commodities.) (C. GN.)

Primary Education: *see* EDUCATION.

Prince Edward Island.

The smallest of the Canadian provinces lies in the Gulf of St. Lawrence. The island is about 130 mi. long, and has an average width of 21 mi. Pop. (1941) 95,047. The largest city is Charlottetown (14,460), the provincial capital. The island is separated from the mainland by Northumberland strait, which is crossed regularly by powerful railway ferry boats. Communication is also maintained by the Trans-Canada Airway service, which in 1942 provided two round trips daily between Charlottetown and Moncton. In 1940, 1,297 passengers were carried by aeroplane. The climate of the island, tempered by the Gulf of St. Lawrence, is moderate. Agriculture is the principal industry, all but about 15% of the total surface of the island being arable. The total estimated value of farming in 1940 was over $13,000,000. The most profitable crops grown were hay and clover, valued in 1941, at $3,680,000; potatoes at $2,414,000; oats at $2,116,000. Prince Edward Island was the original home of silver fox farming, experiments in breeding dating back to the early 19th century. While the fox farming industry scarcely occupies the place it once did, in 1938–39 the island produced 70,420 pelts valued at over $1,000,000. Another industry of considerable economic importance is fishing, which in 1940 produced a return of $714,870. Charlottetown is the seat of Prince of Wales college and also of St. Dunstan's university, the latter being a Roman Catholic institution. (J. I. C.)

Princeton University.

An institution of higher learning at Princeton, N.J. During 1942—its 195th year—Princeton once again girded itself for war. I adopted a year-round schedule to speed up the training of under graduates, introduced emergency courses to give instruction i particular war skills, instituted a physical fitness program, co operated with the reserve programs of the armed services an installed an information service to keep students abreast of th man-power plans of the government. Its faculty member pursued war research and served in advisory capacities to govern ment agencies. It provided accommodations for an army post ex change school of 250 men and a naval training school of 800 men

The year was also marked by reshaping of the curriculum to war needs; establishment of a department of aeronautical en gineering; expansion of geological engineering; introduction of program in American civilization; and adoption of a tutorial pla to remove the causes encouraging resort to commercial tutoring Robert Garrett gave to the university a distinguished collectio of books and manuscripts. President: Harold W. Dodds. Fo statistics of enrolment, faculty, endowment, etc., *see* UNIVER SITIES AND COLLEGES. (H. W. Do.)

Principe: *see* PORTUGUESE COLONIAL EMPIRE.

Printing.

Restrictions on machinery brought offerings of im portant new equipment during 1942 to that irre ducible minimum, nothing. Inventors, however, were reported t be busy. Photocomposition of "type" to supplement typecastin and typesetting machines utilizing metal, reported heretofore promised to become a practical reality at war's end. Experiment in use of plastics to replace type metal (largely lead) in castin linotype slug lines also were reported. During 1942 Du Pon announced types made from Nylon—like plastic, a carbohydrat material—to be unavailable for the duration.

An important development of the year was a compositio plastic and processed paper press plate for offset printing. Th plate, flexible with a glazed surface, is composed of equal part of paper and plastic, the latter forming the printing surface, th paper, flexibility. The new material effects a considerable savin in costs. While some in the trade did not regard the materi equal to zinc and aluminum heretofore used for the purpose WPB officials were said to, especially for plates 22 x 29 in. an smaller. One government executive reported a single run o 100,000 from such a plate.

Printed reproductions of full-colour paintings were accom plished with separate plates for yellow, red and blue values, als one for black to provide tones and shadows. Full-colour copy i photographed once for each plate, using a colour filter whic eliminates the reds and blues, as the camera sees the painting when making yellow plate, *et cetera,* for red and blue plates. A best the method was imperfect, artists correcting inaccuracie by hand. The Kodak Fluorescent process, developed in 1942, im proved on the method, speeded the making of plates. Picture are painted in water-colour paints which fluoresce in ultraviole light. This fluorescence so improves the red and yellow that colou correction is virtually perfect. Although invisible in ordinary light the bright fluorescence, which fully effects colour correction in re and yellow, makes a striking display in a darkened place unde strong ultraviolet rays. Photography for blue and black plates i accomplished, however, with white light only falling on copy.

Another outstanding contribution to the betterment of lithog raphy was the latest contact screen produced by Eastman Koda company. For fidelity it was said to be the nearest thing to con tinuous tone reproduction—that is, most like a genuine photo graph. It is also more efficient, requiring but one piece of fil or one dry plate. Time of making negative is much shorter control need be exercised over only one exposure to one film ead of two. The final result of the first process was a positive l required another contact exposure to produce a negative en it was used on albumen plates. By this new method a half- e negative is produced.

'hotoelectric colour-register control applied to supplements of vspapers printed on rotary presses, which decidedly reduces tage resulting from out-of-register colours, was not new. As etofore used the automatic colour register was applicable to a ss making an eight-page colour supplement. It was frequently ıd desirable to make sixteen-page supplements, folded, stitched trimmed as a book. Such sixteen-page sections heretofore to be combined by hand from the output of two presses, a tively slow and costly process. During 1942 a method to com- , by means of photoelectric register control, the output of presses was developed. While the inside eight-page section ıot be seen by the inspector, his inspection is not required.

(J. L. F.)

nting Office, U. S. Government.

The office was established by au- rity of Congress in 1860 to execute printing and binding for executive and judicial departments and the court of claims. functions extend to all branches of the government and in- e the sale of official publications, reports and technical bulle- Many of its publications are printed in foreign languages find circulation in other countries. The total area occupied he government printing office (including rented space) in 1942 1,457,138 sq.ft., or 33½ ac. The value of the government ting office buildings proper was $9,634,825; machinery and pment $6,143,484, making the total value of the plant $15,- 309. At the end of the fiscal year 1942 there were 8,216 loyees on the rolls, with a pay roll of approximately $19,- 000. The office produced a total of 365,456,048 publications l classes. This total included 9,789,638 copies of the *Congres- al Record,* 5,502,258 copies of specifications of patents, trade- ks, designs, etc., and 258,743 copies of the *Official Patent e Gazette* and annual indexes. Postal cards delivered unted to 2,465,498,000; money orders delivered, 278,106,600; tores division handled approximately 4,632 carloads of paper. ing the fiscal year 1942 the division of public documents ed out 622,736,070 publications and forms; its receipts from sale of government publications during the year amounted to 12,539.28. The total value of all printing done was $46,- 343.90.

(A. E. Gi.)

rities and Allocations.

The rush of U.S. industry into high volume produc- of war materials brought on severe growing pains as the year progressed. The principal causes of production troubles med from rapidly developing shortages of vital raw materials failure of established systems of control to force the best of available materials.

early fall it was apparent that a new method of handling ities and allocation of raw materials was necessary and one worked out by responsible government officials and industrial ers. This new system, announced Nov. 1, 1942, was the rolled materials plan. It was hailed as the most advanced yet taken in the United States toward an all-out war econ- With the experience gained under previous systems of rials control to guide its sponsors, the plan approached the lem from a new angle. It was based on allocation rather than priority system to achieve an ordered flow of vital raw rials to war plants.

the beginning of 1942, the old priorities system was still in . Under that plan, preference ratings were issued to insure that materials and components went first to essential production. However, preference ratings could do nothing to correct a more basic difficulty.

Some manufacturers, more favourably situated in certain respects, were able to turn out their products at much greater speed than others; in fact, the government unconsciously encouraged this lopsided production output by awarding honours to plants making outstanding records of production. Soon it became apparent that while there was a plethora of some essential war products there was a dearth of others. In many respects, the over-all war production effort was slowing down because of the unequal distribution of material and the unevenness of production of parts by different parts manufacturers. For example, a machine gun plant might be far ahead of schedule with guns for combat planes but the maker of engine parts for these same planes might be lagging behind schedule because the steel he needed had been used by the gun manufacturer, or was part of an over-ample inventory in some other war factory.

The inadequacies of this method of materials distribution had been realized late in 1941, and a new system—the production requirements plan—had been devised. Going into effect during the first quarter of 1942, this plan afforded some relief, but subsequent results proved that it was not the "ultimate plan" that some of its sponsors had hoped it would be. Under the PRP the individual manufacturer estimated his requirements for three months in advance and WPB, taking into consideration his estimate and the amount of material he had on hand, attempted to insure him sufficient materials to meet his production needs. Under a ruling issued in June 1942 it became mandatory for companies using more than $5,000 worth of certain critical materials a quarter to come under PRP. By Oct. 1, approximately 30,000 manufacturers were operating under this plan and their applications for materials constituted a report of about 95% of war industry's basic requirements. Under PRP the manufacturers were permitted to receive up to 40% of the total quarterly allotment during the first month, 40% during the second month, and 20% during the third month, these percentages being cumulative.

The baffling problem of bringing war production into balance and making the best possible use of all available material and facilities was not solved by PRP, because PRP provided no means of forcing each plant to operate on definite, approved schedules.

Inauguration of the controlled materials plan for regulating the flow of vital materials into war production—or into essential civilian production—did not do away immediately with the preference ratings or allocations under PRP. The controlled materials plan was designed to go into effect gradually, becoming fully operative beginning July 1, 1943. The CMP came as nearly as any conceivable program at the time of its adoption to composing the differences between the various elements involved directly in wartime production. Adoption of the plan resulted from careful study of the methods formerly employed in the United States and those of other nations and of the difficulties to be overcome. It was the outcome of painstaking conferences between army, navy, marine commission, WPB, and the Office of Civilian Supply, as well as representatives, consumers and producers of materials.

The first metals to come under the allotment control of the new plan were steels, copper and aluminum. The assumption seemed to be that any production program maintained within the available supplies of steel, copper and aluminum would not be likely to encounter immediate shortages of other materials. During the transitional period, these three controlled metals were to be delivered in accordance with both allotments and priority ratings. After July 1, 1943, deliveries of these three metals were to be prohibited except in accordance with allotments. Materials not on the controlled materials list continued to be distributed through the priorities system. Technically, CMP was a "shift from horizontal to vertical material control." Prime contractors presented "bills of materials," specifying not only what materials were required but when they must be received in order to fulfil scheduled deliveries. The bills of materials included all materials needed by subcontractors and their suppliers as well.

The requirements committee of WPB, which made the broad, final allotments, dealt through army, navy, maritime commission, aircraft scheduling unit (agent for army air forces and bureau of aeronautics), lend-lease, Board of Economic Warfare, Office of Civilian Supply and other agencies. These agencies were made responsible for the actual apportionment of the materials. They were known as "claimant agencies." When requirements of manufacturers and the agencies were brought into balance with supply and finally approved, then the WPB vice-chairman on program determination, who was also chairman of the requirements committee, allocated to each claimant agency authorized quantities of the controlled materials, and the agencies in turn handled the distribution among the prime contractors. Distribution was facilitated through the use of "allotment numbers," which constituted a right to receive delivery of materials.

Products were divided into classifications A and B. Custom-built products for the armed forces or other claimant agencies, such as guns, tanks, ships and planes were included in class A, and allotments for their manufacture were received direct from the claimant agencies. The class B list was made up of items such as nuts, bolts, small motors, other standard parts and maintenance and repair products for both industrial and civilian use. Materials for these products were allotted to manufacturers by the various industry divisions of WPB.

Each company receiving an allotment number carrying an allocation of controlled materials also received a preference rating for use in obtaining other materials. During the period of making the change-over from one system to the other, existing procedures, including preference rating orders and PRP certificates and individual material allocations under "M" orders were continued in effect for consumers who had not been able to qualify under the controlled materials plan.

During 1942, the compliance division of WPB checked the operations of some 50,000 business firms, and nation-wide surveys were made with the aid of investigators assigned by other federal agencies. More than 18,000 suspected violations of priority orders and regulations were investigated and 7,500 PRP firms were audited. Warning letters brought about desired results in 4,500 cases of significant or wilful violation of regulations, but 32 criminal and 10 civil cases were referred to the department of justice for appropriate legal action. In addition, the War Production board itself issued nearly 200 penalty orders against offending companies. The penalties imposed for the most part consisted of denial of priority assistance and allocations of restricted materials for periods of time ranging from three months to one year. The compliance division held 252 meetings during 1942, at which the workings and requirements of the priorities system were explained to approximately 150,000 industrialists.

Shortage of manpower and materials, which were urgently needed in the production of war munitions for immediate use, had its effect on the building construction program that had been planned for 1942, for it was necessary to divert both men and materials to the more pressing need. Notwithstanding, necessary building went on at a furious pace. Military housing for more than 250,000 men was provided in a single month, aeronautics construction reached $250,000,000 a month, more than $400,000,000 went into war factory buildings in one month, and an average of 40,000 residential units was built each month. T 1942 construction program consumed approximately 13,000,c tons of cast iron and steel in the form of finished products whi means that it took a pig and ingot capacity of 18,000,000 to It took about 180,000,000 bbl. of cement, nearly 160,000 sh tons of copper in finished products, nearly 190,000 short tons lead, nearly 75,000 short tons of zinc and more than 21,000,00 000 bd.ft. of lumber. This summary merely hints at the probl of priorities and allocations involved in the construction progra in 1942.

Toward the close of 1942, it became necessary for the chairm of the War Production board and the secretaries of the war a navy departments to issue jointly a directive on constructi establishing principles for curtailing facilities expansion. In so instances entire projects were discarded; in others, projects we reduced in size. Much building scheduled for 1943 was ca celled. Material that would have gone into such buildings w allocated to facilities needed immediately for the manufactu of munitions currently behind schedule.

(*See* also Business Review; Price Administration, Offi of; Rationing; War Production, U.S.; War Producti Board.)

(M. P. Q.)

Prisoners of War.

World War II brought the first test the international agreement regardi the treatment of prisoners of war, developed at Geneva, Switz land, in 1929 by delegates of 47 nations and subsequently ratifi by most of the nations represented. Demonstrating the need f such a convention is the fact that an agreement between G many and the United States for the treatment of prisoners duri World War I was not arrived at until the morning of Nov. 1918.

In general, the convention provided minimum standards f the treatment of prisoners of war. Food was to be equal to th of troops of the detaining power at base camps. Sanitary a medical facilities were to be provided. Prisoners might be he in compounds but not individually confined except under usual circumstances. Officers received pay, generally on the sa scale as officers of corresponding rank in the army of the deta ing power. Prisoners other than officers might be required work with pay at an agreed-upon rate, but the work should ha no direct relation with war operations. Representatives of t protecting power might visit camps. Facilities for the exchan of correspondence with relatives at home were to be provide and prisoners were allowed to receive parcels. Such correspon ence and parcels were exempt from all postage duties. The co vention further provided for the exchange of information abo prisoners through information bureaus in each of the belligere countries and a central information bureau.

Two major belligerents in World War II did not ratify t convention, Russia and Japan. Russia stated that she was appl ing the standards of the Hague convention of 1907, which h no provision for neutral observation of prison camps or for t exchange of names of prisoners. In Jan. 1942 Japan agreed abide by the terms of the convention but without formal ratifi tion. (*See* also Red Cross.)

During 1942 reports of the delegates indicated that, in gener the terms of the convention were being observed, although names of only a few of the prisoners taken by Japan had be officially reported, nor had Japan yet accorded facilities for t regular shipment of supplementary supplies to prisoners in t far east. Neutral representatives of the Young Men's Christ association had also been given permission by most of the bell erents to visit camps to assist prisoners in educational, recr tional and religious activities.

No official figures were available by nationality for the total mber of prisoners during 1942. Unofficial information indi- ed, however, that there were about 4,000,000 such captives. issian prisoners were estimated at 1,800,000 in Germany and ,000 in Finland. The next largest group appeared to be French d by Germany, reported at 1,084,000. The number of German soners held in Russia and the various British dominions was available although there were 23,000 German prisoners re- rted in Canada. It was estimated that Britain was holding ne 300,000 Italians in India and the Libyan campaign of late 2 had resulted in the capture of an additional 100,000. Re- ts indicated that in addition to French prisoners, Allied pri- ers in Europe included 142,000 British, 500 Americans, 140,- Yugoslavs, 70,000 Belgians, 56,000 Poles, 2,000 Dutch, 00 Greeks and 300 Norwegian seamen. It was also estimated t there were 282,000 prisoners held by Japan, including some 000 members of the U.S. forces other than Filipinos.

The detaining powers determined the form and frequency of respondence which prisoners might be allowed to send. Pri- ers held in the United States were allowed two letters and one t card per week. Usually the number of letters which prisoners ght receive was not restricted. Mail and parcels sent through tal channels were handled without charge, although a route parcels to the far east was not available during 1942. In- uctions for communicating with and sending parcels to pri- ers were changed occasionally but in the U.S. the latest in- mation was obtainable from post offices, Red Cross chapters the office of the provost marshal general, Washington, D.C.

Supplementary food, uniforms, tobacco, medical supplies and nfort articles were sent regularly to prisoners through the In- national Red Cross committee by Red Cross societies and governments. Distribution was supervised by the international committee and receipts were returned to the senders. Although some supplies for prisoners in the far east were carried on the diplomatic exchange ships during 1942, no regular shipment was developed principally because of Japanese refusal of safe conduct for neutral vessels to carry such supplies. Efforts to overcome these difficulties were being continued by the Red Cross and the government. (*See* also INTERNATIONAL LAW; RED CROSS; WAR RELIEF CONTRIBUTIONS.) (P. E. R.)

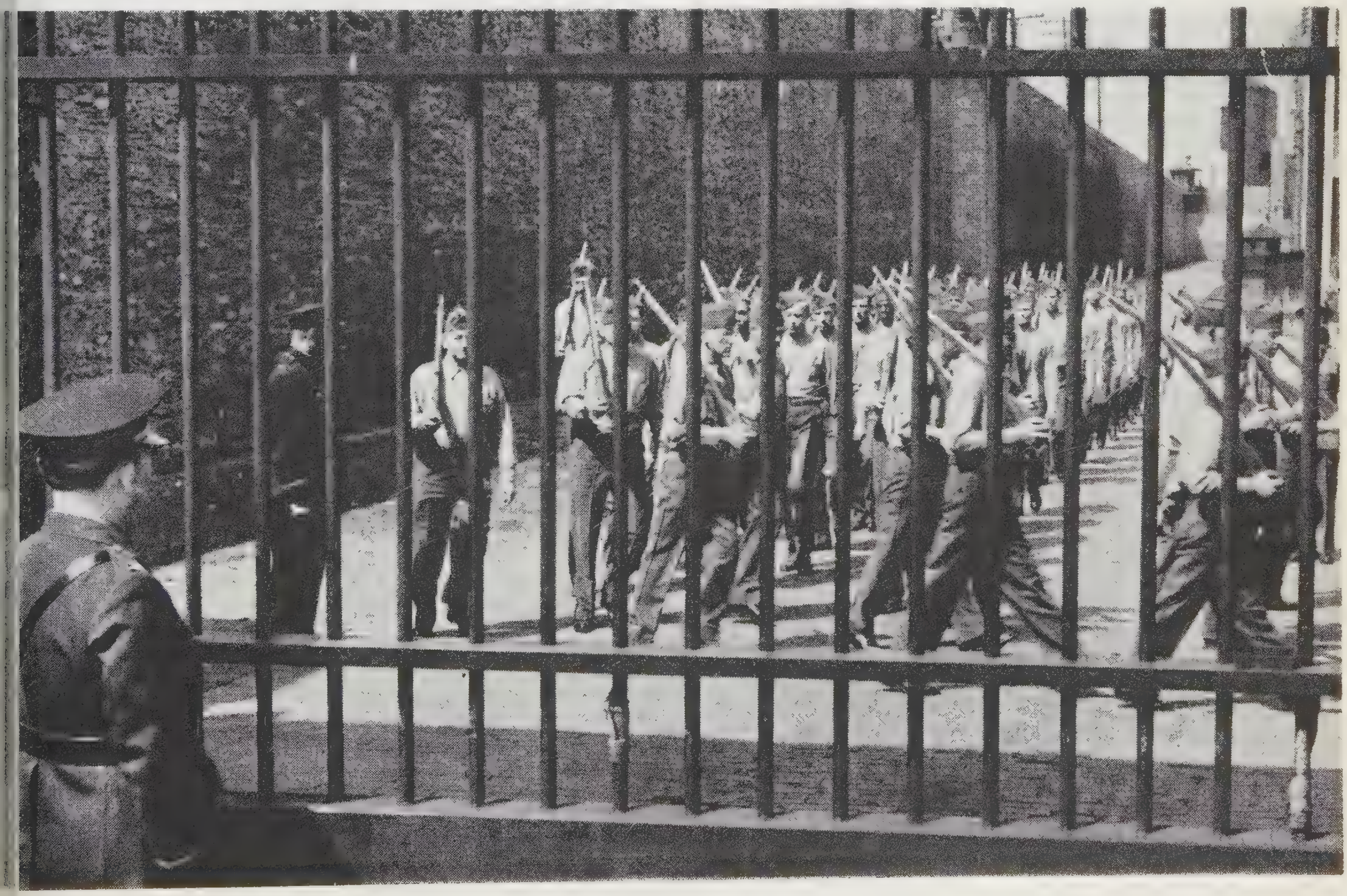
Prisons.

Because of the war and the consequent restrictive use of vital materials, no new buildings were erected in prisons in the United States during the year 1942. However, at the Federal Reformatory at El Reno, Oklahoma, a factory, construction of which started in 1941, was completed. Inmates in all federal institutions and most state prisons manufactured many articles for the army and navy. In fact, in some prisons, the men and women worked on two to five shifts, and their enthusiasm indicated beyond doubt that patriotism, not compulsion, motivated them. Tents, clothing, brushes, brooms, tarpaulins, blankets, tools and rope were some of the commodities produced. And at the McNeil Island penitentiary, on Puget sound, federal inmates constructed 65-foot motor patrol boats in the prison shipyard, the first project of its kind in the country.

Prisoners also supported the war effort wholeheartedly in other respects. They purchased thousands of dollars worth of war bonds from their paltry earnings in prison industries, frequently giving up the little luxuries that they are permitted. And in many institutions, they willingly gave their blood to Red Cross units.

In some states, *e.g.* Ohio and California, the men were allowed to engage in military drills, and using only dummy weapons, prepare for possible service in the army. In many other states, they grew food on prison farms, and in Oregon, they worked in prison

SONERS OF OHIO STATE PENITENTIARY formed a voluntary drill unit in 1942 to prepare themselves for military service after their release



lumber camps. Inmates from the federal prison camp in Montgomery, Ala., performed many important chores at Maxwell Field, an army post in that city.

Released felons were no longer barred from the army, provided their offenses were not of the more heinous type, *e.g.* murder, rape. Kentucky enacted a law permitting the parole of prisoners for military service or farm labour. The act suspends, for the duration, the statutory requirement that men serving sentences of ten years or less must serve at least one half of their terms before being eligible for parole. New Jersey, Michigan, Oklahoma and Texas passed similar acts, thereby giving men behind bars an opportunity to serve their country, if they could show beyond doubt that they were physically, mentally and morally healthy. Other states were expected to adopt this same policy.

A 3.3% increase in crime during the first quarter of 1942 was reflected in the reports received at the Federal Bureau of Investigation from 354 cities, with a combined population of 47,422,481. Rape, felonious assault, and larceny showed the largest upsurge; the net change for robbery was negligible, and burglary showed a decrease, as compared with the same period for 1941. But while official reports were meager, unofficial reports from various law enforcement and social agencies indicated that in 1942 there was a marked increase in juvenile delinquency, a result, no doubt, of conditions created by the war.

With the exception of England, no information was available about crime and prisons in Europe. That country, which reported an increase of juvenile delinquency for 1941, reported a decided decrease for 1942. That was due to the fact that steps were taken to provide adequate recreational and educational facilities for children whose parents were engaged in war work, and for youngsters who were evacuated to places where they were deprived of a normal home environment.

(*See* also CRIME.) (L. E. L.)

Private Schools: *see* EDUCATION.
Prizes: *see* LITERARY PRIZES.
Production, Industrial: *see* BUSINESS REVIEW; WAR PRODUCTION, U.S.

Production Research and Development, Office of.

The Office of Production Research and Development was established in the War Production Board (*q.v.*) by Chairman Donald M. Nelson on Nov. 9, 1942, with Dr. Harvey N. Davis as director.

In essence, this office was set up in order that production of war goods could be aided through the most rapid appraisal and the speediest and most effective utilization of available processes, materials, mechanisms and inventions. In the production field it parallels the work done for instruments of war by the Office of Scientific Research and Development (*q.v.*).

The principal functions of the Office of Production Research and Development were outlined as follows:

To provide the chairman of the War Production board with technical information on problems directly concerning him, and on research and development work in progress in the War Production board; to provide the various operating divisions and branches of the War Production board with research information and findings.

To initiate the evaluation and analysis of specific scientific or technological proposals, through the establishment of expert committees or through reference to research groups in government, education or industry.

To get needed research accomplished by contracting with outside laboratories or agencies for experimental work.

To bring about development of such processes or projects a merit it, either through contracting for the construction of prototypes or through the erection of pilot plants.

The director of the Office of Production Research and Development was charged with initiating such technical evaluation research and development work as would in his judgment advance the war program. (H. N. Ds.)

Profits, Company: *see* BUSINESS REVIEW: *Company Earnings*
Progressive Education: *see* EDUCATION.

Proportional Representation.

"Proportional representation," writes Prof. T V. Smith, University of Chicago, in his *Promise of America Politics* (1936), "would raise representatives above the provincialism of local communities without destroying localism itself . . . would not only give minorities a voice up to the level of their real strength, but . . . would keep the majority efficient up to the level of its strength. No vote would be thrown away but every vote would be counted for its full weight in the total field. It would automatically adjust the conflict between functionalism and regionalism by permitting effectively to operate at elections whatever resolution this conflict had reached in the mind of each voter. But basically and finally . . . it leaves nobody, no territory, no interest, no basis of choice unrepresented." The American Labor party, said the *New York Times,* editorially, on Aug. 25, "is the child of Proportional Representation; its successes in election to the city council have been largely possible through Proportional Representation." The *Times* had not been so friendly to proportional representation and the import of this concession was understandable only by recalling that the party provided a balance of power in New York which had rendered possible a change, in the metropolitan government, from machine rule to nonpartisan administration and, in the state government (at the 1942 election), from two decades of domination by a single party. The attempt to repeal the city's charter provision for proportional representation proved unsuccessful, the petitions for a referendum being judicially found insufficient. A similar attempt in Yonkers, however, reached the voters on Nov. 3.

Two substitute plans were offered them: (1) for a council of 11 members, 5 at large and 1 from each of six districts (rejected, 24,143 to 12,975); (2) for a council of 9, 3 at large and 1 from each of six different districts (rejected, 24,158 to 11,761).

Each plan included a mayor and vice-mayor to be chosen by the council, but gave the voter only one choice of candidates.

(*See* also ELECTIONS.)

See Hogue, *Proportional Representation* (1926). (C. S. L.)

Protestant Episcopal Church.

The 125 parishes and missions of the Episcopal Church in Japan became an independent Japanese church and their statistics were therefore not included in the annual reports.

The statistics for 1942 in the United States showed an increase of 77 in the number of clergy, the number reported being 6,277; the number of communicants reported was 1,508,894, a decrease of about 10,000; the number of confirmations was 67,470, a decrease of 2,630 as compared with the year preceding; the total number of baptized persons was 2,168,164, an increase of 6,142. The contributions for the year totalled $35,311,31 This showed an increase of $1,640,952, which was due in large part to the sums given for emergency needs caused by the war

ECRATION of James Pernette De Wolfe as Episcopal bishop of Long May 1, 1942, in the Cathedral of the Incarnation at Garden City, L.I., York

ding the aid given during 1942 to British missions and the of $490,000 raised for the U.S. army and navy commission h supervised and cared for the work of Episcopal chaplains ilitary and naval service.

great many of the clergy went from their parishes to serve aplains in the armed forces. In the Episcopal Church there very few pacifists.

(W. T. M.)

nes: *see* Plums and Prunes.

Pryor, Arthur (1870–1942), U.S. bandleader, was born Sept. 22 in St. Joseph, Mo., the son of Samuel D. Pryor, founder of Pryor's Silver Cornet band. His father and mother, both gifted musicians, began his musical education when he was an infant. He could play the drums at three years of age, and the piano at six. Before he was given his first trombone at 17, he was already a skilled musician playing the cornet, alto horn and bass viol. He joined Sousa's band at the Chicago World's Fair, 1893, and made three world tours with the "March King" as premier trombone soloist and assistant conductor.

In 1902, after his father's death, he took over Pryor's band and gave his first concert in New York city the next year. He continued with the band until his retirement 30 years later. Pryor composed about 300 musical works, including several light operas.

He died in West Long Branch, N.J., June 18.

Psychiatry. **Civilian Reactions.**—The effect of air raids on the civilian population was reported by numerous authors in England. Vernon pointed out that there was at no time widespread panic. In general, the population soon became acclimatized, particularly to heavy attacks at night, and many managed to sleep throughout the raids. Persons who went to shelters might become more nervously upset by inaction than by the actual effect of the raid, and the presence of group leaders showing activity was a marked factor in overcoming fear among civilians. Where raids were heavy, the effects on individuals were due more to excessive fatigue, dislocation of normal living, lack of sleep and improper diet than to the actual effect of the raids themselves. There developed no psychiatric syndrome which could be deemed an "air-raid neurosis." In general the psychological disorders associated with air raids were much less serious than the social disorganization consequent to the destruction of homes, the dislocation of communications and similar effects. Children were less affected than adults. Patients with mental disease were often impervious to the effect of raids and epileptics showed no increase in fits. Lewis reached similar conclusions and felt that on the whole air raids had not been responsible for any striking increase in neurotic illness. There were some acute forms of reaction such as anxiety, depression and a moderate amount of hysteria. Most patients, however, with these symptoms recovered rapidly and the study by Wilson would indicate that the large majority of those who were hospitalized were able to return to their normal life within one or two days.

That the nervous system is often seriously disturbed, however, is brought out by the studies of Stewart and Winser on the secondary effects of air raids in an increased incidence of perforation of gastric ulcer. This serious complication arose particularly in the period when the air raids were most active in London during Sept. and Oct. 1940. The authors found, in times of peace, that slightly more than 20 patients a month were admitted to London hospitals with perforations of gastric ulcers. During Sept. and Oct. 1940, the admission rate was over four times this average. The factors that were considered as causative were anxiety, dietetic difficulties, increased smoking and drinking, and possibly bacterial infection; but the authors felt that anxiety was the main factor predisposing to ulceration and perforation, thus linking the psychological effects of the air raids with the development of a serious gastric complication.

The more general aspect of air raids was also studied by Vernon. He found that people living in heavily bombed areas and who had a good knowledge of the war and its general purport were particularly free from symptoms and, in fact, had the highest morale of the whole group. Air raids tended to reduce irrational attitudes and even caused an increase in war effort. At no time did the raids tend to inhibit activity, and bombing and danger both encouraged thinking reality. The raids, therefore, tended to make good citizens better and few grumblers and critics were found in areas where extensive bombing had taken place.

Psychiatry in the Armed Forces.—Duval and Hoffman examined a considerable number of patients with mental disease from the military services. They found that about two-thirds of the patients presented schizophrenic symptoms and they contrasted these findings with those ordinarily encountered in civilian life. Their principal finding is that in military life the onset of the schizophrenic episode is often explosive, the patient showing panic states with aggressive tendencies, acute depressions with suicidal drives and other marked symptoms. Although the reaction is a serious one, it is often brief and there is a large percentage of recoveries, more so than in civilian life. The patients present symptoms suggestive of marked hysteria rather than schizophrenia. The authors found that nearly half of their patients were well enough in a few months to be discharged from the hospital.

The question of seasickness in navy personnel had never been thoroughly studied from the point of view of psychiatry. The work of Schwab called attention to this important field of investigation. He found that there were two rather definite types of patients with seasickness. One was constitutional; with a strong and uniform history of nausea and vomiting when riding in cars, trains, buses, on swings or roller coasters. In this group the nausea and vomiting are often initiated by the sense of smell or of taste; the sight of blood may cause an attack. Similar symptoms occur during periods of intense emotion or anxiety. The second group of patients are those that are seasick but do not have the symptoms noted above. In this group there is no nausea or vomiting from emotional situations. The patients in the first group are in general of the psychoneurotic type, unstable individuals readily showing evidence of neurotic character. It is in this group that efficiency at sea is extremely low and no amount of effort towards keeping the officers or men at sea will overcome their extreme seasickness. The second, or milder type of seasickness, although it recurs with considerable frequency and is often not entirely curable, is best treated by transfer to larger ships or in some cases, land duty. A large percentage, moreover, of gastro-intestinal abnormalities were found in this group, some of which might be corrected by operation or other types of treatment. The author found no correlation with the patient's background, race or body type in either form of seasickness.

Schizophrenia.—There is considerable resemblance between pictures drawn by primitive man and the drawings made by patients with schizophrenia. Gutiérrez-Noriega found that the symbolic pictures of ancient Peru are closely similar to the drawings presented by his patients of the Indian race. So many characteristic symptoms of schizophrenia, moreover, find a counterpart in the behaviour of man at the earliest genetic levels that Osborne has suggested a new name for the disease, "palaeophrenia."

The differentiation of patients with schizophrenia between those that are likely to recover and those that will not has been investigated by Gottlieb and Hope, by the use of the drug, sodium amytal, given intravenously. The group showing a good reaction to this drug has a large percentage of social recoveries and conversely, of 61 patients showing a poor reaction, 53 were unimproved.

Shock Therapy.—Various forms of shock therapy continued as a form of treatment in most hospitals in the U.S. and abroad. Kalinowsky made a survey of European centres and he found that insulin, metrazol and electric shock were all being used, there being no distinct preference for any one of them. There wa feeling among psychiatrists that shock therapy has a definite pl in the treatment of mental diseases.

Alcoholism.—In 1940 the treatment of alcoholism by est lishing a conditioned reflex along the lines developed by Pav was instigated by Voegtlin. Certain nauseating drugs were lized to elicit an unconditioned reflex of nausea and vomiti The sight, smell or taste of alcoholic beverages serves as conditioned stimulus. When completely developed, all alcoh beverages will stimulate the reflex and thus a state is produ for the conditioned stimulus amounting to a strong and defi aversion to the sight, smell or taste of liquor. The treatment undertaken in a hospital where the patients stay from five seven days under especially prepared surroundings. The resu were satisfactory. A later report by Voegtlin indicated that some cases a reinforcement of the treatment is necessary wit a period of months.

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(H. R. V.

Psychology.

In keeping with the demands of a total w U.S. psychologists were enlisted on many fro during 1942. Their main concentrations were in two areas: training and selection of military and governmental personnel (2) social research concerned with morale and psycholog warfare. Contributions in these areas came both from psych ogists in governmental service and from universities whose search had been oriented in the direction of war needs.

The work of social psychologists was funnelled through f main governmental agencies: (a) the Office of War Informat (*q.v.*), which in June 1942 took over the activities of the Of of Facts and Figures, (b) the research bureau of the special se ices division of the army, (c) the Office of Strategic Servi under the joint staffs of the army and navy which replaced Office of the Coordinator of Information and (d) the fore broadcasting monitoring service under the Federal Communi tions commission.

In the Office of War Information, psychologists were utili mostly in the bureau of intelligence, the research organization the domestic activities of the office. Their participation in preparation of informational campaigns in the United States elsewhere was slight, but they played a major role in the bur of intelligence. The purpose of the bureau was to advise operating bureaus of OWI as well as other governmental ag cies of the state of public opinion and the conditions underly opinion, so that the proper measures could be taken for the eff tive administration of governmental programs. The tasks ran in 1942 from the measurement of national morale to the test of incentive devices to speed war work in crucial industries.

Systematic attitudinal research to acquaint administrative cials with the problems they faced in carrying out their progr had been initiated in the government before World War II the division of program surveys under Rensis Likert of bureau of agricultural economics in the department of agri ture. With the setting up of the Office of Facts and Figures division of program surveys was expanded and was put to w on a contractual basis for OFF. This arrangement was ma tained when OWI replaced OFF, until Nov. 1942, when bureau of intelligence took over this type of activity direc Highly significant methodological contributions were made by sion of program surveys and by the bureau of intelligence to field of social psychological research. Through the use of ly skilled interviewers and through the development of new rviewing techniques, the statistical approach of the commer- pollers was effectively combined with the depth analysis of clinician. In their work, moreover, program surveys and the eau of intelligence went far in achieving an integration of the nces of psychology, economics, sociology and political sci- ; their studies not only were directed at the individual's re- ons but also at the relevant factors in the social milieu giving to individual opinions. In this integration, psychologists ked together with representatives of the social disciplines.

he research bureau of the special services division of the y roughly paralleled among enlisted men the work of the eau of intelligence among civilians in 1942. The special serv- division, originally called the morale division, was charged supplying the extra-curricular needs of the enlisted men for cation, entertainment, recreation and information. Under the ership of Samuel Stauffer, its Research Bureau was divided two sections. The experimental section under the Yale chologist, Carl Hovland, pretested educational and morale grams, and the surveys section under Professor Cottrell of nell conducted attitudinal researches with both written ques- naires and oral interviews to advise army officials of the sol- 's problems from his own point of view.

he Office of Strategic Services, concerned with certain aspects psychological warfare abroad, maintained a research bureau a psychology division headed by Professor Tryon. Psychol- ts in this division helped in collating and interpreting materi- on customs and habits of thought of peoples in axis and axis- pied countries. Research was of course highly confidential.

he foreign monitoring intelligence service under the Federal mmunications commission had started even before Pearl Har- to record and analyze the short-wave broadcasts of other ntries—a program initiated by the Princeton Listening centre. analysis helped other governmental agencies to understand cope with the propaganda offensives of the axis powers. One nple of its work appeared in the conviction of William D. ey for treasonable utterances. A comparison of short-wave dcasts from axis countries with an analysis of Pelley's paper he media division of the bureau of intelligence of OWI dem- rated that Pelley's publications were following the axis line. chologists such as Goodwin Watson and Otto Klineberg of mbia and Theodore Newcomb of Michigan figured prom- tly in the work of the monitoring service during 1942.

World War I, group psychological tests were employed for first time on a large scale for the classification of men. War- in 1942, however, consisted of many highly specialized tasks, e of them unknown in civilian industry. The problem, there- , had become one not only of dividing men into rough cate- es on the basis of intelligence, but also one of selecting and ing men for jobs requiring special skills and special emotional cities. To select the best men for these new demands requires lamental psychological research on the qualities of mind and erament involved in such difficult tasks as night flying and bombing. Hence the personnel problems of the armed forces ssitate the use of experimental or laboratory psychology to eater extent than was true in World War I. Thus, psychol- ts working in or for the armed forces were giving their atten- in 1942 to five main types of problems: (1) the placement nen through standard intelligence tests or slight modifications hem, (2) research on the types of reactions involved in com- operations, (3) the development of new testing methods, administration of training programs for the U.S. army and y, and (5) clinical work with members of the armed forces. The development of new testing techniques based upon fundamental experimentation was especially marked in the fields of aviation and naval service. More than 100 psychologists were on duty with the army air forces, a number of whom, under the direction of Lieutenant Colonel J. C. Flanagan, were engaged in discovering the physiological and psychological traits involved in different aspects of aviation. An important development was the acceptance by the navy of psychological methods for the selection, placement and training of men. A committee was set up under the auspices of the National Research council, with John Stalnaker as chairman, to aid in carrying out necessary research projects.

The activities of psychologists in full-time government employment were supplemented in 1942 by research projects carried on in the universities either on the advice of a governmental agency or on the initiative of the local psychologist himself. Research, for example, on the problems of sensory acuity under various conditions, on fatigue, on perception and emotion was in many cases oriented in the direction of making the maximum contribution to the war effort. In social psychology, research was cleared through the Society for the Psychological Study of Social Issues to coordinate individual projects with one another and with governmental needs. The research seminar in social psychology in many universities followed the lead of Gordon Allport of Harvard in investigating morale problems. Rumour clinics were likewise instituted in a number of cities by local psychologists both for purposes of studying rumours and of combating them. The second year book of the Society for the Psychological Study of Social Issues was entitled "Civilian Morale" and was devoted to bringing together and interpreting available material relating to morale.

The formal activities of U.S. psychologists were curtailed in 1942 when it was decided to dispense with the regularly scheduled annual meetings because of the undesirability of civilian travel in wartime. The council of the American Psychological association met, however, and proceeded with plans for a council embracing representatives from all psychological organizations to give more formal unity to American psychology. The Society for the Psychological Study of Social Issues held informal round tables in Sept. 1942 in place of its regularly scheduled meetings for those psychologists in Washington at the time. Topics discussed included techniques of opinion research, psychological warfare abroad, the selection of pilots, and the most effective use of psychological research facilities of the universities.

The year 1942 saw the creation of an Office of Psychological Personnel as an agency of the American Psychological association under the directorship of Dr. Steuart Britt, charged with "the maximum effective use of psychologists, irrespective of society membership, in the war effort." This office and the subcommittee on personnel of the Emergency Committee of Psychology which it replaced were in part responsible for the fact that the specialized skills of more than 500 American psychologists were being utilized by at least 40 military and governmental agencies by the end of 1942. (*See* also NERVOUS SYSTEM.)

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Public Assistance: *see* CHILD WELFARE; RELIEF; SOCIAI SECURITY.

Public Buildings Administration: *see* FEDERAL WORKS AGENCY.

Public Health Engineering.

Air Sanitation.—In Great Britain, the National Institute of Medical Research had under study for some time the special hazards associated with air-raid shelters and with emergency and overcrowded hospitals. The fear that extensive outbreaks of respiratory diseases might result from the overnight occupancy of crowded shelters happily did not materialize, and most of the extensive preparation for the use of masks and the disinfection of the air were held in abeyance. Van Den Ende and Andrews expressed the view that the control of dust by use of special floor material or by oiling, is perhaps the most significant single item of precaution.

In the United States, interest was centred in the development of ultraviolet light as a disinfecting agent, owing in part to a vigorous support of the movement by the lamp manufacturers. However, Robertson and associates continued their studies of aerosol mists and vapours. They found propylene glycol to be most advantageous and to give promise of exerting a minimum harmful effect upon the human occupants. On the basis of animal experiments alone, however, they were not willing to recommend this or any of the aerosols thus far suggested for routine use in crowded spaces.

The harmful effects of the pollution of the air of industrial establishments by dusts, fumes and vapours was also being emphasized by the increased demands for plant output, newly developed processes, and continuous 24-hour operation of plants. The subject of industrial sanitation, including air conditioning and ventilation, was stressed in special intensive courses given by several American universities to selected groups, including medical officers of the military forces. Here again, dividends were received upon long years of research, and those responsible for production realize as never before that plant output is a direct function of the well-being of the workers.

Water Supply.—The current literature in water supply again illustrated the change of emphasis due to war conditions. Of special importance was the development of methods for repairing air-raid damage to water mains. M. A. Carrington Wildsmith of the Manchester (Eng.) Water Works, described some of these methods. Organization for immediate action is essential. Often sewers and water mains are destroyed in the same crater. Rapid shut-off is essential to prevent flooding, often of nearby air-raid shelters. Thorough sterilization of the mains after emergency repairs is a primary requirement. Damage also may result through earth movement at some distance from the bomb crater. The author found no evidence thus far of the spread of disease following these emergency repair jobs. It was likewise reported, by the London Metropolitan Water board, that there had not been a single case of water-borne infection following air raids in their jurisdiction.

Destruction of plants and structures by sabotage, while an ever-present danger, did not seem to have occurred to any extent. The possibilities of contamination by aerial attack or by sabotage was also given some consideration. With suitably planned chlorination, any danger of bacterial contamination is largely eliminated.

An essential requirement, however, is that water must be chlorinated at the outlet end of a reservoir or at the aqueduct intake. This was recognized as good practice in normal circumstances.

Chemical poisoning of a large supply reservoir is hardly practicable, as there are relatively few materials that could be added in sufficient quantity and that are sufficiently soluble and nonreactive with the normal water constituent to do any material harm.

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(E. B. Ph.)

Public Health Services: *see* Dietetics; Hospitals; Med cine; Venereal Diseases.

Public Housing Authority, Federal: *see* National Hous ing Agency.

Public Libraries: *see* American Library Association; L braries.

Public Roads Administration: *see* Federal Works Agency Roads and Highways.

Public Utilities.

So far as progress of the public utility i dustries was concerned, the year 1942 wa marked by accelerated expansion in plant and of services derive therefrom, especially when compared with the year 1941. In th first full year of the war, the electric power industry in particula supported the war effort with considerably larger reserves i generating capacity than had been anticipated at the end of 194 This was accomplished not only by additions to power productio plant but also by using the existing plant more efficiently and fo greatly extended hours of use when compared with peacetim The output in kilowatt hours rose to the unprecedented total o 188,500,000,000, with a power producing capacity expanded t 46,800,000 kw. There was no significant complaint, except in few localities, of shortage in war power requirements and eve these were rapidly overcome. With it all, the electric power i dustry carried its expanded civilian load to 32,200,000 customer representing a country-wide electrification estimated at 80%.

Compared with preceding years, 1942 was a good water yea As a result hydroelectric energy represented one-third of the tot generation. This was also made possible by the growth in hydr electric capacity to 28.4% of the total. This growth was dom nantly in publicly owned plants, the total of which by the end o 1942 reached 17% of the combined public and private capacity.

Some steps had to be taken in order to conserve power capacit for more vital purposes. The introduction of "war-time" wa estimated to have held down the national peak by 1,000,000 k "Dim-out" orders, the stopping of rural electrification projec not nearing the completion stage, decreases in street, highway an ornamental lighting, and a relative decline in the small light an power load due to mortality among commercial customers an small manufacturers unable to convert to war orders, were amon the more significant factors making for a decline in normal us On the other hand, power requirements by war agencies, and i creased sales to electric and interurban railways due to the rubb and gasoline shortages, were countervailing developments whic pushed electricity use to the highest totals yet attained. Signif cantly enough, 1942 began with the cancellation by OPM of i power curtailment program in the southeastern states.

Rationing of scarce and critical war materials also left its mar on the utility industries where line extensions and repairs we held down to the barest essentials. A system of intra-industr inventory control and sharing of excess supplies was inaugurate in order to eliminate regional inequalities. A significant priorit order by WPB redistributed the ultimate use of generating capacity, so that of 9,600,000 kw. of capacity on order for pow systems, some 4,300,000 kw. were given other destinations; whi 1,800,000 kw. were reserved for installation in 1942, a total 2,970,000 kw. in 1943 and 500,000 kw. in 1944. The plant wi these accretions would constitute the power-producing capacit which must see the U.S. through the next war years.

Legislatively, the most significant event was the passage b congress of the act of Oct. 2, 1942, designated to "aid in stabili ing the cost of living." This legislation placed the Office of Pr Administration in a position where it might influence the ra making activities of regulating commissions. Under the terms this act, OPA must be notified 30 days in advance of a rate pr eding and must be given an opportunity to intervene in any se involving rate increases by a public carrier or other public ility. This power to intervene was upheld by a United States cuit court of appeals in the case of an interstate motor carrier the ground that the Interstate Commerce act had been super- led “to whatever extent may be necessary to achieve its own rposes.”

The tendency of the state commission to freeze the level of blic utility rates for the duration of the war, unless there were ecial circumstances requiring an increase in earning capacity in ler to enable a public utility to carry on its functions, was well istrated by an order of the Wisconsin Public Service commis- n in May 1942. The order dismissed an application for an in- ase in telephone rates in Madison, Wis., by the Wisconsin lephone company. Similarly, the Federal Communications com- ssion sought to secure a reduction in the long-distance tele- one toll rates of the American Telephone company because a imed earning capacity of approximately 15% upon the net ok investment after all taxes was deemed excessive during the r emergency.

The most outstanding event of 1942 which was likely to have greatest consequences in the future was the decision of the ited States supreme court in the Natural Gas Pipeline company e on March 16, 1942. In this opinion the majority of the court nitely freed the commission from the requirement hitherto erted by all opinions of the highest court to give preponderant ght to replacement costs in fixing a valuation for rate-making poses.

The gist of the opinion is contained in the following paragraph:

> he Constitution does not bind rate-making bodies to the service of any le formula or combination of formulas. Agencies to whom this legisla- power has been delegated are free, within the ambit of their statutory hority, to make the pragmatic adjustments which may be called for by icular circumstances. Once a fair hearing has been given, proper find- made and other statutory requirements satisfied, the courts cannot rvene in the absence of a clear showing that the limits of due process been overstepped. If the Commission's order, as applied to the facts re it and viewed in its entirety, produces no arbitrary result, our iry is at an end.

Although the case was generally hailed by the press as marking downfall of the 44-year old doctrine of “fair value” as em- ied in the rate-making rule of Smyth *v.* Ames, the minority nion, though agreeing with the disposition of the case, deplored t the majority did not see fit to take this more radical step.

Marking a further and perhaps final step in the marketing of A power, the 1942 session of the Kentucky legislature passed bling legislation which authorized municipalities to acquire construct distribution systems for the purpose of purchasing rgy from the authority at wholesale and distributing it at retail accordance with TVA's well known low-rate and high-use cies. A unique provision of the act was the requirement that e as well as local taxes be actually paid by the distribution ems in an amount at least equal to the taxes paid under vate ownership. (*See* also Dams; Electrical Industries; v; Rural Electrification; Tennessee Valley Authority.)

(M. G. G.)

olic Works Administration: *see* Federal Works Agency.

blishing (Book).

Only technical books and books on sports and games registered numerical eases among the 22 classifications issued by U.S. publishers 942. In all classifications, 9,525 new books and new editions eared—a decrease of 1,587 from the total of 1941, and 1,803 n the total of 1940. New books on sociology, economics and iness, poetry and drama and education were notably fewer 942, as were children's books (*q.v.*). Table I is a summary J.S. book publication in 1941 and 1942, as compiled by *Pub- ers' Weekly.*

Table I.—*U.S. Publication of Books, 1941 and 1942*

International Classification	1941			1942			Net Change
	New Books	New Editions	Total	New Books	New Editions	Total	
Philosophy, Ethics	107	15	122	72	12	84	− 38
Religion, Theology	611	53	664	610	46	656	− 8
Sociology, Economics	797	64	861	557	63	620	−241
Law	150	40	190	82	30	112	− 78
Education	317	28	345	200	17	217	−128
Philology	278	60	338	222	58	280	− 58
Science	401	90	491	305	92	397	− 94
Technical and Military Books	559	182	741	606	185	791	+ 50
Medicine, Hygiene	352	140	492	309	134	443	− 49
Agriculture, Gardening	85	25	110	79	21	100	− 10
Domestic Economy	90	36	126	83	29	112	− 14
Business	300	90	390	205	56	261	−129
Fine Arts	236	18	254	170	17	187	− 67
Music	103	4	107	54	13	67	− 40
Games, Sports	125	19	144	121	28	149	+ 5
General Literature	407	98	505	338	62	400	−105
Poetry, Drama	755	68	823	533	61	594	−229
Fiction	1,249	462	1,711	1,108	555	1,663	− 48
Juvenile	892	111	1,003	793	71	864	−139
History	682	71	753	571	75	646	−107
Geography, Travel	249	23	272	222	37	259	− 13
Biography	535	64	599		60	542	− 57
Miscellaneous	57	14	71	64	17	81	+ 10
Total	9,337	1,775	11,112	7,786	1,739	9,525	−1,587

Best Sellers.—Leading the list of U.S. best sellers in fiction during 1942 were *The Song of Bernadette,* by Franz Werfel, and John Steinbeck's novelette, *The Moon Is Down.* Each sold nearly 500,000 copies, including book-club sales, according to *Publishers'*

Table II.—*British Publication of Books, 1940, 1941 and 1942*

Classification	1940		1941		1942	
	Total	Reprints and New Editions	Total	Reprints and New Editions	Total	Reprints and New Editions
Aeronautics	90	9	118	26	159	15
Annuals and Serials	69	50	54	39	40	28
Anthropology and Ethnology	14	1	20	1	12	1
Archaeology	39	1	21	—	12	1
Art and Architecture	110	6	73	8	103	14
Astronomy and Meteorology	29	3	15	2	19	—
Banking and Finance	30	8	19	5	13	3
Bibliography and Literary History	132	72	82	8	88	5
Biography and Memoirs	444	96	356	113	295	43
Botany, Horticulture and Agriculture	95	14	92	16	76	9
Calendars, Booklets and Albums	31	3	14	1	4	1
Chemistry and Physics	101	24	43	8	62	25
Children's Books and Minor Fiction	973	310	520	123	595	87
Classics and Translations	28	18	50	21	38	20
Dictionaries and Encyclopaedias	59	10	28	7	21	13
Directories and Guide Books	66	36	21	4	24	15
Domestic Economy	58	3	60	10	48	18
Educational	658	133	340	51	384	60
Engineering, Electricity and Mechanics	139	30	91	28	158	53
Essays and Belles-Lettres	252	50	112	16	159	28
Facetiae	29	6	44	10	63	13
Fiction	3,791	2,028	2,342	1,311	1,559	488
Geology, Mineralogy and Mining	32	5	12	3	19	5
History	279	52	199	40	213	31
Illustrated Gift Books	136	23	43	4	34	8
Law and Parliamentary	124	45	165	28	132	19
Maps and Atlases	16	3	22	5	18	3
Mathematics	32	2	35	11	28	7
Medical and Surgical	374	112	238	79	303	110
Music	49	4	33	6	35	5
Natural History, Biology and Zoology	86	14	53	9	39	7
Nautical	51	12	32	5	15	2
Naval and Military	139	10	158	19	246	26
Occultism	40	1	33	5	28	—
Oriental	144	4	76	9	60	2
Philately	14	3	4	—	12	3
Philosophy and Science	143	21	71	9	90	22
Poetry and the Drama	310	72	286	64	249	50
Politics, Political Economy and Questions of the Day	551	62	556	26	678	51
Psychology	30	5	33	8	47	4
Religion and Theology	519	48	446	65	495	68
Sociology	135	8	121	12	89	3
Sports, Games and Pastimes	100	18	57	11	60	14
Technical Handbooks	132	13	103	36	110	48
Topography, Local History and Folklore	70	7	83	12	80	26
Trade, Commerce and Industry	48	4	41	4	35	6
Travel and Adventure	209	65	112	42	108	22
Veterinary Science, Farming and Stockkeeping	24	2	37	1	46	5
Wireless	26	4	17	5	40	12
Totals	11,050	3,530	7,581	2,326	7,241	1,499

Weekly. *Dragon Seed,* by Pearl S. Buck (400,000 copies), was in third place, followed by *And Now Tomorrow,* by Rachel Field (*q.v.*) (93,000), *Drivin' Woman,* by Elizabeth Pickett Chevalier, and *Windswept,* by Mary Ellen Chase (first published in Nov. 1941). On the nonfiction list, Marion Hargrove's *See Here, Private Hargrove* was first with 330,000 copies sold, none through book clubs. Second was Joseph E. Davies' *Mission to Moscow* (published Dec. 29, 1941), followed by *The Last Time I Saw Paris,* by Elliot Paul, *Cross Creek,* by Marjorie Kinnan Rawlings, *Victory Through Air Power,* by Alexander P. de Seversky, and *Past Imperfect,* by Ilka Chase.

Retail Sales.—Despite the decrease in number of titles published, the retail trade continued to grow in 1942. According to a survey conducted by *Publishers' Weekly,* sales exceeded those of 1941 by approximately 20%. Technical books were in great demand, as were books dealing with the war, and juvenile books (an anomaly of the year was the sizeable decrease of new titles in children's books). Interest in fiction, poetry and drama dropped sharply.

Great Britain.—British book production continued to decline numerically in 1942, to 7,241 new titles, reprints and new editions, as compared with 7,581 in 1941, 11,050 in 1940 and 14,904 in 1939. The demand for books was as great as during the years preceding World War II, if not greater; but the industry in 1942 was allotted only 37½% of the paper used in the 12 months ending Aug. 31, 1939. Rationing of other materials and the shortage of manpower were other factors in the curtailed production. Table II, page 573, compiled by the publishers of *The Bookseller* and *Whitaker's Cumulative Book List,* gives the breakdown of British book publishing by classification. (*See* also NEWSPAPERS AND MAGAZINES; AMERICAN LITERATURE; ENGLISH LITERATURE, etc.) (J. V. Do.)

Puerto Rico.

A United States insular dependency in the West Indies; area, 3,400.6 sq.mi.; pop. (1940): 1,869,255, a 21.1% increase over 1930. Whites comprised 76.2%, Negroes, 23.8%. The chief cities are San Juan, the capital (169,247); Ponce (65,182); Mayagüez (50,376); Caguas (24,377); Arecibo (22,134); Río Piedras (19,935). Languages: Spanish and English; religion: predominantly Roman Catholic. Governor in 1942: Rexford Guy Tugwell.

History.—During 1942 Puerto Rico underwent one of the most serious economic crises in her history. Essentially the difficulties rested on shipping shortages which were, in turn, the direct outgrowth of wartime dislocation and disruption. In the face of normal shipping requirements estimated at more than 110,000 tons a month, Puerto Rico was allotted slightly in excess of 30,000 tons. Axis submarine attacks in the Caribbean area and emergency diversion of allocated shipping, also served at times to reduce available tonnage.

As shipping conditions tightened, prices rose from 149.67 points (basis: 1939=100) on Jan. 15 to 172 in June. Many essential food products advanced even more. Rising freight costs served further to accentuate the depressed condition.

Unemployment increased rapidly during 1942. The effects were first felt after the completion early in January of major construction on the Isla Grande air and naval base.

Several plans were tried in order to alleviate conditions. Gov. Tugwell and others made various trips to Washington, D.C., to get additional shipping allocated to the island. In May, at a meeting in Jamaica, supply officers of British and U.S. territorial possessions discussed plans for mutual assistance. Army and navy forces were supplied from the Dominican Republic and Haiti so as to ease demands in Puerto Rican markets. An estimated 15% of cargo space was saved by sending supplies from Florida across Cuba, Haiti and the Dominican Republic.

A redivision of the large landholdings of companies and co porate bodies was begun under the 1941 law. The program wa twofold. It was proposed (1) to sell small farms to qualifie farmers, and (2) to provide housing sites and garden plots fo farm labourers ("agregados"). In March 1942 the insula supreme court ordered the first estate to be partitioned.

Conditions in such export industries as sugar became especiall bad. The sugar mills were made public utilities as a result; i September Gov. Tugwell decided to make another trip to Wash ington for aid. Before he sailed, Senator Luis Muñoz Marín, Liberal leader in the legislature, presented the governor with petition signed by 314,316 persons supporting the Tugwell refor program.

In Washington, the United States senate actively intereste itself in the Puerto Rican situation. Senator Dennis Chavez o New Mexico headed a special investigating committee.

Education.—In 1940 there were 1,733 public schools, wit 286,098 enrolment. The University of Puerto Rico, with nearl 6,000 students in 1942, is the cultural focal point of the island

Finance.—The monetary unit is the United States dolla

Trade and Communication.—During 1942 external trad faced thoroughly adverse conditions. Exports of sugar and simila commodities were especially affected.

Under wartime conditions trade statistics were not made pub lic. In the year ending June 30, 1940, however, imports wer valued at $107,030,482, the United States supplying 93.9%. Th remainder represented chiefly petroleum products from Curaça jute from India, fish from Newfoundland and Canada, corn an other foodstuffs from Cuba and the Dominican Republic. Th United States supplied mainly foodstuffs, textiles, and miscellan ous manufactures, and took sugar, needlework, tobacco, rum fruits and coffee.

Puerto Rico in 1942 had daily air service to the United State and southward to Panama. Internal communication was by rai way (387 mi.) and by 1,487 mi. of main highway, supplemente by local and military roads.

Agriculture.—The island is essentially agricultural. Sugar the leading product, with a 1939–40 production of 1,018,80 tons, of which 868,568 tons were exported. Tobacco is secon (1941 production: 267,500 cwt.), followed by fruits, mainl grapefruit, pineapple, oranges and citron (1940 export valu $1,479,819). In 1940 there were 51,494 work and 112,585 othe cattle, and 22,709 horses, mules and donkeys. Pasture land aggr gated 1,005,560 ac.

Manufacturing.—Manufacturing is for domestic consumptio except for needlework (1940 exports: $12,514,429), sugar pro essing, cigar and cigarette making, and rum production. (C. L. G.)

Pugilism: *see* BOXING.

Pulitzer Prizes.

The Pulitzer prizes in journalism and le ters were endowed by Joseph Pulitzer, pu lisher of the *New York World,* and are awarded annually in th spring by the trustees of Columbia university on the recommenda tion of the advisory board of the school of journalism of th university. In 1942 the award for the play was omitted. T following awards were made: For the novel by an America author, $1,000 to Ellen Glasgow for *In This Our Life;* for a boo on the history of the United States, $2,000 to Margaret Leec for *Reveille in Washington;* for the best American biograph $1,000 to Forrest Wilson for *Crusader in Crinoline,* a life Harriet Beecher Stowe; for the best volume of verse by an Ame ican author, $1,000 to William Rose Benét for *The Dust Whic Was God.* Awards were also made for disinterested public ser

LITZER PRIZE CARTOON of 1941: "British Plane," by Herblock (Herbert Block) of NEA Service, Inc. The award was announced May 4, 1942

by an American newspaper, a $500 gold medal, to the *Los* *geles Times* for its series on the right of free press; for dis-guished reporting, $1,000 to Stanton Delaplane of the *San* *ncisco Chronicle,* who reported the movement of California d Oregon counties to secede and form a 49th state; for dis-guished Washington or foreign correspondence, $500 to Louis rk of the *New York Times* for his reporting of labour, and to urence Edmund Allen, of the Associated Press, for his report- of operations of the British Mediterranean fleet, and to Dr. rlos P. Romulo of the *Philippines Herald* for his articles on far east; for distinguished editorial writing, $500 to Geoffrey sons of the *New York Herald-Tribune,* and for a distinguished toon, $500 to Herbert Lawrence Block, of the Newspaper terprise association. (*See* also LITERARY PRIZES: *United States;* EATRE.) (H. HA.)

lp Industry: *see* PAPER AND PULP INDUSTRY.
lpstones: *see* ABRASIVES.
mice: *see* ABRASIVES.

rdue University. An institution of higher education at Lafayette, Ind., founded May 6, 1869, the Indiana link in the chain of land-grant colleges and uni-sities. Degrees in 1942 were offered in agriculture, home eco-nics, pharmacy, science, physical education, education, and the owing branches of engineering: civil, electrical, chemical and allurgical, mechanical and aeronautical, public service and ineering law; trade and industrial education.

ike many other institutions of learning, Purdue in 1942 was red to the U.S. war effort, with the school calendar changed n two semesters of 18 weeks and a summer term to three full ns of 16 weeks each, so that a student might graduate in two two-thirds calendar years.

Vhile the type of training offered in Purdue fitted definitely the war program, there were in addition to the regularly enrolled student body in 1942 hundreds from the navy or army taking special courses lasting from four to eight months. Among them were 850 training as naval electricians; 150 as diesel engine experts; 210 as ferry pilots or flight instructors at the university airport; 60 in a Radar school, 60 in an ultrahigh-frequency class, and many other special types of training. The research program in farm and laboratory, as well as the teaching and the extension program, were also directed into the nation's war program. For statistics of enrolment, faculty, library volumes, etc., *see* UNIVERSITIES AND COLLEGES.

Pyrite. The production of pyrite in the United States in 1941 increased by 5% over 1940, to 659,498 long tons, while imports declined from 407,004 tons in 1940 to 224,264 tons in the first nine months of 1941. The bulk of the imports formerly came from Spain, but shipping difficulties cut these to about one-tenth of their former bulk, and most of the receipts came from Canada. Australia has a large potential output as a by-product in the mining of copper, lead and zinc, but this was not being utilized to any great extent. As indicated by exports to the United States, production in Canada was increasing, but statistics were not published. Operations in Cyprus practically ceased while the area was in the war zone. The Portuguese output was 179,759 metric tons in 1941, about a third of the former output. The Spanish output dropped from 2,600,000 metric tons in 1939 to 490,096 tons in 1941, largely as a result of shortage of shipping space. Data were lacking from other important producing countries. (G. A. RO.)

Quakers: *see* FRIENDS, RELIGIOUS SOCIETY OF.

Quebec. One of the two central provinces of the dominion of Canada (*q.v.*), admitted to the union in 1867; area 594,534 sq.mi.; pop. (1941) 3,331,882, of whom 65% were urban. Capital, Quebec (147,908); largest city, Montreal (890,234). The lieutenant governor in 1942 was Eugene Fiset; the premier, Adelard Godbout.

Education.—The number of students in provincially controlled schools in 1942 was 610,792; in private schools 57,593.

Communication.—The mileage of surfaced highways in 1942 was 19,250; of earth highways 18,918; provincial expenditure on highways $21,389,804. The railroad mileage in 1942 was 4,804.

Finance.—The ordinary receipts in 1942 were $59,153,857; ordinary expenditure $66,441,201. The direct debt (less sinking funds) was $387,747,347, indirect liabilities (less sinking funds) $38,554,517.

Agriculture.—The acreage of field crops in 1942 was 5,995,400; gross value of all agricultural crops $213,116,000.

Manufacturing.—The gross value of manufactured products in 1940 was $1,357,375,776; net value $595,552,909; number of employees 252,492; salaries and wages $277,639,876.

Table I.—*Leading Agricultural Products of Quebec, 1941 and 1940*

Crop	1941	1940
Wheat, bu.	567,000	522,000
Oats, bu.	46,872,000	44,290,000
Barley, bu.	3,762,000	3,888,000
Corn, bu.	581,000	552,000

Table II.—*Principal Industries of Quebec, 1939 and 1938*

Industry	Value of products	
	1939	1938
Pulp and paper	$103,564,981	$88,990,115
Smelting and refining	86,005,322	78,954,445
Cotton, yarn and cloth	49,176,421	39,568,088
Tobacco, cigars and cigarettes	39,986,847	39,156,515

Mineral Production.—The value of the mineral production of Quebec in 1940 was $86,313,491.

Table III.—*Principal Mineral Products of Quebec, 1940 and 1939*

Mineral	Value	
	1940	1939
Gold	$39,238,238	$34,455,998
Copper	...	11,831,749
Nickel	14,476,814	...
Lead	..	...
Zinc	...	882,606
Silver	1,340,540	472,675
Asbestos, etc.	16,931,476	15,858,492

(J. C. HE.)

Queensland. A state of the Australian commonwealth lying in the northeast and occupying 670,500 sq.mi.; pop. (est. Dec. 31, 1941) 1,036,830. Chief cities (pop. Dec. 31, 1939): Brisbane, cap., 528,000; Rockhampton 32,600; Townsville 31,450. Governor (1942): Sir Leslie Orme Wilson.

History.—Forgan Smith, who was elected labour premier in 1932 and had held that post continuously ever since, resigned in Sept. 1942, in order to devote his services more directly to war work. He was succeeded by F. A. Cooper, the state treasurer.

Consequent upon war developments in the Southwest Pacific zone, the trend of economic organization in Queensland was naturally towards the establishment of specific defense works. Strategic roads connecting with the northern coast were built, large airfields for the use of United States as well as Australian air forces were constructed, and munition factories and cold storage facilities were enlarged. Unemployment reached an irreducible minimum, and women were drafted into both agricultural and manufacturing industries.

Successful experiments were undertaken for the production of rubber from the indigenous rubber vine which grows wild in the Charters Towers district.

The state budget revealed a surplus of £A63,772 for 1941–42. The loan council allocation for loan expenditure during 1942–43 for Queensland was £A1,626,000, mostly for inescapable defense necessities.

Education.—In 1940: schools, 1,914; scholars, 171,391.

Finance.—Revenue (1941–42) £A23,662,947; expenditure (1941–42) £A23,599,175.

Communication.—In 1940: roads, motor 49,973 mi.; railways (Dec. 31, 1941) 6,497 mi. Motor vehicles licensed (March 31, 1942), 64,128 cars and taxis; 44,051 commercial; 6,187 cycles. Wireless receiving set licences 173,265. Telephones, 85,847.

Agriculture, Manufacturing, Mineral Production.—Production in 1940–41: sugar cane 800,000 tons; wheat 5,700,000 bu.; maize 3,733,424 bu.; wool 194,200,000 lb.; gold (1939) 145,667 fine oz.; silver (1939) 3,600,000 oz.; coal 1,121,000 tons. Industry, manufacturing, 1939–40: factories 3,064; employees (average) 55,541; production, gross value of output £A68,753,142.

(W. D. MA.)

Quicksilver: *see* MERCURY.

Racing and Races: *see* AIR RACES; AUTOMOBILE RACING; DOG RACING; HORSE RACING; TRACK AND FIELD SPORTS.

Radio. Manufacture of all types of radio receiving sets (including television and FM) was frozen by order of the War Production board but set inventories were sufficiently high to allow sales throughout the year. The total number of receiving sets in the United States at the end of 1942 was pegged at 59,340,000 distributed among 87% of the American homes. This compared with a figure of 57,000,000 sets a year earlier. In line with the government's hemispheric solidarity program, some 2,500,000 sets were delivered to countries in Latin America in 1942, according to best available information, for a grand total of 6,000,000 receivers in those nations.

On Jan. 1, 1942, in the United States there were 918 standard broadcast stations licensed and 909 in operation. Acting upon a directive of the War Production board, caused by scarcity o materials needed for transmitter manufacture, the Federal Communications commission discontinued licensing of new standard broadcast stations. Several stations voluntarily discontinued operations during the year, turning in their licences, because of loss of revenues, the war's drain on technical personnel and other factors. These, however, were in secondary areas, otherwise served by stations with higher powers.

Frequency modulation was a war casualty, along with commercial (as opposed to experimental) television. There were 4 commercial FM stations licensed, but their operations in some measure were curtailed for the duration, since additional receiving sets were not available. There were 14 international shortwave stations in operation, with government plans under way for increase of the total to 36. Commercial television stations licensed totalled 8, with 17 experimental visual transmitters authorized.

Radio's chief sources of advertising revenue were foods, drugs (including soaps and similar housekeepers' supplies) and tobacco. These commodities represented about 75% of the total income of the national networks. The broadcasting industry continued its steady growth in 1942, though local advertising suffered because of depleted store inventories.

National and regional advertisers, with few products to sell, in most instances continued their campaigns along institutional or "brand name" lines, looking to the post-war era. A trend toward reduction of length of network programs, developed during the year, with most of the one-hour nighttime features cut to one-half hour.

While a moratorium was declared on new or improved station facilities, occasioned by wartime freezes, the battle begun in 194 between government and industry over regulation of the major networks continued throughout the year.

Most radical change in program structure during the year was the introduction of war effort programs on all networks and stations. It is estimated that about 25% of station hours were donated for these programs and recruiting drives, with the total time valued at $64,000,000 at commercial rates.

Revenue and Finance.—During 1941 (1942 figures were not available), the broadcasting industry maintained its consistent pace of increasing business from year to year, with an increase of approximately 13% ahead of the preceding year's level. This was at a slightly lower rate than in 1940, when time sales rose about 19% over the preceding year. Prior to all discounts, the advertising revenue of the industry was divided as shown in Table I.

Table I.—*Radio Advertising Revenue, 1941 and 1940*

	1941	1940
Major and regional network advertising revenue	$82,373,607	$73,789,011
National "spot" advertising*	45,681,959	37,140,444
Local advertising†	51,697,651	44,756,792
Total	$179,753,217	$155,686,247

*Advertising by nationwide distributors placed over individual stations (as opposed to chain, or network, advertising).

†Advertising placed by local advertisers over the individual stations in their market area.

Compilations of "net revenues" by the Federal Communications commission showed the same relative degree of growth (net revenue means revenue from which all discounts and similar trade inducements have been subtracted). The outlook for 1942 business, however, was not as good from the net standpoint becau increased overhead, government free programming and tax hedules. The industry's 1941 balance sheet as computed by the CC is shown in Table II.

Table II.—*Revenue and Expenses of Radio Industry in 1941*

	1941	Pct. change over 1940
tation revenue:		
Sale of time to major and regional chains	$32,092,590	+16
Sale of time to national spot advertisers	45,681,959	+23
Sale of time to local advertisers	51,697,651	+16
Total sale of station time	$129,472,200	+18
etwork revenue:		
Revenue retained after paying affiliated stations	$48,618,843	+ 8
Total industry time sales	$178,091,043	+15
educt commission to advertising agencies	24,501,946	+17
Total industry net time sales	$153,589,097	+15
Incidental revenue	15,190,335	+15
Total net industry revenues	$168,779,432	+15
xpenses:		
Total deductions	$123,940,406	+ 9
roadcast Service Income (Total Revenue in Excess of Expenses)	$44,839,026	+35

The figures quoted above are all from the official records of Federal Communications commission, based on income statents supplied by the major networks and practically all of the ndard broadcast stations. Trade estimates, dealing in gross ings, which are projected from the one-time rates of stations l networks, are substantially higher. For example, the 1941 de estimate of total business reached $237,600,000, as against 7,956,000 for the preceding calendar year. Of this aggregate, 6,900,000 represented national and regional network sales and 0,700,000 spot and local income for 1941. Preliminary trade mates for the 1942 calendar year indicated a major network ss of approximately $115,000,000 and national spot and local iness of $140,000,000. While national advertising in newsers and magazines generally appeared to have dipped somet in 1942, radio increased its volume by about 10%. Radio ntained an almost unbroken record of increased volume after commercial advent in 1926. Only in 1933 did it show a drop—about $4,000,000 below the preceding year.

etwork revenue was dependent largely upon brand name adising in highly competitive fields. These billings were contrated largely in the convenience goods field, such as articles in small units by a multiplicity of retail outlets for a small e and which were purchased frequently by consumers. Goods his type represented nearly 85% of the 1941 network volume probably equaled that percentage in 1942. Institutional paigns, however, were introduced by many accounts which longer were in a position to promote multiple sales, because vartime freezes and rationing. (*See* also ADVERTISING.)

rofit.—During 1941 (1942 figures were not available as of 1, 1943), 784 of the nation's stations showed an excess of nue over expenses totaling $33,438,118. This was an average 42,650 per station.

he entire roster of 817 standard broadcast stations showed ating profits, along with the networks, with a broadcast serv-ncome (excess of broadcast revenues over expenses) of $44,-026. As against these earnings, the 1941 official statistics aled that 174 showed losses of $553,440, or an average of 80 per station. This showed a decided improvement over the eding year when 184 stations lost about $1,000,000 more, or verage of $8,300 per unit. For 1942, these figures were exed to increase appreciably, since many small stations in local kets reported losses.

reaking down the excess-revenue-over-expenses tabulations for 1941, these official figures appear:

U.S. SOLDIER, near St. Paul's cathedral, broadcasting his impressions of the bombed city of London over the British Broadcasting Company network in 1942

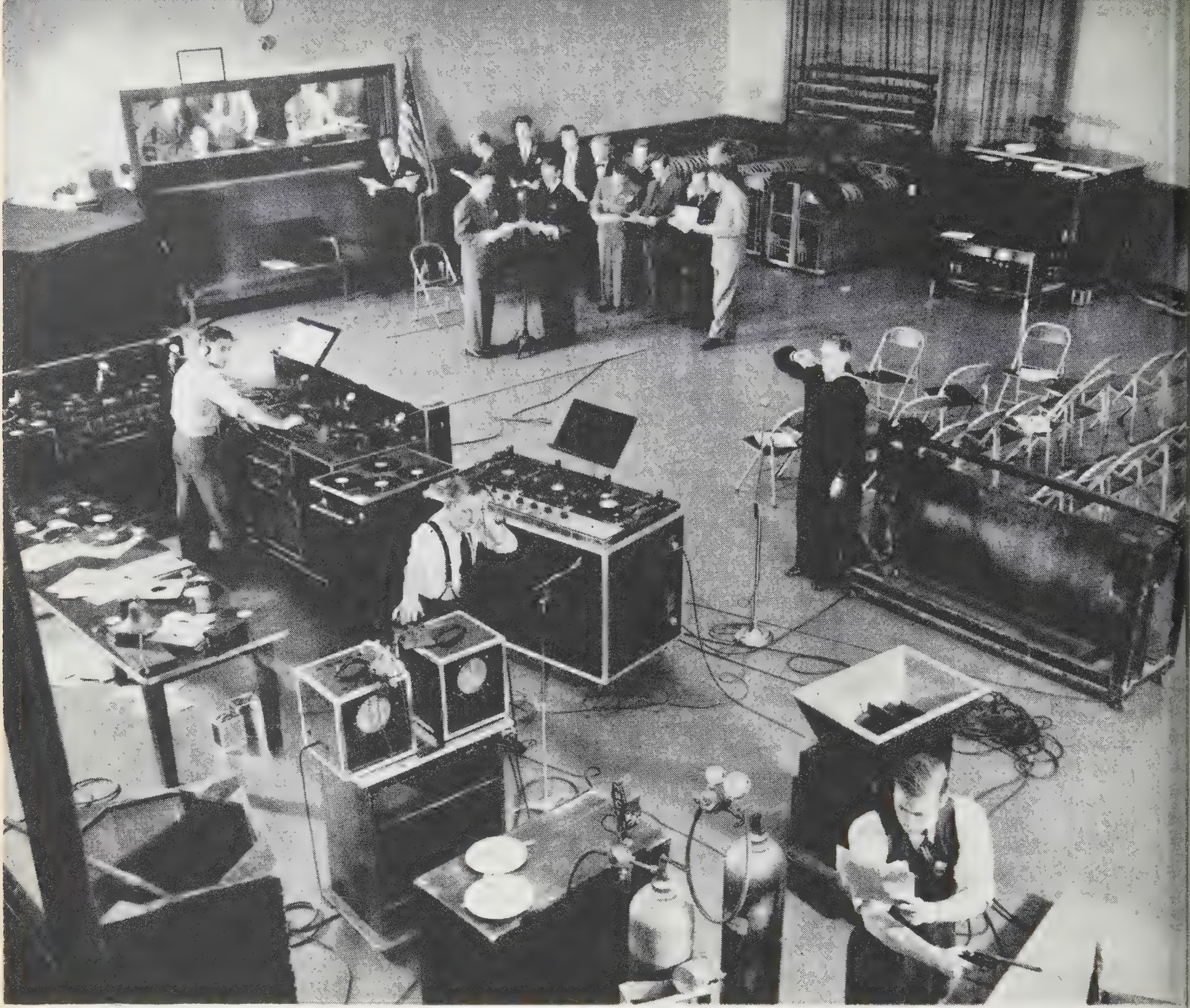
	Excess of revenue over expenses
Networks	$11,400,908
33 network-operated stations	6,381,956
784 other stations	27,056,162
Total	$44,839,026

Total expenses of the broadcasting industry increased approximately $10,000,000 in 1941, the figure reaching $168,779,432. Total excess revenues increased in about like ratio—from $33,-296,708 in 1940 to $44,839,026 in 1941. Expenses for 1942, it was estimated, were destined to wipe out that gain and then some, because of generally increased overhead.

The 177 stations which lost money in 1941 had total investments of $7,780,500, or an average of $43,958 per station. Many of these "losers" had been licensed during the preceding two years, when the FCC took the lid off any local station authorizations. Of this total, 115 stations were located in communities having no other radio outlets. Of the aggregate, about 50 had shown losses since 1938.

The problem of losing stations became serious during mid-1941, when local business tapered off sharply. These stations get little or no national advertising, by virtue of no network affiliation. It was reported the records would show an estimated 300 stations in red ink at the end of 1942. Means of encouraging national advertisers to use the stations were being pondered by the Federal Communications commission (which has no direct authority over station business) and the Office of War Information, whose function it is to keep the public uniformly appraised of the wartime economy.

Industry Assets.—The tangible property of the entire broadcasting industry in 1941 had a composition as shown in Table III.



AN OUTSTANDING RADIO PROGRAM OF 1942 was "This Is War," written by famous authors and broadcast over all four major U.S. networks. Extensive sound effects were used

Programming.—*Network Commercial Programs.*—The ten most popular network programs as of Dec. 1 were[1]:

1942

1. Chase & Sanborn Program (Edgar Bergen)
2. Fibber McGee & Molly
3. Jack Benny
4. Bob Hope
5. Kraft Music Hall
6. Lux Radio Theatre
7. Red Skelton
8. Maxwell House Coffee Time
9. Aldrich Family
10. Kay Kyser

1941

1. Chase & Sanborn Program (Edgar Bergen)
2. Jack Benny
3. Fibber McGee & Molly
4. Lux Radio Theatre
5. Aldrich Family
6. Bob Hope
7. Maxwell House Coffee Time
8. Walter Winchell
9. Kate Smith Hour
10. {Fitch Bandwagon
Kraft Music Hall

Whereas changes in network programming during the previous several years had been negligible, 1942 showed several definite trends, stemming largely from wartime operation. War effort programs immediately vaulted into the forefront of all network and station operations. Individual government departments an agencies spontaneously began development of program feature clearing them through the Office of War Information, which established an elaborate radio branch for funneling of governme programs. The networks themselves, to keep the people arouse inspired and informed, engaged in unprecedented war progra developmental work on the home front, with literally thousand of war broadcasts covering 100 different major subjects aire during the year. More than half of these programs were sustainin

There developed considerable controversy during the year abou so-called "soap operas," serial strips which are radio's counterpa of the continued love story. Unrelenting sponsor support of thes programs, however, resulted in their retention for the most par though several series were discontinued during the year.

Whereas in radio's earlier days it drew much of its top talen from the motion pictures, the reverse was true during the previo two or three years. Top-flight radio names hitherto unknown the movies were in 1942 headliners on the screen. Such perso alities as Abbott & Costello (number one box-office attraction 1942), Jack Benny, Bob Hope, Bing Crosby, all were radio sta before they received Hollywood calls.

Network Programs by Types.—The general composition of ne work evening programming is set forth in Table IV.

Talent Costs.—Official data was not compiled covering aggr gate talent costs of network commercial programs. Trade es mates, however, covering the 1941–42 period, were in the vicini

Table III.—*Composition of Tangible Property of Radio Industry in 1941*

	817 stations	Major networks	Regional networks	Total
Original cost	$67,917,706	$9,934,697	$121,960	$77,974,363
Depreciated cost	39,416,993	5,596,815	97,189	45,110,997

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[1] These ratings are supplied through the courtesy of A. W. Lehman, manager of the Co-operative Analysis of Broadcasting, and are copyrighted by the latter. The CAB is the industry's major fact-finding body in the field of programming.

Table IV.—*General Composition of Network Evening Programs*

Type of program	1941–42		1940–41	
	No. of programs	% of time on the air	No. of programs	% of time on the air
rama, serial drama	45	31.4	40	28
udience participation	22	14.5	28	21.6
ariety	29	22.6	24	18.9
ommentators, news and talks	19	10.9	14	12.3
opular music	13	12.6	13	11.1
amiliar music	8	5.2	7	4.9
assical, semiclassical music	4	2.8	3	3.2

ata supplied by the Co-operative Analysis of Broadcasting.

$35,000,000 for nighttime programs and $8,000,000 for day- e programs—running somewhat ahead of the preceding year's imates. This was in ratio to increased industry revenues and rating costs, plus the more widespread introduction of union les for performers in the key originating cities. The Federal mmunications commission reported that the total programming enses of the industry in 1940 were $46,712,361, based on cial data submitted by networks and commercial stations.

ndividual Station Programming.—With the United States a -fledged combatant, more and more news periods were sched- d during 1942 over individual stations, supplementing network gets. While music and sports still constituted anchor program icles, straight news programs, commentaries and roundups in- ased perceptibly. Moreover, entry of the Associated Press in radio news field through its subsidiary, PA, tended to enliven s competition. United Press, International News Service and nsradio Press, old-line participants in radio news distribution, stepped up their activities to meet increased demands.

rograms During the War.—Despite the rigours of wartime ration, radio encountered few, if any, censorship difficulties ing its first full year of war. Its record was regarded as short miracle, since the four major networks themselves devoted over 4,000 network hours to broadcasting war effort programs announcements. This was exclusive of the thousands of news news analysis programs almost completely concerned with orting and explaining the progress of the war, on the battle ls, around the globe and on the production fronts at home. did it include thousands of hours of programs labeled as ertainment but which also rendered wartime service in pro- ng troops and workers with entertainment and relaxation.

he radio audience reached an all-time high, because of the lic's appetite for war news and information. On several occa- s President Roosevelt, as the country's number one micro- ne performer, shattered all previous listening levels with 83% he audience. Average listening to all news programs increased n about 27% in 1941 to about 33% in 1942, according to the operative Analysis of Broadcasting.

t the war's outset, one of the greatest concerns of the broad- ing industry was how it would fare under wartime censorship. Jan. 16, 1942, the U.S. Office of Censorship promulgated a time code of practices for broadcasters, providing for volun- rather than mandatory action. The industry was on notice, ever, that mandatory censorship would be invoked if any ous incidents developed. The code was revised once after its ase, but only to point up obvious shortcomings. Army and y censorship restrictions likewise had to be followed by sta- s, but not a single serious untoward incident developed affect- the industry as a whole.

adio v. Government.—*The Network "Monopoly" Case.*— five-year battle of the Federal Communications commission ring the larger networks within the scope of its regulatory hority reposed before the supreme court (Jan. 1943) after elling a tortuous course in the lower courts. The government ended it had ample authority to "break the grip" of such vorks as NBC and CBS over their affiliates, growing out of exclusive affiliation and time-option contracts. These networks claimed the regulations, as written, would mean "sudden death" for them and would result in deterioration of programming operations all down the line, and pave the way for "fly-by-night" program speculators and brokers to enter the field.

Of the major networks, only Mutual held that the proposed regulations were fair and equitable and would result in healthy competition in radio. As the newest of the networks, it stood to gain most from such regulations, opening the field, in essence, to all comers. Since then, however, the Blue Network, formerly operated jointly with the Red Network of NBC, became a separate corporate entity (Jan. 9, 1942) and divorced its operations from those of NBC. The Red Network became known as NBC, with the Blue Network separately incorporated as the Blue Network Co. This was in accord with one of the FCC's "monopoly" regulations, which specified that one organization may not provide more than one program service, obviously aimed at the Red and Blue. Subsequently, NBC abandoned its exclusive affiliation form of contract, thereby in part satisfying another of the commission's eight proposed regulations.

But both NBC and CBS went to the mat on the time option provision, which they insisted was the lifeblood of network radio. After losing out in the lower courts early in 1942 in its effort to enjoin the FCC from making these rules effective, the networks went to the Supreme Court. On June 1 the highest tribunal reversed the statutory three-judge court in New York, holding that it had jurisdiction over the chain-monopoly regulations, and sent the case back for full review on the merits. This was a temporary victory for the old-line networks. Mutual intervened in both proceedings as a friend of the commission.

On Nov. 16, the New York statutory court dismissed the appeals of NBC and CBS for injunctions, a smashing victory for the FCC. The networks then took the case to the supreme court, contending that the commission was without jurisdiction to regulate business practices in broadcasting and that the lower court had erred in making such a finding. The final chapter was expected to be written when the supreme court decides this issue, scheduled to be argued early in 1943.

Irrespective of the outcome of the FCC network litigation, these same networks later must face anti-trust proceedings on virtually the identical issues, filed on Dec. 31, 1941 by the Anti-Trust division of the department of justice. Trial of this proceeding was repeatedly postponed, pending the outcome of the earlier litigation.

Also pending before the Federal District court in Chicago was a $10,000,000 triple-damage suit against RCA, as parent company of NBC, claiming that NBC willfully stifled Mutual's growth. This suit hinged upon the government's anti-trust proceeding. The outcome of all this litigation, geared toward bringing network operations under close government scrutiny and regulation, appeared to be anybody's guess. Several pleas by the networks that a moratorium should be declared for the war's duration were rejected by the FCC and by the department of justice. It appeared certain, however, that final determination would be reached during 1943, unless the administration or congress stepped in.

Other FCC Investigations.—While the FCC did not let up in its effort to terminate what its majority views as domination of the industry by the major networks, it did slow down to a walk on other inquiries and proposed regulatory moves designed to tighten its grip on station ownership and operation. Two investigations which it had launched during 1941, covering (1) the desirability of newspaper ownership of stations, and (2) multiple and absentee ownership of stations, were practically stalemated during the year.

FRANCES LANGFORD singing on the "Command Performance" program broadcast weekly by 13 short-wave stations to U.S. forces throughout the world in 1942. The entire show was made up of requests received from U.S. soldiers, sailors, marines and coast guardsmen stationed outside the country; it was not heard by the U.S. public

The newspaper ownership inquiry, which brought a storm of protest from congress, as well as the industry, was in its final phases, but there was little indication of any conclusive action soon—probably not for the war's duration. The question the commission sought to decide was whether joint control of newspapers and broadcasting stations tended to result in an impairment of radio service and whether regulations should be adopted to force their complete divorcement. Industry opponents took the position at protracted hearings that the question was one for congress and not the commission, and that the commission was without authority to act even if it decided against them. The question was of great importance, since about a third of the country's stations were in 1942 owned by or affiliated with newspapers.

While the commission did not pursue the multiple ownership inquiry, involving ownership of more than one station in the same community by a single person or entity, or absentee ownerships of stations, certain of its members nevertheless disparaged such acquisitions. A number of separations resulted during the year by sale, presumably to head off any commission mandate banning such ownership. Here again, formal action was unlikely for the war's duration.

Board of War Communications.—With the war's advent, broadcasting became a "fourth arm of defense." On Sept. 24, 1940, President Roosevelt created the Defense Communications board to co-ordinate all phases of communications during a "national emergency." Its personnel was made up of the chairman of the Federal Communications commission, the chief signal officer of the army, the director of naval communications, the assistant secretary of state in charge of international communications, and the assistant secretary of the treasury in charge of coast guard operations (absorbed by the navy with the outbreak of the war).

One of the president's first official acts (on Dec. 10, 1941) after the war declaration was to transfer to this board all of his functions and powers over communications vested in him under the Federal Communications act. This board promptly went into action, and, so far as non-military communications were concerned, became a sort of super Communications commission, geared to the war effort. Its name subsequently was changed to the Board of War Communications.

With no staff of its own, this board issued restrictions which were promulgated by the FCC as the operating agency. Many of the FCC's civil functions were curtailed, with the accent on emergency wartime operations. Upon recommendation of this board, regulations governing qualifications of broadcast station technicians and operators were relaxed, due to manpower shortages cropping from the war. New construction also was stopped by order of this board, working in collaboration with the War Production board.

On July 14, the broadcasting industry was declared "essential" under Selective Service requirements, and some degree of protection was afforded against migration of key personnel to the armed forces or other pursuits, the step having been taken upon recommendation of the Board of War Communications. Subsequently, on Oct. 16, 1942, Selective Service defined a score of broadcast occupations as critical. On Dec. 1, standard broadcasting technically went on a full wartime ration, with the enforcement of horizontal power reduction of all stations by one decibel, which was not discernible to the listener, and by relaxation of normal engineering standards.

Musical Property.—Having successfully resisted the effort of the American Society of Composers, Authors & Publishers (ASCAP) to increase licence fee royalties for use of its copyrighted music over the air in 1940, the broadcasting industry moved along without any serious music performance headaches until the summer of 1942, when James C. Petrillo, president of the American Federation of Musicians (34,000 members), banned the making of transcriptions and phonograph records for public performance, on grounds of unfair competition with live musicians. The ban became effective Aug. 1, 1942. After that date no new recordings or transcriptions were made, up to the close of 1942, for radio, automatic coin-operated phonographs (juke boxes), or other public performances.

Although aimed primarily at radio and juke boxes, the Petrillo ban precipitated a national controversy that had repercussions in the courts, congress and in the public prints. Several government agencies, including the Office of War Information, FCC and the Department of Justice, interceded, contending that the war effort would be impeded through non-production of recorded music, so vital in maintenance of morale and in entertainment of troops at home and abroad. Moreover, it was contended that many small radio stations, largely dependent upon recordings and transcriptions for programming, would be forced out of business, along with many taverns and small business establishments which could not hire live talent. As the year ended, Mr. Petrillo, variously

Table V.—*Employment Figures of the U.S. Radio Industry*

	1941	1940
l-time employees	23,666	21,646
rage weekly compensation	$48.10	$46.95
t-time employees	3,978	4,007
rage weekly compensation	$30.86	$27.49

lled as a "czar" and "dictator," had stuck to his guns. A gressional inquiry into the whole matter was scheduled for mid- 1943, with remedial legislation predicted unless the ban was d.

ssistant Attorney General Thurman Arnold brought anti-trust vities against the musicians union, contending violation of Sherman act. The federal district court in Chicago on Oct. 12, ever, dismissed this proceeding as a "labour controversy." whole question then was taken to the supreme court by the rnment, where it awaits argument and decision.

eanwhile, ASCAP enjoyed unusually favourable relations with broadcasting industry, after its bitter fight which resulted in rious drop in its receipts during 1941. New contracts entered with the major networks and most of the broadcasting sta- s run until 1948, with the industry paying about half, per- agewise, of what ASCAP sought in the way of royalties.

nployment.—With an average weekly wage for its nearly oo full-time employees of $48.10, the broadcasting industry ntained its standard of high compensation. The average kly payroll (for the week of Oct. 12, 1941) was $1,138,249, ncrease of $121,883 over 1940. The average weekly wage $1.15 over 1940. Latest data, made available by the Federal munications commission, is shown in Table V.

adio had its manpower problems galore during 1942, but er few national union difficulties, save for the musicians con- ersy, still raging as the year ended. With the war's drain on manpower, which has been a "young man's game," more more women entered radio service, both in the technical and ophone ends. Women technicians, quickly trained at special- schools, entered service by the score. And women announcers over regular microphone duties, without confining them- s to home economic pursuits.

levision and Frequency Modulation.—These fields, before war's onset, were looked upon as radio's new twin bonanza. ng 1941, the government paved the way for their commercial lopment, with the allocation of set bands of frequencies for services, and the setting up of rules for commercial opera- providing for sponsorship, both local and national, on the basis as standard broadcasting. The technical progress of two arts is discussed elsewhere in this article and in TELE- ON.

e war, with immediate shortages in all types of electronic pment, froze development of these two arts without necessity overnment edict. All radio receiving set and transmitter ufacturing plants were converted to 100% war production, ping new civil radio development dead in its tracks.

e FCC subsequently found it expedient to relax its regula- regarding minimum operating schedules for both television FM, and cut down appreciably the fidelity requirements of transmission. These were only temporary expedients, how- , and, once the war was won, both services were destined for n periods.

hile television and FM service continued under commer- regulations, actually both services were perforce on experi- tal schedules. There were not enough receivers either for FM elevision in use to warrant extensive purchase of time by rtisers. It was estimated roughly that there were 500,000 sets in use, largely in the east.

Within the radio laboratories, many revolutionary electronics developments were taking place during 1942, practically all of them geared toward waging of modern warfare. Rigid secrecy was being maintained, because of the war.

Radio In the Western Hemisphere.—In March 1941, radio listeners all over the continent changed their dial settings for their favourite stations. The North American Regional Broadcasting agreement, providing for a redistribution of broadcast facilities among the North American nations, became effective March 29. General improvement in service resulted, with less interference evident and with most of the renegade Mexican border stations eliminated. Canadian broadcasting, always geared closely to operations in the United States, continued to show overall improvement, and worked harmoniously with the government in the war effort. Mexican and Cuban broadcasting, as a result of the scientific allocation of facilities, became more stable, with Mexico particularly following the United States formula for program sponsorship and distribution.

Superpower.—Use of power in excess of 50,000 watts for standard broadcast stations in the United States, long a burning issue, was knocked out "for the duration" as one of the FCC's last official acts of 1942. The only station to use so-called superpower—Crosley's W8XO, Cincinnati—was ordered Jan. 1 to terminate its experimental authorization with 500,000 watts, which it used from midnight to 6 A.M. The transmitter was the experimental adjunct of WLW, Cincinnati, and with the FCC's action it appeared the superpower transmitter would be mustered in for psychological warfare, probably to be taken over by the Office of War Information for international shortwave broadcasting or standard band broadcasting from a location somewhere in Africa, or in England.

While technically power in excess of 50,000 watts was regarded as desirable, political and economic repercussions in previous years resulted in serious controversy, lower wattage stations claiming that they would be driven out of business by virtue of the "national" coverage of the proposed radio behemoths.

U.S.-Latin-American Broadcasts.—A year of global war brought about more radical and far-reaching changes in the international phases of broadcasting than in any other aspect of the industry. Plans launched in 1941 for expansion of domestic broadcasts to the Latin-American fields had to be modified radically, to permit use of the U.S. international transmitters in the psychological warfare effort. Through the Office of War Information,

JEN YING YEN, Chinese journalist, rehearsing his part in "America Speaks to China," a series of eight dramas written by Pearl Buck (right), translated and short-waved to China in 1942

Overseas Branch, and the Office of the Co-ordinator of Inter-American Affairs (Rockefeller committee), all program operations of the nation's international broadcast stations were taken over under lease arrangements, effected Nov. 1, 1942. The licencees, private corporations, relinquished all their program control but were reimbursed for rental of their facilities.

These leases covered the 14 existing international stations. To compete more effectively with axis propaganda broadcasts, plans were made by the government during 1942 to construct 22 additional international shortwave transmitters of power of at least 50,000 watts, calling for an outlay of some $4,400,000 for transmitters alone.

It was specifically provided that, upon the war's ending, these government leases would be terminated, with the transmitters returned to their licencees, which included such companies as NBC, CBS, Crosley, General Electric, Westinghouse, World Wide Broadcasting, and Associated Broadcasters, operators of a standard broadcast station, who at the government's behest installed the 100,000-watt KWID in 1942 in record time. This was to supply sorely-needed counter-propaganda to the Pacific theatre. (*See* also Federal Communications Commission.) (S. Tf.)

Scientific Developments (U.S.).—The year 1942 witnessed an intensive step-up in scientific and industrial activity in the field of radio, under the imperative prod of wartime needs. Such activity for the military and naval forces began with the conversion of plant facilities, formerly used for the annual production of hundreds of thousands of home broadcast receivers, to the manufacture of standard communication apparatus for war uses. From that relatively elementary step, the new work extended into far-flung fields of design and research, in which phenomena strange to the average pre-war radio engineer were turned to unforeseen uses as "secret weapons." Little could be said about any of this, except to echo the already announced facts that really astounding progress in the generation of high-intensity ultra-frequency radio power and in the invention of new forms of sharply-beamed antenna structures made possible direction-finding and range-determination apparatus of almost unbelievable precision and importance. These new instruments might be used not only like old-fashioned direction-finders, to fix the location of enemy radio transmitting stations which are caught in the act of sending messages, but also to locate bodies that are unusual in their environment, such as aeroplanes in flight or ships at sea, under conditions of distance or atmospheric obscurity which would make their detection by optical means impossible.

Even the most simple field of radio communication was expanded and improved in striking fashion, doubtless in part because of the obvious fact that in World War II, where "fronts" were often 50 mi. or more in depth, and where the whole active field might be overrun with tanks and under constant aerial bombardment, communication could not be maintained by wire lines alone. The added burden thus thrown upon radio communication apparatus, together with the added importance of swiftly delivering graphic material (such as photographs and maps) from point to point, naturally gave impetus to the development of new and special applications of the older forms of signalling, including code telegraphy, telephony and facsimile. In the air forces and at sea, where wire-line communication was of course not merely difficult or intermittent but impossible, the newer uses of radio were all the more essential. (*See* also Federal Communications Commission; War Communications, Board of.) (J. V. L. H.)

Great Britain.—The year 1942 saw the tenth anniversary of British overseas broadcasting, which became during the war the most extensive part of the British Broadcasting corporation's work. The "V" campaign so caught the imagination of the occupied countries that radio propaganda found itself in advance of military possibilities. After that, the mysterious "Colonel Britton" suggested, with precise details, an insidious form of passive sabotage such as the "Go Slow" movement with its sign of the snai, and gave hints for hindering transport. There followed a succession of warnings to the population in coastal areas in the occupied countries to cease to travel by night or to leave the distric altogether.

Meanwhile, listening went on, and increased, despite the German efforts at jamming. A new service of messages in Morse to most of the occupied countries was introduced, giving the essenc of the news and talks in a form which no jamming could stop.

"Black listening," as the Germans term it, did not stop at the helots of the "New Order"; Germans themselves, including the army, formed the habit, as various appeals from the Goebbel propaganda machine and numerous savage sentences in the court proved, while in the occupied countries, and notably Poland, BBC bulletins continued to form the basis of the "underground" newspapers which circulated everywhere in spite of every effort to suppress them.

But though this European service was of primary importance as the BBC's aggressive weapon of political warfare, it formed only a small part of the corporation's work. The empire service in English, now ten years old, covered the globe, at appropriat listening times for each audience, for over 21 hours a day. Ther was also a supplementary service for the non-English tongues of the empire—such as Afrikaans and Bengali, Maltese and Tamil. Altogether, 11 fresh tongues were added in 1942 to the oversea services, and broadcasts were given regularly in 45 languages not including English, Welsh and Gaelic. An important addition was the introduction of bulletins originating in the United States and rebroadcast over the BBC in English, German, French Finnish and Italian.

The close radio co-operation between Britain and the new world became increasingly evident after the bombing of Pear Harbor when a great development took place in the rebroadcasting of BBC news and programs by the chief networks of the United States. Moreover, the Columbia Broadcasting system brought an eminent radio producer, Norman Corwin, to Britain He, working with BBC facilities, was responsible for a program series which was well received by United States listeners—"An American in Britain." The BBC's own series, "Britain to America," in the hands of Laurence Gilliam, was also widely rebroadcast. By the autumn of 1942 every news broadcast or talk put out by the BBC at weekends was rebroadcast somewhere in the United States.

Reciprocally, listeners in Britain heard a steadily increasing number of programs built in the New York studios by the BBC while special program items were introduced for the United States troops stationed in Britain.

Throughout the year broadcasting also increased in all the great dominions, in India—a very special service—and in the crown colonies, while the local radio stations of Central and South America made growing use of the BBC Latin-American service rebroadcasting news bulletins, talks, music and drama.

Of more domestic interest was the resignation of the director-general, F. W. Ogilvie, and the appointment of two joint directors-general, Sir Cecil Graves and Robert Foot. A notable development of corporation policy was the decision to ban "emasculated music," while the appointment of Arthur Bliss as music directo was a reflection of the public's growing desire for more vigorou music of the lighter kind, and also for music formerly regarded as far too serious for the generality. Russian music, of the traditional kind, and also in its more modern expressions, notabl Shostakovich's "Leningrad Symphony," proved especially popular while the Promenade concerts in London had never before had n large and enthusiastic audiences either on the spot or over radio.

lso significant was the enthusiastic reaction to three other grams—"Marching On," "Radio Reconnaissance" and "The ins Trust." Listener research—and the interest of the news-ers—showed the last to be the most consistently popular es of programs ever produced by the BBC. Another indica- of the attitude of the British people in war was the popularity he religious services.

inally, two other developments stood out—the increase in twave services for troops in the middle east, and the con-ed development of the daily schools broadcast. Nearly 12,000 ols had, by the end of 1942, incorporated, as an integral part he educational system, these broadcasts, that dealt with no ow technical subjects, but aimed at giving the child a liberal cation and making him, or her, a citizen of the world. (*See* ADVERTISING.)

diology.

Radioactive Isotopes.—During 1942 by far the greater part of the output of radioactive materials duced by the cyclotrons in the U.S. was diverted to various tary research projects. It was possible to continue a small unt of therapy with radioactive phosphorus, in patients with aemia or lymphosarcoma who had been shown to be bene- previously, but no new projects were reported. Neutron apy was practically discontinued. Tracer and metabolic ies, however, requiring only small amounts of the radioactive opes, were carried on in several institutions. It is impossible eview these in detail, or even to mention more than a few nem.

ith radioactive phosphorus, distribution and elimination in nal persons and patients with leucaemia were studied in detail. phosphorus apparently passes from the acid-soluble com-nt of the white blood cells, through enzymatic carrier sys- to the nucleoproteins and phospholipides. If high phosphorus entration in these cells is desired in therapy, the material ld be injected intravenously.

ood studies with radioactive iron were fruitful. In pregnancy absorption of iron is from two to ten times normal; in ses in which iron stores are known to be abundant (per-ous anaemia, etc.) absorption is less than normal; chronic tion shows no utilization of radio-iron, and leucaemia and cythaemia but little. It is believed that the *reserve stores* on in the body, rather than anaemia, control iron absorption. ethods for determining the volume of the circulating blood devised, based on the injection into the blood stream of which have been made to take up some radioactive material; phosphorus and possibly other elements have been found ticable.

y means of radioactive sodium, the transfer of sodium across entas of animals was studied, for different species. The rate ransfer increases throughout gestation, until just before de-y, when it drops sharply. Correlation was established between veight of the foetus, its rate of growth and the sodium supply. all such tracer studies, it was assumed that possible effects ne radiation emitted by the very small amounts of radioactive erial employed could be ignored. In the case of radio-phos-us this was shown to be not always the case. The administra- of very small doses (subtherapeutic) to leucaemia patients followed by large shifts in the organic acid-soluble phosphorus ion of the white blood cells; such shifts did not follow the inistration of normal phosphorus. The total body radiation the tracer dose was calculated to be of the order of 3 to 15 valent roentgens. Irradiation of the entire body, or of the ulating blood (through a small cone over the heart), with X-ray doses of this magnitude produced similar shifts in the blood phosphorus.

In view of the number of individuals working with or in the vicinity of cyclotrons, the matter of their safety from radiation damage is important. Monthly blood studies of 85 such individuals in two institutions were carried on for over two years. Some transitory radiation effects were demonstrated, when exposures were known to have occurred. A few individuals were found who appeared to be especially sensitive; these were advised to change their occupations. In general, protection by these installations appeared adequate.

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Radium.

Mining operations in Belgian Congo were reported to have been stopped when the refinery at Oolen, Belgium, fell into the hands of the Germans; some 1,200 short tons of ore was shipped to the United States in 1940, presumably stocks on hand, as none had been reported in 1941, and no information was received as to the recovery of the radium content of the 1940 imports. The Eldorado mine, in the Northwest Territory of Canada, the world's second largest source, was closed during 1941, due to a heavy accumulation of untreated ore, but was reopened early in 1942. The refinery at Port Hope, Ont., remained in operation. Due to current conditions, the agreement between the Belgian and Canadian producers, dividing world markets on a 60:40 basis, was dissolved in 1941.

There is a small recovery of radium from ores mined primarily for uranium and vanadium; all told, slightly over 3 grams was recovered in 1941, and a total of 4-6 grams was expected in 1942. Imports of radium salts into the United States dropped from 30.311 grams in 1940 to 4.063 grams in the first nine months of 1941, all from Canada.

(*See* also URANIUM.) (G. A. Ro.)

Railroad Retirement Act: *see* SOCIAL SECURITY.

Railroads.

In the United States the 1942 record of railroad performance, in meeting the heavy and exacting demands of war conditions, reflected credit on railroad management, the governmental regulating authorities and the shipping and travelling public. The volume of traffic, both passenger and freight, was greater than in any previous year. The freight performance was free from car shortage, congestion, or unreasonable delay, but in passenger service there was overcrowding of regular trains, as well as restrictions on extra trains. There was a governmental ban on conventions and other large gatherings requiring train travel and prohibition of special trains to sports and like events. The "on time" performance of regular trains was considerably below normal. The relatively poor record in passenger service was explained by the fact that in addition to the increased travel of civilians the heavy demands by the military services at times utilized 40% of all sleeping cars and 15% of all coaches. During the latter part of 1942 the railroads carried monthly about 1,750,000 men in the armed services moving under orders. The total for the year was about 12,000,000, not including the very large number of uniformed men who made trips while on furlough or travelled under orders in parties of less than

Table I.—*Traffic Units of U.S. Railroads*
(in thousands of millions)

Item	1918	1929	1932	1941	1942
Revenue ton-miles	405.4	417.3	234.0	475.1	630.0
Revenue passenger-miles	42.7	31.0	17.0	29.4	53.0

Table II.—*Units of Equipment of U.S. Railroads on January 1*

Item	1918	1929	1932	1942
Locomotives	61,890	59,470	55,149	41,759
R. R.-owned passenger train cars	52,977	53,097	50,747	37,897
R. R.-owned freight cars (thousands)	2,302	2,298	2,230	1,725

50. The shortage in locomotives and cars, the inability to acquire new equipment, and the overloading of trains meant that some sacrifice in the quality, adequacy and comfort of service for civilian passengers was inevitable, but the sacrifice was generally borne without complaint.

An indication of the degree of increase in freight and passenger traffic of Class I railroads is given in Table I which shows the number of tons and passengers moved one mile in 1942 (partially estimated), compared with the number moved in 1918, the last year of World War I; 1929, the peak of predepression prosperity; 1932, when the depth of the depression was reached; and 1941, when the national defense program was in full swing.

The most striking feature in the comparison is that the record-breaking performance of 1942 was made with substantially less units of equipment than in the earlier years. The increase of 41% in ton-miles in 1942 over 1929 was made with 25% fewer freight cars, and the increase of 71% in passenger-miles was accomplished with 29% fewer passenger train cars.

The ability of the railroads to carry the larger 1942 load with a smaller inventory of equipment was due (1) to improvements in the design and capacity of locomotives and rolling stock, (2) to betterments in terminals, track structures and signalling, (3) to advances in the technique of terminal and line operation, and (4) to co-operation of shippers and receivers of freight in the more effective utilization of freight cars. Because of substantial increases in train load and train speed, the net ton-miles per freight-train hour in the first 10 months of 1942 were 16,216. The comparable figure for the same period in 1929 was 10,654. In freight-car performance, the car-miles per car-day in 1942 were 49. This may be compared with 34 in 1929. The car-loads in the two years were 31.5 and 26.9 tons respectively. The inclusive unit—net ton-miles per freight-car day—was 1,042 in 1942 and 557 in 1929.

The improvement in the utilization of locomotives is reflected in miles per locomotive-day. Freight locomotives in 1942 made a daily mileage of 127.4; in 1929 the daily mileage was 65.6. In passenger service the 1942 figure was 212; in 1929 it was 120. In practically all other units of freight operating efficiency the performance in 1942 was markedly superior to that of previous years.

Apart from the abnormal transportation demands of the war industries and the movement of troops and military equipment and supplies, the burden on the railroads was augmented by the effect of enemy submarines along the Atlantic seaboard and the shortage in gasoline and rubber. The sinking of many oil tanke and the diversion of others to the navy and overseas servi placed on the railroads the responsibility of meeting the needs the Atlantic coast states by moving oil in tank cars. During th latter part of the year the railroads carried as much as 850,00 bbl. daily—oil which formerly had moved by water. The closin of the Panama canal to commercial vessels caused the diversio to rails of the substantial intercoastal traffic which previously ha moved by water through the canal. The rationing of gasoline an the difficulty in renewing worn tires, as well as the inability t purchase new equipment, handicapped the trucks, busses and pr vate automobiles, and a large part of their tonnage and passenge sought the railroads.

Table III.—*Condensed Income Account—Class I Railroads*
(in millions)

Item	1929	1941	1942*
Operating revenues	$6,270	$5,347	$7,439
Operating expenses	4,506	3,664	4,578
Taxes	397	547	1,076
Net Ry. operating income	1,252	998	1,500
Net income after fixed and contingent charges	897	500	950

*1942 partially estimated.

The creditable railroad record of 1942 was attributable in pa to the constructive administration of the Office of Defense Tran portation. That office was created by executive order in De 1941 to co-ordinate the transportation policies and activities o the several federal agencies and modes of transportation. Be tween Director Joseph B. Eastman and the railroads there wa effective co-operation, and many of the steps taken to conserv transportation effort and insure the more efficient utilization o equipment were due to Eastman's initiative and support.

Nor would the railroads have been able satisfactorily to per form their heavy task in freight service had they not had a hig degree of co-operation on the part of shipper organizations an individuals in the heavier loading of cars and in the reduction i time ordinarily taken in loading and unloading.

The greater volume of traffic, together with a moderate in crease in rates authorized in March by the Interstate Commerc commission to offset wage increases late in 1941, resulted in earn ings, both gross and net, greater than in any earlier year.

Under normal conditions an increase in railroad traffic approach ing the capacity of available equipment would have been met b the purchase of additional locomotives and cars. In 1942, how ever (and in 1941 as well), priority regulation of critical ma terials prevented the railroads from augmenting their equipmen inventory. They were unable to secure the approval of the Wa Production board for all of the materials necessary and conse quently received only a part of the needed equipment. Prioritie also interfered seriously with the normal programs of rail re newals, other important items in physical maintenance, and heav repairs to and renewals of equipment.

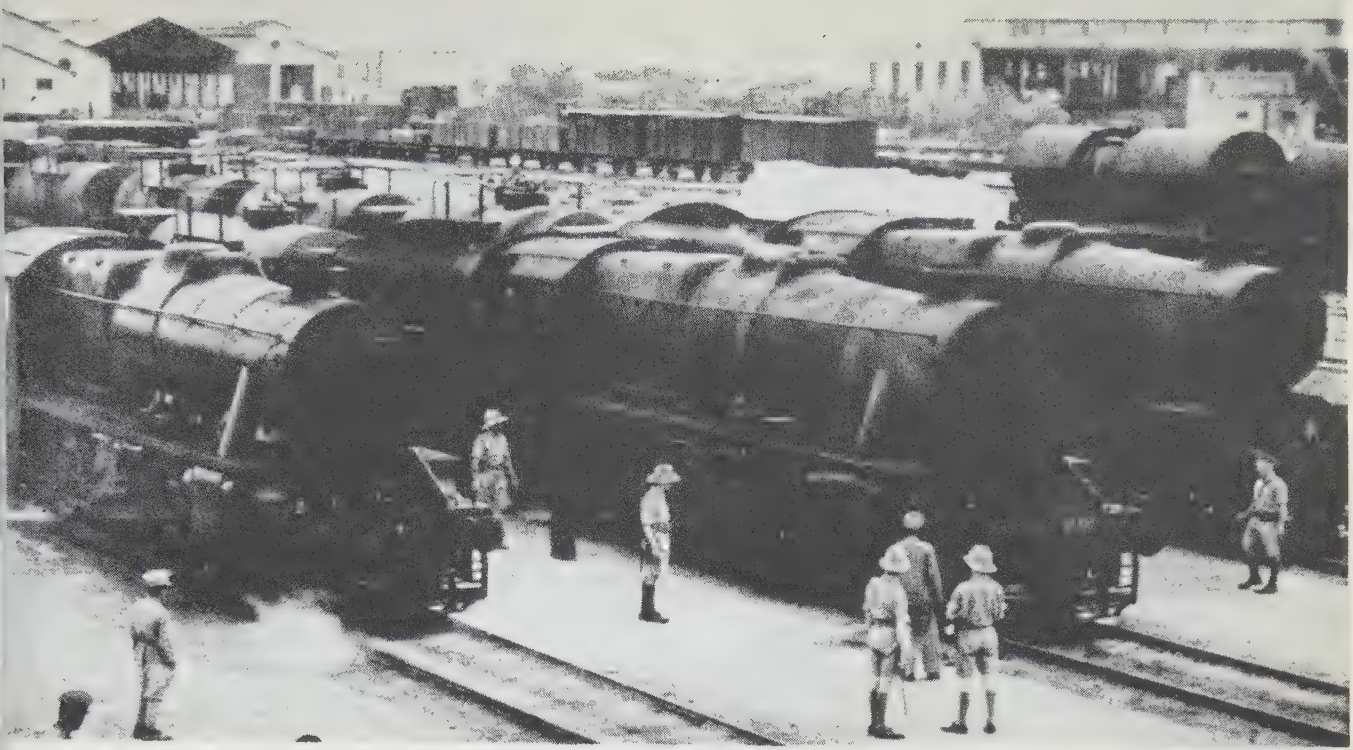
Legislative activities affecting transportation in 1942 wer small in scope. An act placing freight forwarders under regula tion by the ICC was signed by the president in May, and i October the so-called Chandler act of earlier years, providing fo voluntary financial reorganization of railroads by negotiation between the railroad and the bondholders, was re-enacted.

Little progress was made in completing the reorganization o railroads in the hands of receivers or trustees. The mileage in th hands of the courts at the beginning of the year was 69,859. A the end of the year it was 66,092. Two Class I roads emerge from receivership and one was added. The higher earnings o 1941 and 1942 caused renewed litigation by stockholders wh would, under the proposed plans, have their equities extinguishe

The process of abandonment of unprofitable railroad branc lines was given impetus by pressure from the War Productio board in the interest of recovering rail and other scrap materia The abandonments authorized by the ICC during the year ha an aggregate of approximately 2,516 mi. of line, the highest o record.

(*See* also BUSINESS REVIEW.) (W. J. C.)

Great Britain.—Railway extensions and improvements we limited to those required for the war effort, but the physical asse were maintained in good condition so far as the track and rollin



'SH LOCOMOTIVES hauling munition trains at Ahwaz, Iran, in 1942, en
to the U.S.S.R. The British transported considerable railway equipment to
uring the year to carry supplies to Russia

were concerned. A considerable mileage was renewed, a pro-
on of it with American rolled rails, and, in conformity with
sh practice of using longer lengths than the American 39 ft.,
or even three 39 ft. rails were welded together. Drainage
improved, new ballast laid down and new ties inserted: re-
l programs either of track or equipment were not, however,
the normal peacetime standard.

e outstanding problem had been to operate the railways with
luced staff, since a large proportion were serving with the
d forces, and yet carry the unexampled war load of added,
usually urgent, freight traffic in addition to the heavy passen-
oad. Expressed briefly, with a reduction in passenger train
ge, by some estimated at roughly 30%, and a ton-mileage
probably well above all prewar records, the four British
ays and the London Passenger Transport board had so far
d it possible to meet all the demands placed on them by the
Though passenger trains on some sections of line were un-
crowded, the position was eased by the withdrawal of dining
thereby giving additional seating accommodation on the
s concerned, and by the reduction of sleeping car services.
y categories of cheap tickets were withdrawn in Oct. 1942,
hroughout the year the slogan "Is your journey really neces-
" helped to limit passenger travel which tended to grow as
restrictions on the use of private automobiles grew more
e and as long distance coach services were suppressed.
reas the lessened incidence of air attacks helped the situa-
the increasing need for fuel, gasoline, and then rubber saving
d to aggravate it. To some extent the problem of staff was
ome by the employment of about 100,000 women, on the
ons, in the offices, locomotive depots and shops, but it was
open to the British railways to increase their total staff as
proving possible in the United States.

ontinental Europe.—It is not desirable to refer to technical
opments in Britain, but this restriction does not apply to
nental Europe. Neutral countries were few in number, but
pain the recently established state railway system, primarily
ed by the Norte, the M.Z.A. and the Andalusia-Western
was occupied mainly with its own formation into one entity, and with overcoming the arrears of civil war damage aggravated by a shortage of fuel, locomotives and equipment. Main-line electrification north of Madrid made but slow progress.

In Switzerland the benefits of electrification, through the domestic production of power supply, were well demonstrated. Steam locomotives, held in reserve, had to be despatched to Germany to haul coal and other stores to Switzerland. Steady progress was made with the widening to double track of the last few single line sections on the Gotthard route which formed one of the most vital supply arteries of the axis powers, linking Germany and Italy, since the latter was receiving about 12,000,000 tons of coal from the former per annum, a large proportion of which had to pass over the Gotthard and the Simplon routes.

In Sweden conversion to electric traction continued in the south and electric traction became continuous from Trelleborg, ferry for Sassnitz in Germany, to Riksgransen, Norwegian frontier near Narvik, as a result of the completion of the Langsele-Boden section: a throughout distance of 1,260 mi., probably the longest continuous stretch of electrified main line in any country in the world. The Norwegian Nordland line was at work to the north of Mo. Except for the western tip of Turkey the rest of Europe was temporarily German-occupied territory, or Germany itself, and, therefore, railway communications and their working lay under the control of the German minister of transport; in which case the military needs were paramount.

It could be safely assumed that no construction work was being undertaken unless it was considered essential for the German war effort; indeed, the whole German war effort, owing to the shortage of motor fuel and tires coupled with the virtual elimination of shipping except in coastal waters or on inland waterways, was dependent on the successful functioning of the European railway system under German control. To make the best use of the facilities available an energetic policy was being followed aimed (1) at obtaining the maximum use of every unit of equipment through better loading and quicker turn-round, (2) diverting to inland waterways much traffic of a nonperishable nature, at any rate in months when navigation was open, (3) reducing cross-hauls by the zoning of supplies (a policy earlier and more effectively organized in Britain). During summer months, with fewer blackout hours and good weather conditions, the transport position eased visibly after the crucial and exceptionally cold winter, but the

1942 MOHAWK TYPE freight locomotive

strain was likely to reach almost breaking point early in 1943.

As the German forces advanced into the U.S.S.R. the 5 ft. gauge Russian lines were converted to the standard 4 ft. 8½ in. gauge, and to operate these supply lines locomotives had to be withdrawn from all over Germany—during the summer of 1942 it became known that locomotives from other countries such as France and Belgium were being requisitioned in important numbers for work further east. The only 5 ft. gauge lines existing in German controlled areas were those in Finland, and it was likely that a use had been found for captured Russian equipment in that area. In many parts the repair of war damage to the railways was a prime necessity for the axis occupying forces, and little information was naturally available but it could be assumed that nearly all the Belgian, French and Dutch lines were available again by early 1942. The task was heavier in the Balkans, and it was not until March that the Salonika to Athens section was reopened, two large bridges being involved. In July the single rail link joining Istanbul and Adrianople to Central Europe was reopened, but certain bridges over the Danube in Yugoslavia were understood to be still incomplete. In Rumania, as the battle area moved eastward, certain main lines became vital and several important widening schemes were completed. Railway construction in Bulgaria aimed at linking up the newly acquired ex-Greek and Yugoslav territories.

Italian endeavour was largely concentrated on the conversion to electric traction, an important section completed in 1942 being that from Trento (Brenner pass) to Bologna. Some progress was being made in France with the conversion to electric traction of the Brive-Montauban line, long under way, and preparatory work was in hand on the Paris-Dijon section of the main line to Marseilles, but shortage of materials and fuel slowed up all major works. No important developments were reported in Belgium, but in Holland, electrification of the Utrecht-Hilversum-Amersfoort passenger services could be recorded.

Asia.—Feverish activity was reported on the Yunnan-Burm railway link as a supply route to China early in 1942, but lat developments brought the scheme temporarily to a stop. Railwa mileage in Malaya and the Dutch East Indies was in Japane hands and damage had been repaired; they also controlled th railway systems of Indo-China and Siam, as well as the Burm railways. Doubtless links were being constructed between is lated sections but there was no reliable information. In Japa itself an event of importance was the opening of electric servic through the new tunnel between Shimonoseki on the mainland ar Moji on Kyushu island, thus reducing the schedule between Toky and Nagasaki to 24 hours. News was lacking of railway develo ments in China.

Turkish railway construction proceeded in Asia Minor; bo Britain and Germany supplied the Turkish state railways wi locomotive power and equipment. The standard gauge rail link Syria between the Palestine railways and the Turkish railway sy tem was continuing rapidly; published statements showed that was already complete between Haifa and Beirut. For variou standard gauge lines in the middle east American 2-8-2 type loc motives were supplied, constructed in the record time of 3 month The traffic capabilities of the Trans-Iranian route to the U.S.S. were increased by the construction of the Ahwaz-Khorramsha branch, thus giving alternative port facilities in the Persian gul In India record traffics resulted in excellent financial returns, b inability to import new motive power and equipment gave cau for some concern. The latest railways to be taken over by th government were the Bengal and North Western and the Rohi kund and Kumaon.

Africa.—Construction continued of the Mediterranean-Nig railway, a new name for the long projected trans-Sahara projec Eventually designed to link up with the Dakar-Niger railway sy tem, the Bou Arfa-Colomb Béchar section of standard gauge l was opened and construction was continuing southwards, permi ting development of the Kenadza coalfields. Extensions eas ls were also being made to the Dakar-Bamako line, and, in 1942, a bridge was opened over the Niger to be used to iect French Guinea and the Ivory Coast with the Mediteran-Niger. Press references were made to the strategic rail- built westwards from Mersa Matruh to the vicinity of ruk.

he South African railways and harbours administration had to lle record traffics and large equipment programs were re- ed to cope efficiently with it. The rapid development of the vays' workshops as equipment building centres, in addition to r war activities, was the outstanding feature of the situation, full advantage was taken of increased receipts to strengthen place on a sound foundation the financial structure of this railway system, whose weekly gross revenues attained the ,000 mark.

outh America.—In Argentina the four most difficult prob- were the shortage of fuel supplies, the large stocks of cereals and which could not be exported, the inability to import h-needed new locomotives and equipment and the insolvency he railway pensions fund, on a national basis. To ease the named, locomotives were converted to oil-burning and some e was used as fuel. Grain export, which affects railway rev- s materially, depended on the supply of ocean tonnage; the motive situation was eased by the lowering of speeds, reduc- of services and greater reliance on Argentina's own repair facilities. Development of the Victoria-Minas railway, as a lt of U.S.-Brazilian agreement, was of vital significance in rd to ore supply for the United Nations.

onstruction was continuing on the Salta railway link to Anto- sta, and on the Chilean side must have nearly reached the ntine border; the Argentine section would not be finished 1945. The Chilean railways were faced with many difficulties freight rates and passenger fares were materially increased in. 1942.

Peru the Arica-Tacna railway, dating back to 1857, was n over by the government.

ustralia.—The various Australian government railways, in in the war zone, handled vastly increased traffics with lim- production facilities for locomotives and equipment. The blem was not eased by the existence of three different gauges by the necessity of utilizing railway workshops for other war vities. Construction work was limited to that required for purposes and the growing restriction on road services im- d a further traffic burden on the railways, as did the diver- from coastal shipping. Close co-operation between the indi- al state railways was an outstanding feature. In almost every 1941–42 yielded record traffic figures, as also records in ating efficiency, in spite of the release of large numbers of to the armed forces. In New Zealand the financial year 1–42 resulted in record receipts, in part created by the diver- from road transport, but also due to the government's policy ail and road co-ordination.

anada.—The two large Canadian systems were called upon andle record traffics, on certain sections reaching double the var volume. The C.N.R. installed one of the longest C.T.C. allations in the world on its Maritime Provinces main line. system of rates known as "agreed charges," which originated ritain, made headway even under war conditions, simplifying ounting and clerical work. (*See* also DISASTERS: *Railroads;* TED STATES.) (C. E. R. S.)

nfall: *see* METEOROLOGY.

oid Transit: *see* ELECTRIC TRANSPORTATION.

tes of Exchange: *see* EXCHANGE CONTROL AND EXCHANGE ES.

Rationing.

Consumer rationing began in the United States in 1942, to meet shortages in supplies of certain civilian goods needed for, or curtailed by, the war program. The legal basis for rationing had already been laid in 1941, beginning with the Priorities and Allocations act of May 31, 1941, which stated that, in the case of shortages, "the president may allocate such material in such manner and to such extent as he shall deem necessary . . . in the public interest. . . ."

The president delegated this authority to the Office of Production Management (OPM), subject to the approval of the Supply, Priorities and Allocations Board (SPAB), and transferred the Division of Civilian Supply from the Office of Price Administration (OPA) to the OPM to "formulate plans and programs providing for the equitable distribution . . . of the materials . . . for civilian use." The director of priorities (OPM), then Donald M. Nelson, was made responsible for preparing and issuing priority programs, which included rationing.

One of the first and most vital commodities affected by the Japanese attack in the Pacific was rubber, 97% of the world's supply being produced in the area of the southwestern Pacific, and rapidly being cut off by the advance of the Japanese armed forces. Luckily, the United States had been foresighted enough to build up stocks of this vital war and civilian material, and about a normal year's supply was on hand or afloat. However, new war demands and the probability of having to depend on this stockpile for two or three years made it necessary to curtail civilian consumption immediately. Tires accounted for about 75% of the country's consumption of rubber, and three days after the war began, all civilian sales of tires were "frozen."

Some 8,000,000 tires, at all distributive levels, were thus made available for rationing (manufacture of civilian tires was stopped). The OPA, because of its established regional price administrating organization and consumer interest, was considered the best agency to administer rationing. The amount of tires to be rationed was so small that only vital community needs could be

AND TWO QUARTS OF OATS
LET US CLEAN YOUR PLUG
~~GAS~~
HAY
SHOEMAKER

ULTIMATE EFFECT of U.S. gasoline and tire rationing as predicted in 1942 by Shoemaker of *The Chicago Daily News*

THE IRONIES OF U.S. SUGAR RATIONING in 1942 as seen by Goldberg of the *New York Sun* in this cartoon captioned "Sugar Shortage"

considered. On Dec. 27, 1941, the OPM issued M-15-c, a detailed ration order, directing the OPA to ration tires by certificates through local boards (at least one to every county) to qualified eligibles, such as physicians, ministers, police, fire services, and operators of buses, farm tractors and trucks used for certain specified purposes. These eligibles were to prove the need of a car in the pursuit of their duties, and the need of a tire to operate the car.

The OPA issued ration order 1 shortly after; printed regulations, instructions and forms; and organized local volunteer Tire Rationing boards after the manner of the Selective Service boards. (On Dec. 1, 1942 these boards, renamed War Price and Rationing boards, numbered 5,500.) Quotas were issued for each board, with state and national quotas to distribute in areas where needs were under-estimated. On Jan. 5, 1942, tires began being rationed to the public.

Closely allied to tires were automobiles. Both the steel and the mechanical skills that went into the making of several million cars each year were badly needed to produce war materials. On Jan. 1, 1942, all sales and deliveries of passenger cars to civilians were "frozen," and the OPM and the OPA began working on a rationing program for this civilian good.

During Jan. 1942 the war administration was streamlined. The OPM was abolished and the War Production board (*q.v.*) was established in its place, free from all of the cross-checks and answerable to no one but the president. One of the first acts of the WPB was to establish the OPA as the rationing administrative agency, empowered to ration at the retail level to consumers such goods and with such added authority as the WPB should thereafter direct. The OPA was given a free hand with respect to the administrative regulations, in order to provide for changes and flexibility in the rationing programs instituted.

This was followed by a directive to ration passenger automobiles, and on Feb. 2, 1942, ration order 2 allowed delivery of all cars sold but not delivered on the date of the "freeze." This done to avoid the inequities arising from the numerous ca where "turn-ins" had already been sold on the second-hand market. Ration order 2A established consumer rationing of au mobiles by certificate through the same local boards with m the same eligibility standards, beginning March 2, 1942.

With the conversion of the typewriter manufacturing plants war work, the OPA was directed to ration another commod which was very important to most businesses. Ration order revised, issued on March 24, 1942 (ration order 4, first issu was a temporary expedient allowing used typewriters to go t highly restricted list of war manufacturers), rationed new a used typewriters by certificates to qualified eligibles showing ne Non-portables could be secured by firms with A-1 or higher r ings, and portables went to firms with A-3 or higher ratings, p a number of other important organizations, such as governm agencies, newspapers, etc. Used non-portables and new portab could be rented by any group until such time as they were cal in. (This date was later set at Sept. 15, 1942 for used n portables.)

The war curtailed the supplies of sugar from the beginni The Philippines and Hawaii were cut off or curtailed as sour of supply, and in the Caribbean, submarine activity and shipp space priorities limited our ability to import sugar. According sugar had to be rationed, and the OPA was called on to adm ister the first comprehensive rationing program. Coupon rati ing, with an equal amount to everyone, was decided upon.

The immense job of printing and distributing 180,000,000 rat books was finally completed by May 6, 1942, with the help the nation's schools and a temporary army of volunteers, a rationing began. The first coupon of the 28 in the War Rat book I was good for one pound of sugar over a period of t weeks. Later the coupon values and length of the periods w adjusted from time to time according to the supply situation.

On May 15, 1942, bicycles began to be rationed by certific to qualified eligibles showing need. The primary purpose of t rationing was to make available this substitute for automobile public transportation to those whose work was vital to the w or the community. On July 9, the qualifications were liberali to speed up the movement of bicycles.

On May 15, 1942, gasoline rationing was begun in 17 east states and the District of Columbia. Tankers had been divert to war uses, causing a shortage on the east coast which the u of rail tank cars, although greatly increased, could not make Rationing was done by the issuance of cards to be punched the filling station attendant when the gasoline was sold. T basic ration was three gallons a week, with additional amou for necessary occupational driving, and unlimited amounts t few drivers whose needs could not be calculated and who w important to the community, such as doctors. As there was check on the seller, violations were very frequent in cases wh the attendant knew the driver.

On July 22, 1942, a new system was inaugurated in the ea rationing gasoline by coupons. The basic ration was four gall a week (later lowered to three), with an additional ration occupational driving up to a maximum of 64 gallons for th months. In addition, a certain number of qualified drivers w allowed extra amounts above that where conditions warrant Filling stations were required to turn in coupons received in or to obtain supplies, thus helping to achieve compliance. Th coupons were distributed in the same manner as were the su coupons.

Farm machinery and equipment became one of the warti casualties under the shortage of steel. Manufacture was shar curtailed, and the OPA was directed to ration supplies to obt e best distribution of available supplies. In this instance, the epartment of agriculture, through its AAA program, was equipped administer the program, and on Sept. 15, 1942, the OPA dele- ated its authority to the secretary of agriculture, who began the tioning of farm machinery according to need and to the extent at it would help production.

Rubber boots and rubber work shoes were rationed to the ublic on Oct. 5, 1942 by certificates through the local boards cording to qualified need. Some types of footwear were dis- ontinued, and the attempt was made through rationing to scale own the use of rubber by issuing lighter weight protective foot- ear where possible. Civilian rubbers, gaiters, etc., which could made almost entirely from reclaimed rubber, were not in- uded in the rationing program.

As the winter of 1942 approached, it became apparent that el oil, along with gasoline, would be a war casualty on the east ast, and even in the midwest. On Oct. 22, a fuel oil rationing ogram became effective in 30 eastern and midwestern states d the District of Columbia. Coupons were issued according to formula which weighted factors such as average degree-day mperatures of the region, floor space, consumption during the evious year, plus special considerations for young children and k persons. An average cut of one-third of the 1941 consump- on was the necessary goal of the program. Considerable diffi- lty was experienced because of the complexity of the formula d the regulations, causing some public resentment.

On Nov. 11, 1942, OPA again delegated authority to the secre- ry of agriculture, under a directive from the WPB, to ration ilk cans and farm fencing.

As in the case of sugar, coffee supplies diminished because of bmarine activity and priority shipments. As the stocks ran w on retailers' shelves, the OPA was directed to ration coffee. is was done with the sugar ration book, using the last coupons coffee coupons. On Nov. 29, 1942, coffee rationing began, with e initial coupon (No. 27) good for one pound of coffee over a e week period. All consumers, except those under 15 years of e, were included in this program.

During 1942 the rubber situation had grown worse rather than tter. New tires were rationed, but no attempt was made at st to control the use of the biggest stock of rubber in the untry, that on the wheels of the country's automobiles. The ruch report, submitted to the president at the end of the sum- er, recommended immediate mileage rationing to preserve the e of these tires, in order to maintain essential civilian activities. cordingly, on Dec. 1, 1942, after nationwide distribution of soline coupon books in the manner of the second gasoline ration- g program on the east coast, gasoline rationing began through- t the United States. Coupled with it, was a tire-inspection pro- am, providing for a complete periodic check on the nation's es. In addition, all tires over five per car were required to be rned in to the government as a stockpile or scrap rubber.

The last ration program of the year was the certificate ration- g of coal and oil stoves to consumers on the proof of need. It gan on Dec. 18, 1942. As production was curtailed, it was ared that the fuel oil ration would cause a run on the available pplies.

As the year ended, a new type of rationing was being prepared. ortages of meat were apparent throughout the butcher shops the country, and canned goods, especially processed fruits and getables, were disappearing from the grocers' shelves.

The new type of rationing planned to handle this was point tioning. Under this plan, an entire group of similar products ere to be rationed, with a coupon price set on each individual em, allowing the consumer to spend his points as he chose among e rationed articles. On Dec. 27, it was announced that processed fruits and vegetables were to be rationed Mar. 1, 1943, and meats shortly thereafter. (*See* also BUSINESS REVIEW; PRICE ADMINISTRATION, OFFICE OF.) (L. HN.)

Rayon and Other Synthetic Fibres.

With a 1942 production the highest in history, the rayon yarn industry of the world went through 12 months of accelerated introduction into many new fields of both military and civilian use. The total production of rayon filament yarn and rayon staple fibre in the United States was 10% larger in 1942 than in 1941. The increase in filament yarn was 6% greater and the staple fibre 25% greater. Consumption of staple fibre alone in 1942 of domestic (U.S.) origin represented an increase of 9% over the 1941 combined figures of domestic production and imports.

Comparative figures of rayon production in the United States are given in Table I for the period 1937–42 inclusive. Table II shows the relative position of rayon with that of other principal textile fibres.

In other countries as well, rayon took a prominent position. In France, according to official reports, a new rayon producing company was formed during the spring of 1942 known as France Rayonne, through which the German staple fibre and rayon producers cartel took control of the French industry. Germany was to supply all of the cellulose raw material to France. An adjunct of this development was the formation of a separate company to exploit the bullrush growth in Provence alleged to contain 97% of alpha cellulose. The German cartel was reported to control 33% of the venture.

Rayon, in Great Britain, came under new government control with the introduction of so-called utility cloths, or the only cloths in which rayon could be used. In July 1942 the British Standards Institution in order BS/BOT 23, issued specifications for 16 groups of cloths in all acetate, all viscose, all cuprammonium, acetate warp, viscose filling, spun rayon and filament, etc. Details of the specifications were type of cloth, use (lingerie, linings, etc.), threads in warp and filling, weave, finish and requirements as to fastness to washing, degree of fading and fastness to perspiration. The variety of fabrics that might be produced from a limited range of yarns was commented upon favourably by British manufacturers. Altogether, 56 constructions were stipulated. The British Rayon council and the Rayon and Silk association adopted, in 1942, a standard trade terminology for rayon as follows:

Rayon yarn: Continuous filament rayon yarn.
Rayon fabrics: Fabrics made from rayon yarn.
Rayon waste: Waste from rayon yarn.
Rayon staple: Rayon staple fibre.
Spun rayon yarn: Yarns spun from rayon staple.
Spun rayon fabrics: Fabrics made from spun rayon yarn.
Spun rayon waste: Waste from rayon staple and from spun rayon yarn.

In the United States market, 1942 saw many new military uses for the synthetic fibres, the most notable the rayon tire cord. In Oct. 1942 the United States government issued orders for five rayon producers to convert their yarn production to

Table I.—*United States Rayon Production in Millions of Pounds*

	1942	1941	1940	1939	1938	1937
Rayon filament yarn . .	479.3	451.2	390.1	328.6	257.6	321.7
Rayon staple fibre . . .	153.3	122.0	81.1	51.3	29.9	20.2

Table II.—*Consumption in Millions of Pounds*

	1942	1941	1940	1939	1938	1937
Cotton	5,618.6	5,208.5	3,961.7	3,629.7	2,918.7	3,657.1
Silk	not available	25.3*	35.8	47.3	51.7	53.6
Wool	597.4*	652.2	411.1	396.5	284.5	380.8
Rayon	468.8	452.4	388.7	359.7	274.1	267.1

*11 months actual, one month estimated.

that suitable for tire fabric. The order was expected to increase the output of the high tenacity type of rayon needed from 50,000,000 to 100,000,000, possibly to 150,000,000 lb. annually. The government expected that one-third of the viscose yarn production of the United States would go to military tires. But this was only part of the huge consumption of rayon and synthetic fibres for war use. The entire output of nylon yarn was allocated to the military, primarily for parachute fabrics known as "escape chutes." The amount produced was a military secret. Vinyon, fortisan and other variations of rayon, such as the substitute for kapok known commercially as bubble-fil, were being employed in a variety of ways in self-sealing gasoline tanks; aerial delivery and cargo chutes; fragmentation bomb chutes; tow targets; life preservers; mosquito netting canopies; flags, insignia, etc.; tapes, lines and webbings; uniform materials for the maritime service, the women's auxiliary services and the parachute troopers; sleeping bags and other windproof fabrics; and life boat fabric.

In the civilian field, rayon was the only fine fibre left to the hosiery makers when nylon was removed from the civilian market in Feb. 1942. The hosiery mills consumed, in 1942, 15% of the viscose yarn shipped, as compared with 8% in 1941. In 1942 former users of silk and wool in fabrics also increased their demands. In all, it was estimated that in 1942, new users took about 25% of the rayon available.

A new source of demand for rayon civilian fabrics made its appearance late in 1942 for the first time and was a potentially major factor for 1943. This was the demand from the North African and other outlying military areas where the lend-lease program would be utilized in rehabilitation of the civilian population as well as in providing a medium of payment for services and goods used by the U.S. forces. Rayon fabrics, because of their versatility both as to price and types, were heavily in demand for shipment to these areas. While purchases made in 1942 were for immediate delivery, it was expected that a long-range program for 1943 would include heavy shipments of rayon for future delivery.

Production of rayon in South America and Mexico also progressed. In April 1942 machinery of a New Jersey rayon yarn producer was dismantled and shipped to Mexico to begin operation around August 1. One of the larger rayon (acetate) producers in the United States was also combining with Mexican interests to construct a new plant at the cost of $6,000,000 which would employ more than 3,000 persons. Chile started operations in 1942 in its new rayon filament yarn plant, making coarse denier sizes of yarn from imported wood pulp. Of historical interest was the decree issued on Aug. 16, 1942, by the Argentine government, making compulsory use of the term "rayon," and prohibiting use of the term "artificial silk." (*See* also SILK; TEXTILE INDUSTRY.) (I. L. BL.)

Receipts, Government: *see* BUDGETS, NATIONAL.

Reciprocal Trade Agreements: *see* INTERNATIONAL TRADE.

Reclamation: *see* CANALS AND INLAND WATERWAYS; FLOODS AND FLOOD CONTROL; FORESTS; IRRIGATION; SOIL EROSION AND SOIL CONSERVATION.

Reconstruction Finance Corporation.

The functions and activities of the Reconstruction Finance corporation were administered in 1942 under the direction and supervision of the secretary of commerce. The RFC has succession until Jan. 22, 1947, unless sooner dissolved by act of congress.

In 1942 the main function of the corporation was the financing of various war activities, such as procurement of materials, construction and operation of war plants, and writing of war damage insurance. Such financing was provided both to private business and to the corporation's own subsidiaries—Defense Plant corporation, Defense Supplies corporation, Metals Reserve Co., Rubber Reserve Co., and War Damage corporation. The corporation was also authorized to make loans to public agencies, financial institutions, insurance companies, railroads, drainage, levee, irrigation and similar districts, mining and fishing industries, public school districts; subscribe for and make loans upon nonassessable stock of banks, trust companies, insurance companies, national mortgage associations, mortgage loan companies; make loans for the carrying and orderly marketing of agricultural commodities and livestock, and exportation of agricultural or other products; and purchase securities from Public Works administration. (C. B. H.)

Reconstruction Finance Corporation—Summary of Activities Feb. 2, 1932, through Dec. 31, 1942

	Authorizations	Disbursements	Repayments and Other Reductions
For benefit of agriculture	$ 2,602,281,430.83	$ 1,450,848,509.84	$ 1,449,453,719.76
To open banks to meet demands of depositors	1,334,805,161.08	1,138,251,619.27	1,086,932,446.99
For distribution to depositors in closed banks	1,419,531,473.07	1,056,570,252.24	1,021,849,899.44
For bank capital (including Export-Import banks $176,500,000, and Federal Home Loan banks $124,741,000)	1,646,046,189.00	1,471,132,831.56	783,712,091.28
For self-liquidating projects (including PWA municipal securities)	1,295,122,465.62	1,069,317,914.15	906,582,243.92
To business enterprises	663,414,534.26	339,386,574.72	215,483,491.23
For loans for national defense and war activities	8,839,576,367.98	5,071,253,010.92	1,934,987,299.03
For loan to Great Britain and Northern Ireland	425,000,000.00	390,000,000.00	30,262,605.43
For purchases of stock—national defense	125,000,000.00	26,000,000.00	
To drainage, levee and irrigation districts	148,662,048.64	99,668,742.35	33,003,471.20
To railroads (including PWA railroad securities)	1,595,476,435.54	1,035,626,714.70	575,187,677.08
For loans to and capital of mortgage loan companies (including $25,000,000 capital the RFC Mortgage company and $11,000,000 capital Federal National Mortgage association)	767,342,930.95	627,269,524.67	393,033,394.72
For loans to and capital of insurance companies	151,527,250.19	137,668,209.81	103,709,493.78
To building and loan associations (including receivers)	178,402,559.59	133,134,867.90	128,463,588.03
To public school authorities	25,674,050.00	23,242,175.00	22,399,400.00
For catastrophe rehabilitation loans	16,184,520.95	12,003,055.32	11,066,565.71
To state funds for insurance of deposits of public moneys	13,087,715.88	13,064,631.18	13,064,631.18
For mining, milling and smelting businesses	19,124,100.00	8,607,909.40	3,362,751.78
For loan to Export-Import bank	25,000,000.00	25,000,000.00	25,000,000.00
For other purposes	669,057.07	614,813.85	614,813.85
Total—By directors of the corporation	$21,291,928,290.65	$14,128,661,356.88	$ 8,738,169,583.81
Allocations and loans to other governmental agencies and for relief by direction of congress	3,724,387,499.75	3,399,503,917.39	2,958,322,941.10*
GRAND TOTAL	$25,016,315,790.40	$17,528,165,274.27	$11,696,492,524.91†

*Includes $2,741,144,685.09 of corporation's notes cancelled pursuant to act of congress, approved Feb. 24, 1938.
†Includes $45,669,005.09 credited on indebtedness for property taken over for debt.

Red Cross.

Entry of the United States into World War II resulted in unprecedented expansion of American Red Cross activities at home and abroad during 1942. More than half of the Red Cross budget was devoted to the U.S. armed forces. At the request of the army and navy, scores of Red Cross clubs for service men were established in the British Isles, Iceland, Australia, New Caledonia and other foreign countries in which U.S. troops were stationed; 461,493 pints of blood were collected from volunteer donors for army-navy blood plasma supplies; 45,648,300 surgical dressings, made by chapter volunteers, were delivered to the armed forces.

Military and civil defense activities at home also increased. Red Cross field directors at army and navy stations and hospitals counselled and assisted 637,585 service men and their families with the co-operation of local chapters; the Red Cross recreation ogram for convalescent patients in military hospitals was oadened; medical case and social workers were recruited to eed the recovery of convalescent service men by relieving eir minds of personal problems and worries; Red Cross first-aid d water safety courses were made available to the army and vy for use in the military training program. The Red Cross o embarked upon a program to enroll 98,000 nurses eligible military service in its first reserve, the reservoir of the army d navy nurse corps.

In the civil defense program, Red Cross first-aid instructors ined and certified 3,616,254 persons. First-aid detachments th 8,287 persons were organized to protect life in factories, ice and store buildings, schools and other public places. To eviate the shortage created by the large number of physicians, rses and medical technicians entering the army and navy, 5,214 persons were trained in Red Cross home nursing. An ditional 30,000 women were enrolled as Red Cross nurse's es, a volunteer corps whose members take over routine nursing ties in hospitals and clinics. Through the Red Cross nutrition vice, need of proper food and diet to cope with wartime conions was stressed with 157,288 women completing an extensive cational course.

Chapters perfected their disaster preparedness organizations in as vulnerable to enemy attack. Under agreements with the ice of Civilian Defense and the Office of Defense Health and lfare Services, the Red Cross assumed responsibility for the ergency mass care of civilians affected by enemy action, inding temporary shelter, feeding and clothing. The number mobile disaster units, made up of trucks, canteens, ambulances l other vehicles was increased, and disaster relief workers in coast chapters took over the task of assisting seamen and sengers of torpedoed vessels.

At a cost of $1,235,295, the Red Cross aided 72,434 victims 174 natural disasters in 42 states. Membership in the Red oss' 3,748 local chapters and more than 6,000 branches inased to 15,129,833 adult and 14,887,792 junior members in 2.

n three years of war more than 20,000,000 people in Europe, rica and Asia had received $60,000,000 worth of assistance ough the American Red Cross foreign war relief program. oroximately $4,000,000 worth of hospital and medical supplies e shipped to Russia; in China 4,245,000 persons were aided an additional $4,000,000 worth of medical and food supplies.

CROSS MOTOR CORPS in a parade of 10,000 uniformed women down Fifth ue, New York city, April 11, 1942

U.S. CIVILIANS donated blood through the Red Cross in 1942 to be used in transfusions on battlefields. A nurse is shown taking the blood pressure of a donor

Food and medicine were sent in large quantities to Greek and Polish refugees in the middle east. Milk concentrates and clothing were sent to the children of unoccupied France; clothing, hospital and medical supplies to the people of Great Britain.

More than 500,000 food parcels were sent to the International Red Cross in Geneva for distribution to prisoners of war in Europe. Food and relief supplies also were shipped to U.S. prisoners of war in the far east; large quantities of Red Cross supplies in Shanghai were saved from confiscation and distributed to imprisoned Americans and citizens of Allied countries.

At home, 2,719,581 volunteers accomplished the following in 1942: produced 96,661,757 surgical dressings and 15,501,512 garments and miscellaneous articles for home and abroad; transcribed into Braille 461,553 pages and duplicated 302,228 pages for distribution to the blind; served meals to 587,291 persons through the canteen corps; 26,604 active members of the motor corps made 552,240 trips, principally in behalf of disabled veterans and crippled children; 11,452 Gray Ladies served in hospitals; home service workers made a total of 110,198 visits in handling cases of enlisted men and their families; 28,812 members of the staff assistants' corps gave their time performing general office work in chapters. (G. S. Br.)

The World.—Rapidly spreading war during 1942 brought corresponding extension of Red Cross activities in the various national Red Cross societies and their two international organizations, the International Red Cross committee and the League of Red Cross Societies.

War in the Pacific and the capture of many prisoners by the Japanese extended the work of the International Red Cross committee to that area. Although Japan had not ratified the convention of Geneva regarding the treatment of prisoners of war, agreement to abide by its terms was given in Jan. 1942 and delegates of the international committee were accepted for Japan proper, Shanghai and Hongkong. The committee's Central Agency for Prisoners of War in Geneva, Switz., continued to serve as a clearing house for information about prisoners of most of the belligerents and its delegates visited prison camps in Europe, the far east, Africa, Australia and at many points in the western hemisphere. These delegates, always neutral and usually of Swiss nationality, observed the treatment of prisoners, talked to the men in private, submitted reports for both the detaining power and the prisoners' own country, and arranged for the distribution of supplementary supplies of food, clothing and comfort articles.

The International Red Cross committee continued to handle an increasing volume of civilian messages and inquiries about persons in war-affected nations, maintaining for the most part the only method of communication between persons in one belligerent country and their friends and relatives in enemy territory. During 1942 the committee also developed an agency for the operation of ships carrying prisoners of war relief supplies and given safe conduct by the belligerents.

The League of Red Cross Societies—the federation of the 63 Red Cross and Red Crescent societies of the world—continued its exchange of information among the societies and its promotion of Red Cross activities by the publication of bulletins in various languages and by visits to societies by the league's experts. The Pan-American bureau of the League of Red Cross Societies sent specialists in disaster relief and nursing services to Latin-American Red Cross societies, assisting in the development of these activities. The Joint Relief commission of the International Red Cross, formed by the league and the international committee, arranged for the extension of relief to civilian war victims and sent delegates to observe the distribution in many of the occupied European countries. (*See* also PRISONERS OF WAR.) (P. E. R.)

Reeves, Jesse Siddall (1872–1942), U.S. educator, was born Jan. 27 in Richmond, Ind. Educated at Kenyon and Amherst colleges, he did graduate work at Williams college and Johns Hopkins university and was admitted to the bar in 1897. He founded the University of Michigan's department of political science, joined the staff of that school in 1910 as professor of political science and in 1931 became professor of American institutions, a post he held until his death. Previously he had taught at Johns Hopkins and at Dartmouth. He served as technical adviser to the American delegation to The Hague conference on codification of international law, was lecturer at the Academy of International Law at The Hague and was a member of the Pan-American commission of jurists for the codification of international law. He died at Ann Arbor, Mich., July 7.

Referendum: *see* INITIATIVE AND REFERENDUM.
Reforestation: *see* FORESTS.
Reformed Church: *see* PRESBYTERIAN CHURCH.

Refugees. The tide of refugee movement was predominantly eastward in Europe during 1942. The most substantial movements were of unknown numbers of civilians in flight before the German armies as they advanced into Russia and of 200,000 to 300,000 Jews deported in the first instance from cities and towns in Germany, Austria and Czechoslovakia to the overcrowded ghettos of Warsaw, Lublin and Lwow in occupied Poland and later from these concentration centres to unknown destinations and obscurity in eastern Europe.

Earlier, more than 1,000,000 Polish refugees were driven from western Poland, which had been incorporated into the German reich, into the Gouvernement General of Poland and into southern and eastern Poland, occupied in the first instance by soviet Russia and later by Germany as her attack on the U.S.S.R. rolled eastward.

To meet the increasing shortage of manpower resulting from the war, Germany recruited labour from all countries in Europe. To the 1,500,000 French war prisoners employed in industry and agriculture in the reich were added those who went voluntarily under contract to Germany from the allied and neutral countries. Larger numbers followed from the occupied countries whose enlistment was forced either by the lack of other employment or by the imposition of repressive measures such as restricted food rations or the threat of imprisonment or internment. It was estimated that foreign labourers in Germany totalled more than 2,000,000 in 1942. Refugees in southern France enlisted for labour in building roads across the desert in North Africa to avoid recruitment for labour in Germany.

Exit westward through the Atlantic ports of Spain and Portugal and through Algiers to Casablanca in Morocco to the western hemisphere was restricted to those central and eastern European and Spanish refugees in southern France, Spain and Portugal who were fortunate enough to secure exit permits from these countries and immigration visas to overseas countries. After the United States and many of the Latin and South American countries entered the war in Dec. 1941 transportation from Lisbon was restricted to occasional sailings of Portuguese and Spanish boats. Less than 10,000 refugees left these ports for places of final destination in 1942.

The westward movement of millions of Chinese war refugees from central and eastern China and the coast cities continued. The movement was not essentially different in character from that of the preceding years. Peasants and unskilled labourers moved short distances along railroads and highways in flight from the Japanese forces to return to their homes when the military action had ceased or the areas were recaptured. The more mobile elements of the Chinese population trekked farther westward participating in the general movement of industry and cultural institutions. Whether the westward movement will prove permanent will depend on many factors involved in the peace settlement at the end of the war, chiefly the organization of the industrial and business economy of China and the strength of its government administration.

Through the arrest and round-up of Jewish refugees in Paris late in July 1942 the world became aware of the persecutions to which the Jewish communities of central and eastern Europe had been subjected earlier at the hands of their German oppressors. Mass deportations which had taken place on a wide scale in the east and had been hidden by nazi censorship were instituted in western Europe where news to the outside world could not so easily be controlled. Men and women of all ages were taken from their homes at night, herded into concentration camps and deported eastward. Families were separated, over 2,000 children were left behind by their parents and many suicides were reported from Paris. Protests from the French public and church authorities were of no avail. Several thousand evaded arrest and fled over the border into Switzerland, others over the demarcation line into unoccupied France.

Within a few weeks similar deportations were instituted in southern France. All exit permits were cancelled in southern France and it was announced that none would be reissued to Jews of other than French nationality. Over 5,000 refugees escaped over the French border into Spain and Portugal. Deportations of Jews were also under way at the same time in Norway, the Netherlands and Belgium.

When Germany occupied southern France in Nov. 1942 all avenues of escape from Europe were cut off except for those who had managed to enter Spain and Portugal. It was estimated that from 50,000 to 60,000 central European refugees remained in southern France. The occupation of North Africa by British and American forces brought prospects of release to some 20,000 eastern and central European and 25,000 or more Spanish refugees who had escaped to that area in previous years.

On Dec. 17, 1942, a joint statement was issued by the governments of Belgium, Czechoslovakia, Greece, Luxembourg, the Netherlands, Norway, Poland, Union of Soviet Socialist Republics, the United Kingdom, United States and Yugoslavia and by the French National committee, giving cognizance to the persistent reports of deportations, mass executions and enforced ɔour practices instituted by the German authorities against e Jewish race in Europe and condemning these persecutions as "policy of cold-blooded extermination."

Action by the League of Nations High Commissioner for fugees and the Intergovernmental committee which grew out the conference of 32 governments summoned by President anklin D. Roosevelt at Evian, France, in 1938, was severely tricted by the war. Interventions on behalf of individuals d special groups of refugees were made with countries of nsit or of final immigration with respect to releases from ernment and admissions. These organizations and the Inter- ional Labour Office were giving consideration at the end of the ır to plans for more adequate treatment of the refugee problem er the war. It was generally accepted that the refugee blem would have to be treated as an essential part of the ger problem of dislocated population groups. (*See* also CHILD ELFARE; JEWISH RELIGIOUS LIFE.)

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ichenau, Walter von (1884–1942?), German army officer, was born in Karlsruhe, Ger- ny. The son of a general of the artillery, he followed his ıer's footsteps, joining an artillery unit in 1903. During rld War I, he served on the German general staff and in the ly days of the nazi regime, he was regarded as one of Hitler's ourites. He was raised to the rank of a lieutenant general in Polish campaign in 1939 and was made a field marshal in y 1940 in recognition of his generalship in the French blitz- g a month earlier. Marshal von Reichenau was in command he German army that scored initial successes against Marshal lenny's Russian forces in the Ukraine campaign in the fall of 1. In Nov. 1941, von Reichenau's armies met defeat at the ds of Marshal Timoshenko and he was driven out of Rostov. erne dispatch Jan. 17, 1942 said Marshal von Reichenau died apoplexy while travelling back to Germany "for reasons of lth."

isner, George Andrew (1867–1942), U.S. Egyptologist, was born Nov. 5 in In- ıapolis. He received his Ph.D. degree from Harvard university took graduate work there in Semitic languages. From 1905 942, he was in charge of excavations in Egypt sponsored by vard university and the Boston Museum of Fine Arts. His t famous discovery was the alabaster sarcophagus of Queen epheres, mother of Cheops. His excavations of tombs and amids in the Anglo-Egyptian Sudan shed new light on Ethi- n culture. Dr. Reisner compiled an outline of the history ncient Ethiopia from 750 B.C. to A.D. 350. His findings were rded thoroughly and in minute detail, describing vividly the ent customs and culture of the Pharaohs. He died at the amids of Gizeh, June 7.

lander, Lauri Kristian (1883–1942), Finnish statesman, was born May 31 and educated at Helsinki university. A member of the agrarian y, he sat in the diet from 1910 to 1913 and from 1917 to 9, and was minister of agriculture from 1918 to 1920. He president of Finland, 1925–31. Long considered Finland's ing authority on agriculture, he was credited with the suc- of his country's varied farm projects. Dr. Relander died Feb. 9 in Helsinki. (See *Encyclopædia Britannica.*)

Relay Racing: *see* TRACK AND FIELD SPORTS.

Relief. President Roosevelt's appointment of Governor Herbert H. Lehman of New York state as director of Relief and Rehabilitation in Occupied Countries marked a new direction for relief in the United States. Money from the Lend-Lease fund will be made available as required, and while many of the details of its administration are necessarily in the formative stage, its announced policy is to work in connection with the military and civil governments which may be set up in various countries, with special attention to such measures as will most effectively place their citizens upon an independent footing. Two of the outstanding public welfare officials of the United States, Fred Hoehler of Chicago and William Hodson of New York city, were sent by Governor Lehman to Africa to explore the needs and possibilities.

Trends in general and in work relief noted during 1940 and 1941 were continued on even an accelerated rate. In England, whereas there were 128,000 persons on the rolls of the assistance board receiving relief (unemployed workers and those in need because of enemy action) in March 1941, the number had shrunk to 44,100 in March 1942 (the latest date for which figures were available). Money cost showed a proportionate decrease, from £12,767,000 in March 1941, to £4,500,000 in March 1942. Comparable figures for the United States were not so striking, but present the same picture. In Sept. 1941 there were 818,000 families on relief and 1,007,000 men and women on Work Projects administration (work relief), whereas in Sept. 1942 the numbers were 528,000 and 382,000 respectively. Payment for general relief decreased from $18,503,000 in Sept. 1941 to $12,998,000 in Sept. 1942; and for work relief from $60,439,000 to $26,432,000 in the same period. In Dec. 1942 the president ordered the closing of all federal works projects under this category, and by Feb. or March 1943 all expenditures for this method of relief were to cease.

However, in what is called in the United States categorical assistance—aid to the blind, aged and dependent children—there was a gradual and uneven increase in both United States and Great Britain. The assistance board of Great Britain granted 987,235 supplementary pensions in March 1941 to the aged and dependent widows, at a cost of £15,438,000, whereas in March 1942 the figures had risen to 1,133,597 persons and £27,500,000. The story again was not quite so striking in the United States, where recipients of old-age benefits increased from 2,205,000 to 2,245,000 between Sept. 1941 and Sept. 1942, and the money involved in these benefits increased in the same period from $46,190,000 to $50,318,000. In aid to dependent children, comparable figures for the same interval were 384,000 and 382,000, showing a slight shrinkage and $12,565,000 to $13,054,000 change in benefits. It was the general opinion of those closest to the situation that not only were children going to work younger than the assistance plan anticipated, and so thus reversed a trend that had been constant and unmistakable after the enactment of the Social Security bill in 1935, but the same authorities saw evidence that the same influences depressing the upward curve in old-age assistance were also at work: men and women who might in a glutted labour market find it impossible to find work or not even attempt it succeeded in securing employment under war conditions, and thus either did not apply as they reached the eligible age, or took themselves off the rolls by getting a job. No such reversal of trends, however, was observable in Great Britain, probably because the drain on manpower was felt at least two years earlier than in the United States. In the United States, and to a less degree in Canada, there was widespread criticism directed against assistance of almost any sort, except old age, based on the failure of most of the public to have a realistic understanding of the wide variety of factors, other than the economic one of unemployment, that created dependency. Hence there was impatience of any program to liberalize assistance or to make eligibility less stringent. In Great Britain, on the other hand, the social services, including assistance, were liberalized, as in the supplementary grants to the aged, during the course of the war.

The war chest movement, started in 1941 as a natural expansion of the peace time community chest in Canada and the United States, collected more money than in 1941. Strictly for regular activities, eight chests in Canada, reporting up to the end of November raised in 1942 the sum of $2,278,809 as against $2,180,771 in 1941. In the United States, 257 chests reporting at the same time raised $65,485,527, as against $51,927,323 in 1941. In both countries, these sums were in addition to money raised for specific war relief, such as navy or army relief or the Red Cross, none of which was included in the various chests. The Red Cross made no appeal for war funds in the U.S.A. in 1942, but planned to do so early in 1943.

In June 1942 the United States congress brought that country into line with the other nations of the allies by passing an allotment and allowance act, whereby the enlisted man earning not more than $90 a month might allot $22 (or more, by a later revision) to a spouse or dependent relative, to which the government added an allowance, whose size varied with the number of dependents and their relationship to the enlisted man. In Great Britain and Canada the administrations of allowances to dependents of enlisted men were flexible enough to permit them to meet exceptional situations, so likely to occur in any general scheme, but no such discrimination was possible in that of the U.S.A. In World War I, the Red Cross filled in all the gaps between needs of the soldier or his dependents and governmental provisions. In April 1942, however, an agreement was made between the Federal Social Security board and the Red Cross whereby the latter assumed responsibility for needs of enlisted men and for informational service either to the men or their families. On public welfare authorities lay responsibility for meeting need arising among families of enlisted men.

The dominating place of the war forced social agencies, public and private, into new activities. In London, for example, new services for refugees from British territories were instituted; homes for aged evacuated from their own homes by enemy action have been opened; means for distributing American and Canadian war relief set up, and bureaus for information to those made homeless by bombing or evacuation of dangerous areas established, as well as various provisions for their emergency care In the Americas, up to Jan. 1, 1943, untouched by actual violence of war, certain dislocations of communities and families demanded immediate attention such as care of children of working mothers, housing and community facilities in areas having a sudden growth as well as attention to provision for recreation for the young.

This sudden emergence of new needs and means for meeting them gave rise to some overlapping and confusion. In the United States two federal organizations were launched, the Office of Civilian Defense, and the Office of Defense Health and Welfare Services, which acted as stimulators and co-ordinators of local activities, and in certain functions even granted aid to local projects. In Great Britain, the Assistance board retained the responsibility for giving the necessary relief or for co-ordinating the efforts of other agencies, although perhaps not entirely with success any more than in the more loosely organized Americas, as complaint was made early in 1942 that the Lord Mayor's fund of London of over £2,000,000 was used quite without reference to what other authorities were doing in the same field. Somewhat the same criticism was voiced in the United States with reference to the army and the navy relief funds.

For any solicitation of funds at all connected with needs created by war at home or abroad, the Canadian government created the National War Charities Fund Advisory board, and in the United States the War Relief Control board was established in the state department by executive order. These bodies reviewed budgets, recorded results of solicitations and, when deemed fitting, advised the public when enough had been contributed, as the control board did in November, by stating the war and navy funds had collected enough to meet their requirements. (*See* also Child Welfare; Municipal Government; Social Security; Social Service; Unemployment.)

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Relief, War: *see* War Relief Contributions.

Religion. The conflict between war and conscience furnished a central issue for the discussions and utterances of nearly all church bodies during the year. Majority opinion in religious circles found ground for moral judgment in a balancing of the enormous values involved in the outcome of the war against its colossal evils. The report on the state of the church presented to the biennial meeting of the Federal Council of Churches of Christ in America declared that "there are moral issues at stake in this war for which the Christian as Christian should have special concern." The Gallup poll in May indicated that six out of ten Protestant and Catholic ministers of the United States thought they should support the war and give full co-operation to the government But strong pacifist minorities continued to voice positions within the federal council and in numerous denominations, and the declarations of Protestant bodies in support of the war frequently were moderated by the feeling that the churches supported the government too uncritically during World War I and by the resolve that the churches themselves must not split on the war issue

The most representative utterances of the churches declared that all governments should be kept under moral criticism and that in no absolute sense could the cause of any nation be identified with the will of God.

Other ethical problems forced to the front by the breakdown of civilization and prominent in discussions and utterances of practically all churches included those of anti-Semitism, and of other racial minorities. There was serious effort to understand the revolutionary social changes under way in the world in the light of Christian ideals and a growing inclination to raise the question of serious modifications in the social order after the war. The "leftist" tendencies of the new archbishop of Canterbury, as voiced in his Albert hall speech of Sept. 26 and in numerous publications, did not prevent the British government from raising him to the highest position in the Anglican church Numerous clear-cut declarations on social ethics came from Catholic sources, for example that of the Inter-American Seminar on Social Studies in September in elaboration of the well-known papal encyclicals.

Under war pressure significant changes occurred in the relations of churches and communions to one another. War pressure forced together contending creeds and sects. Closer relations between Protestants and Catholics were developed most effectively in England. A strong popular movement of religious revival and application to social issues was conducted under a joint committee of the Catholic "Sword of the Spirit" movement and the Religion l Life movement of the Anglican and free Protestant churches. eat public meetings were alternately chaired by the archbishop Canterbury and the Roman Catholic cardinal. Even more matic were the concurrent utterances of Protestant and Roman tholic leaders in France in condemnation of anti-Semitism and mistreatment of refugees. On the other hand, eastern Ortho- c churches in nations involved in war complained against Roman tholic activity in territory traditionally Orthodox, and the erican Roman Catholic hierarchy in a pronouncement in No- nber criticized Protestant missions in South America as con- ry to the good neighbour policy in a normally Catholic land. s got a somewhat pointed reply in a resolution passed by the eral council of churches. Protestant interchurch relations ved toward unity on numerous lines. (*See* CHRISTIAN UNITY.)

The terrible human vicissitudes which go with war and the akup of civilization were naturally reflected in the institutional tunes of the churches. In the totalitarian and conquered coun- s some were oppressed to the point of virtual extinction; and church everywhere was hindered in activities believed to be ential to its mission. Vast population movements in the United tes heaped up unassimilated masses of people in temporary mmunities and housing projects around great defense industrial tres, withdrew virility, leadership and financial strength away n tens of thousands of smaller communities and made the lot he churches at both ends of the process exceedingly difficult. supply of ministers was greatly reduced by those who went war as volunteers and the greatly expanded demands of the plaincy for the armed forces. In the United States the finan- support of religion, in general, held up fairly well but there e widespread fears as to the effect of immediately impending ation. Numerous church colleges and other institutions were ed into financial straits and faced possible obliteration.

reative religious thought suffered a decline. The year 1942, ever, saw the publication of a number of competent Biblical lies, as well as a considerable outpouring of devotional litera- , much of it aimed at furnishing spiritual comfort and lance to soldiers.

Widely diffused concern for the postwar world order, expressed ess formal fashion, must be regarded as one of the primary gious phenomena of the year. This concern strongly united e who differed as to the war. It was reflected in the United es by the studies and conferences of the influential commis- on the basis of a just and durable peace, set up by the eral council, and by very numerous declarations and publica- s by British religious leaders. Meanwhile the church's works mercy and relief for war prisoners and refugees and the sup- of orphaned missions, cut off from their parent churches by , went steadily forward. The rehabilitation of the European rches and Christian institutions after the war was formally gnized as a great and peculiar task for the churches as soon ostilities cease. (*See* also CHRISTIAN UNITY; also under sep- e churches.) (H. P. D.)

igious Denominations: *see* CHURCH MEMBERSHIP.

presentatives, House of: *see* CONGRESS, UNITED STATES; CTIONS.

publican Party. When the 77th congress convened for its second session on Jan. 5, 1942, the ublicans held 28 senate and 164 house seats. Senator Charles McNary of Oregon continued as Republican senate leader, Representative Joseph W. Martin, Jr., remained as house er and as chairman of the Republican National committee. resentative J. William Ditter of Pennsylvania headed the ublican Congressional committee, and former Senator John G. Townsend, Jr., of Delaware served as chairman of the Republican Senatorial committee.

Though sharply divided in their attitude toward the administration's foreign policies prior to Pearl Harbor, the Republicans in 1942 supported measures aimed to mobilize the full resources of the nation in the global struggle to defeat the axis. Entrance of the United States into the war virtually put an end to the earlier division between noninterventionists and interventionists. There was a difference of opinion, however, among party leaders on the postwar international role of the United States.

On April 20, the Republican National committee met at Chicago to define the party's position on war issues. Wendell L. Willkie, Republican standard bearer in 1940 and a strong supporter of the administration's international policies in 1941, urged that the committee approve a statement favouring the co-operation of the United States in building a new world order. Senator Robert A. Taft of Ohio, runner up to Mr. Willkie in the 1940 convention, held that the party should postpone a definite stand on postwar reconstruction until after the war.

The resolution on foreign policy adopted by the committee at Chicago said:

> We realize that after this war the responsibility of the nation will not be circumscribed within the territorial limits of the United States, that our nation has an obligation to assist in the bringing about of understanding, comity and co-operation among the nations of the world in order that our own liberty may be preserved and that the blighting and destructive processes of war may not again be forced upon us, and upon the free and peace-loving peoples of the earth.

The committee recorded its opposition to any effort by the administration "to use the war emergency as an excuse for the extension in domestic affairs of unsound economic panaceas," and demanded a drastic reduction in nonessential government expenditures, the elimination of "nonessential domestic regulations," and the "weeding out of inappropriate and unfit political appointments throughout the government's war machinery."

In a "declaration of policy," closely paralleling the committee's Chicago resolution, Republican members of the house, on Sept. 22, asserted that the United States had "an obligation and responsibility to work with other nations," called for "an efficient and unrelenting prosecution of the war," expressed their opposition to a negotiated peace, until the United States and its allies were able to dictate the peace terms, and urged a drastic cut in nondefense spending. Representative Martin, as national chairman, travelled widely during the year, addressing state and local party groups. In his speeches he emphasized the need for a strong Republican party, and the maintenance of the two party system.

Republican candidates were victors in two of the three special elections held in 1942 in each case winning a seat previously held by a Democrat. (*See* also ELECTIONS.)

Following the November elections, Representative Martin issued a call for the national committee to meet at St. Louis on Dec. 7, and announced that he would present his resignation to the committee at that time, in order to give his full time thereafter to his duties as Republican house leader. The committee, on the third ballot, elected Harrison E. Spangler of Iowa as its new head. The defeat of Werner W. Schroeder of Illinois, who led on the earlier ballots, was interpreted by some political observers as a victory for Mr. Willkie, who had opposed the election of Schroeder because of his views on foreign policy.

Senator Taft, a supporter of Schroeder, was selected to offer the committee's war resolution. In this, the committee affirmed the principles of the April 20 declaration, pledging itself "to victory over our foreign enemy, and a just peace when war shall end, and to the preservation of the republic under our constitution."

Shortly before the adjournment of the 77th congress on Dec. 16, Representative Hamilton Fish of New York, outspoken noninterventionist prior to Pearl Harbor, resigned from the House

HAMILTON FISH, Republican representative of the 26th New York district, talking at a political picnic in the summer of 1942. Fish, especially marked for "purging" by the New Deal, won in the election of Nov. 3, 1942. The Republicans gained 47 seats in the house of representatives in this election

Foreign Affairs committee, where he was ranking minority member. On Dec. 17 former Senator John G. Townsend of Delaware was again named head of the Republican Senatorial committee, to serve through the 1944 campaign.

As 1942 ended, the Republicans, with the largest representation in the new national legislature since the 72nd congress (1931–33) prepared to play a more important part in shaping war measures and domestic legislation. (*See* also UNITED STATES.)

(O. McK.)

Retail Sales: *see* BUSINESS REVIEW.
Réunion: *see* FRENCH COLONIAL EMPIRE.

Rhode Island.

A north Atlantic state of the United States, in New England; one of the 13 original states; popularly known as "Little Rhody." Area, 1,214 sq.mi. (smallest of the United States); pop. (1940) 713,346. The urban population was 653,383 (91·6%). Capital, Providence (253,504). Other cities include Pawtucket (75,797); Woonsocket (49,303); Cranston (47,085); Newport (30,532); Warwick (28,757); Central Falls (25,248).

History.—At the regular 1942 session of the legislature, leading measures passed included the following:

An act providing for absentee registration for service men; an act permitting Rhode Island citizens in the armed services to vote by absentee ballots; an act granting leave of absence to state employees who entered the armed forces or were loaned to federal agencies; an act authorizing local housing authorities to convert slum clearance projects to defense housing projects; authorization for local governments to deal directly with the federal government in contracts for defense public works; an act giving general authorization to cities and towns to appropriate for civilian defense needs; an act granting emergency defense powers for the governor and the state council of defense; an act placing the state sickness insurance system under the unemployment compensation board; provision for increase of about 12½% in unemployment compensation benefits; authorization for recipients of old-age pensions to live with relatives and hold insurance up to $500; provision for reduction of employee contributions to the unemployment compensation fund from 1½% to ½% of the individual's wages, the 1% being diverted to the new state sickness insurance fund.

The chief executive officers of the state elected in Nov. 1940 for 1941–42 were: J. Howard McGrath, governor; Louis W. Cappelli, lieutenant governor; Armand H. Cote, secretary of state; John H. Nolan, attorney general; Russell H. Handy, general treasurer. The same officers were elected in Nov. 1942 for 1943–44.

In the 1942 gubernatorial election, McGrath (Dem.) received 139,407 votes; McManus (Rep.), 98,741. Edmund W. Flynn was chief justice of the supreme court.

Education.—During 1941–42 there were in the public elementary schools 61,625 pupils and 2,154 teachers; in junior high schools 22,488 pupils and 963 teachers; in senior high schools (three years) 16,759 pupils and 816 teachers; in senior high schools (four years and vocational) 5,074 pupils and 218 teachers.

Public Welfare, Charities, Correction.—The total number of persons receiving relief in all categories (including a small amount of overlapping among categories) in Nov. 1942 was 17,656, or about 2.5% of the state's population. The total amounts paid out during the year Dec. 1, 1941–Nov. 30, 1942 were as follows: state unemployment relief and general public assistance $1,569,782; soldiers' relief $77,240; old-age assistance $2,078,391; aid to dependent children $773,960; aid to the blind $26,254. In unemployment compensation, the gross amount of benefits paid during 1942 was $4,741,690.40 to 46,114 different individuals. The amount paid into the fund during 1942 was $16,090,619.18. WPA monthly average employment for the year ending June 30, 1942 was 3,693. Total expenditure for the fiscal year was $3,619,637.16.

There were 782 inmates in correctional institutions in Oct.–Nov. 1942, and 4,596 patients in charitable institutions and institutions for defectives.

Communication.—The total mileage of highways on Dec. 1 1942 (excluding city streets) was 2,680.86. Expenditures (1942) for the 801.58 mi. of constructed state highway system totalled $3,154,475.36. The total mileage of railways was 188.9. Waterborne commerce of the state for 1940 was 7,389,110 tons. Airways totalled 120 mi.; there was one airport, two landing fields. In Jan. 1942 there were 138,762 telephones in service.

Banking and Finance.—There were 35 banking institutions in 1942. Resources of 23 banks under state supervision totalled $492,342,944.94 and of 12 banks under federal supervision, $174,481,579.00. Savings deposits (exclusive of club accounts) in savings banks and trust companies (the 23 state banks) amounted

$316,139,941.50 on June 30,)42. In addition, six loan and vestment companies had re- urces of $9,335,862.95; eight ilding and loan associations, 3,328,200.93; 23 credit un- ns, $5,196,199.76.

At the close of the fiscal ar, June 30, 1942, total state ceipts were $20,256,960.20; penditures and encumbrances, 9,034,006.94; surplus from eration, $1,222,953.26. The ate gross debt was $29,333,000; net debt $23,990,695.83.

Agriculture.—The total estimated value of agricultural pro- ction was $16,280,000 in 1942 and actual value was $12,750,- o in 1941. Total acreage harvested was 50,000 in 1942 and ,600 in 1941. Cash income from crops in 1942 was $5,660,000; om livestock, $9,710,000; from government payments, $107,000 total of $15,477,000.

Leading Agricultural Products of Rhode Island, 1942 and 1941

	1942 (est.)	1941
orn for grain, bu.	42,000	39,000
for silage, tons	57,000	57,000
ay (tame), tons	49,000	41,000
lfalfa, tons	2,000	2,000
otatoes, bu.	975,000	920,000
ats, bu.	34,000	32,000
pples (commercial), bu.	332,000	250,000
eaches, bu.	16,000	21,000
ears, bu.	6,000	7,000
rapes, tons	210	230
Livestock and Livestock Products		
ows, No., Jan. 1	23,000	22,000
ilk produced, lb.	142,000,000	136,000,000
ens, No., Jan. 1	504,000	478,000
ggs produced, doz.	6,149,000	6,000,000
hickens raised, No.	908,000	811,000
urkeys raised, No.	25,000	22,000

Manufacturing.—The total estimated value of manufactures s $516,390,541 for 1939 and $517,196,193 for 1937. Total em- oyment in 1939 was 106,269 wage earners and 12,005 salaried rsonnel. The number of establishments was 1,460. Wage earn- received $105,406,950 and salaried personnel $27,940,576. igures for 1941 were not obtainable from bureau of the census.)

Mineral Production.—The value of mineral production in ode Island is small: $980,916 in 1939 and $911,599 in 1938. one ($558,944 in 1939 and $511,620 in 1940) and sand and avel ($265,631 in 1939 and $333,612 in 1940) are the principal oducts. (M. C. Ml.)

hodes, Edgar Nelson (1877–1942), Canadian statesman, was born Jan. 5 in Amherst, S., and finished his education at Acadia and Dalhousie universi- s. He was elected to the dominion house of commons in 1908, ving as speaker from 1916 to 1918. He became Conservative emier of Nova Scotia in 1925, federal fisheries minister, 1930, leral finance minister, 1932, and senator, 1935. As premier of va Scotia, he abolished the legislative council. He died at a spital in Ottawa, Ont., March 15.

hodesia. The territory extending from the Transvaal border northward to the boundaries of the Belgian Congo d of Tanganyika Territory. It is bounded on the east by Portu- ese East Africa, Nyasaland and the Tanganyika Territory, and the west by Belgian Congo, Portuguese West Africa and chuanaland. Area 440,656 sq.mi.; comprises two territories of British empire; viz., Southern Rhodesia and Northern Rhodesia. Southern Rhodesia is a self-governing member of the British commonwealth, but supervision over native rights is reserved to the imperial government. Northern Rhodesia remains a dependency of the crown. Certain essential statistics are given in the accompanying table. (*See* also BRITISH EMPIRE.)

Rhodesia

Territory and Area in sq. mi.	Principal Products	Imports and Exports (in thousand £)	Road and Rail	Revenue and Expenditure (in thousand £)	Education: Elementary and Secondary 1938
NORTHERN RHODESIA 290,323	copper (smelter production 1939) 215,100 metric tons (export 1940) copper, blister, £7,452, 644 copper, electrolytic, £1,270,638	(1940) imp. 5,294 exp. 13,028	(1940) All rds. 8,775 mi. rly. 629 mi.	(1940) rev. 2,245 exp. 2,026	Eurpn. schls., 18, schlrs., 1,320; African schls., 431, schlrs., 35,570.
SOUTHERN RHODESIA 150,333	(1941) maize 118,475 metric tons coal 1,874,975 tons gold 790,442 oz.	(1941) imp. 9,829 exp. 15,395	(1941) Main rds. 1,621 mi. rly. 1,361 mi.	(1941-42) rev. 6,715 exp.: ord. 3,990 war 2,613	Eurpn. schls., 111, schlrs., 10,762; Asiatic and coloured schls., 12, schlrs., 11,426; native (1937) schls., 1,283, schlrs., 108,995.

History.—The demands made in 1942 for increased production in these two territories of foodstuffs and basic metals intensified the chronic shortage of African labour, which was further depleted by military requirements. Two steps were taken to meet this shortage. Conscription of Africans was resorted to in Northern Rhodesia early in 1942 and in Southern Rhodesia in June 1942 in order to insure a labour supply, under conditions which were laid down for the protection of the workers. In Northern Rhodesia an African labour corps was raised to assist employers, especially farmers, who were engaged in work important to the war effort. Details of a provisional labour agreement between the Rhodesias and Nyasaland were published in June 1942. This agreement was to remain in force for two years and was intended to regulate the flow of migrant African labour and to provide adequate safeguards.

Southern Rhodesia.—Southern Rhodesian white troops took an important part in the campaigns in North Africa, and the African regiment, the Rhodesian African Rifles, also acquitted itself well. Plans were made to improve and co-ordinate the cattle industry in the country. The Salisbury municipal council appointed a director of native labour.

Northern Rhodesia.—Munitions were being made in 1942 on the Copper Belt in three workshops, and others were shortly to be opened. In order to improve overland communications between South Africa and Kenya, work was begun to reconstruct the Great North road between Northern Rhodesia and Kenya to an all-weather standard at a cost of £355,000. To prevent the spread of rinderpest from Southern Tanganyika a game fence was built along the Northern Rhodesian border with Tanganyika, and an armed guard would prevent movements of game to the south. As a result of arbitration between the Northern Rhodesian government and the North Charterland Exploration company, the company was awarded a sum of £153,985 for 3,776,741 acres of land. Part of this newly acquired land was allocated to the African tribes to relieve the shortage of land in the reserves near Fort Jameson. The agricultural department made a detailed survey of the area, of soil and vegetation, and anti-erosion measures were put in hand. (M. Rd.)

Ribbentrop, Joachim von (1893–), German statesman, was born April 30 at Wesel on the Rhine and was educated at the gymnasium at Metz. In 1910 he went to Canada as an independent merchant. At the outbreak of war in 1914 he returned to Germany, enlisted in a Hussar regiment, advanced to lieutenant colonel, and by the end of the war was attached to the war ministry. After the war he returned to private business as a wine merchant. He first became identified with the nazi party as a worker in 1930. At his home in Berlin-Dahlem were held the important meetings that preceded Hitler's appointment as chancellor of the reich, Jan. 30, 1933. In 1935 Ribbentrop was appointed ambassador-at-large, and from 1936 to 1938 he was ambassador to Great Britain. He became foreign minister Feb. 4, 1938, and played a prominent role in the diplomatic negotiations that preceded the war.

In Jan. 1942, Ribbentrop conferred with Premier de Bárdossy of Hungary in an effort to get the latter to give more aid to the Reich. In May he was present at the Hitler-Mussolini conferences in Salzburg and later that month conferred with Pierre Laval. On Sept. 27, 1942, the second anniversary of the Rome-Berlin-Tokyo pact, Ribbentrop asserted that Russia was nearing exhaustion; two months later, Russia's "exhausted" armies were engaged in four major offensives.

Rice, Alice Caldwell Hegan (1870–1942), U.S. novelist, was born Jan. 11 in Shelbyville, Ky. After graduating from Hampton college, Louisville, Mrs. Rice did social work and in the course of her visits to the poor, met a humorous and philosophical woman, head of a large family, who inspired *Mrs. Wiggs of the Cabbage Patch* (1901), her first novel. It was her most successful book and was widely translated and dramatized for the stage and movies. She and her husband, Cale Young Rice, poet and dramatist, collaborated on several books, and their extensive travels in Europe provided them both with material for their literary works. *Lovely Mary,* a sequel to Mrs. Wiggs, appeared in 1903 and was followed by *Sandy* (1905); *Captain June* (1907); *Mr. Opp* (1909); *A Romance of Billy Goat Hill* (1912); *The Honorable Percival* (1918); *Mr. Pete and Co.* (1933); *The Lark Legacy* (1935); *My Pillow Book* (1937); *Our Ernie* (1939); and *The Inky Way* (1940). Mrs. Rice died Feb. 10 at Louisville, Ky.

Rice. The western hemisphere, which formerly depended largely on the orient for its rice supplies, probably produced in 1942 a surplus sufficient to supply lend-lease shipments of an estimated 400,000,000 lb. to the Allies. Ten years ago most South American countries imported rice. The 1942 crop in Brazil, although the latter part of the season was unfavourable, produced an export surplus of 155,000,000 lb., according to U.S. commerce department reports. Expanded acreage in 1942 in the United States, although the yield was below average, produced a record crop of 66,363,000 bu., compared to 51,323,000 bu. in 1941 and a ten-year (1930–39) average of 45,712,000 bu. The 1942 area harvested was 1,477,000 ac. as against 1,214,000 ac. in 1941 and a ten-year average of 943,000 ac. The yield in 1942 was 44.9 bu. per ac. In 1941 it was 42.3 bu.; the ten-year average was 48.4 bu. per ac. In California a low-yielding acreage was included in the 1942 expansion, thus affecting the yield per ac. Four states produced the rice crop grown in the United States.

Chile produced a record crop of 86,041,000 lb. in 1942, compared to 61,327,000 lb. in 1941. The Dominican Republic reported an exportable surplus of 20,000,000 lb., as against 8,659,000 lb. in 1941. Although Ecuador, the third largest rice-producing country in the western hemisphere, had a record crop of 5,697,000 bu. in 1942, the government forbade exports until domestic needs had been satisfied. The Ecuadorian crop in 1941 was 4,491,000 bu. Mexico also achieved a record in 1942, with 6,000,000 bu., compared to 5,551,000 bu. in 1941. Cuba had imported an average of 437,000,000 lb. of rice annually in the previous six years, but in 1942 increased domestic production sufficient to reduce import needs by about 30,000,000 lb. The Republic of Panama Oct. 8, 1942, placed an embargo on imports of rice, to protect local farmers who had been encouraged to increase production. Uruguay was reported to have an export surplus of 2,000,000 lb.

U.S. Production of Rice by States, 1942 and 1941

State	1942 bu.	1941 bu.	State	1942 bu.	1941 bu.
Louisiana . . .	25,758,000	20,400,000	Arkansas . . .	13,515,000	10,918,000
Texas	15,498,000	11,590,000	California . . .	11,592,000	8,415,000

Argentine production in 1942 was described as sufficient for home consumption and a possible small export.

In Egypt a government-supported effort to increase production was counteracted by an unfavourable season which reduced the crop from 33,607,000 bu. in 1941 to 29,339,000 bu. in 1942.

(S. O. R.)

Rickenbacker, Edward Vernon (1890–), U.S. airline executive, was born Oct. 8 in Columbus, Ohio. The entry of the United States into World War I interrupted his career as an auto racer. At first, he was chauffeur to General Pershing; later he was transferred to the air force, was promoted to captain of the 94th aero squadron and shot down 26 enemy planes in battle. He won the Congressional Medal of Honor for shooting down two and routing five of seven German planes that attacked him over France in Sept. 1918. After the war, he returned to the motor car trade and eventually joined the General Motors company as an executive. Later he became president of Eastern Airlines. During World War II, he was assigned to England to investigate reports that U.S. planes were inferior to models of other countries. On returning to the United States in the early fall of 1942, Rickenbacker declared that U.S. craft had good performance records but were not superior to other makes. While flying on a similar mission across the Pacific, his plane ran out of gas on Oct. 21 and he was virtually given up for lost. But Rickenbacker, who had brushed with death many times, was found alive on a rubber raft after floating 23 days at sea north of Samoa. He was brought to a base in the South Pacific for hospitalization, and was returned later to the United States.

Ríos Morales, Juan Antonio (1888–), Chilean statesman, was born Nov. 10 in Cañete, Chile. He studied law and was admitted to the bar in 1914. Four times elected to the national congress as a radical deputy, he was twice president of his party. In 1932, he was minister for the interior in the Allessandri cabinet for three months and then was shifted to the post of justice minister. After the death of Pres. Aguirre Cerda, Ríos, radical candidate, was elected president in Feb. 1942 by a majority of 56,000 votes. It was believed that he would adhere to the anti-axis and pro-democratic policy of his predecessor. He refused, however, to break off diplomatic relations with the axis and postponed a scheduled trip to Washington in Oct. 1942 after Sumner Welles, U.S. undersecretary of state, had declared in a speech that axis agents operating freely in Chile and Argentina were transmitting news of United Nations ship movements to German and Italian submarines. On the first anniversary of Pearl Harbor, Dec. 7, 1942, President Ríos in a message to President Roosevelt declared that Chile "has been and will be at every moment at the side of the democracies."

Ritchie, Neil Methuen (1897–), British army officer, was born July 29, and was educated at the Royal Military college at Sandhurst. He entered the army at the age of 17 as 2nd lieutenant in the famous Black Watch regiment (42nd Highlanders). He served on the western fron d in Mesopotamia and Egypt in World War I. He was wounded action and won the distinguished service order and military oss. In 1939 he became colonel, was an acting brigadier general thin a year and acting major general by Oct. 1940. He had en deputy chief of the middle east general staff for some onths, prior to his appointment on Nov. 26, 1941, as commander the 8th army in Libya, succeeding Sir Alan Gordon Cunningm.

In June 1942, Rommel trapped Ritchie's armoured units, de- oying nearly all his tanks. On June 25, when Rommel was shing his way through Egypt, Gen. Claude J. E. Auchinleck placed Ritchie as commander of the 8th army.

vers and Harbours. Federal improvement and maintenance of rivers and harbours and ner waterway channels in the continental United States and territories and island possessions are carried out by the corps engineers, U.S. army, under the direction of the secretary of r and the supervision of the chief of engineers in accordance th the plans authorized by congress. Reports requested by ngressional directives to ascertain the advisability of further provements of this nature are also made by the corps of engi- ers.

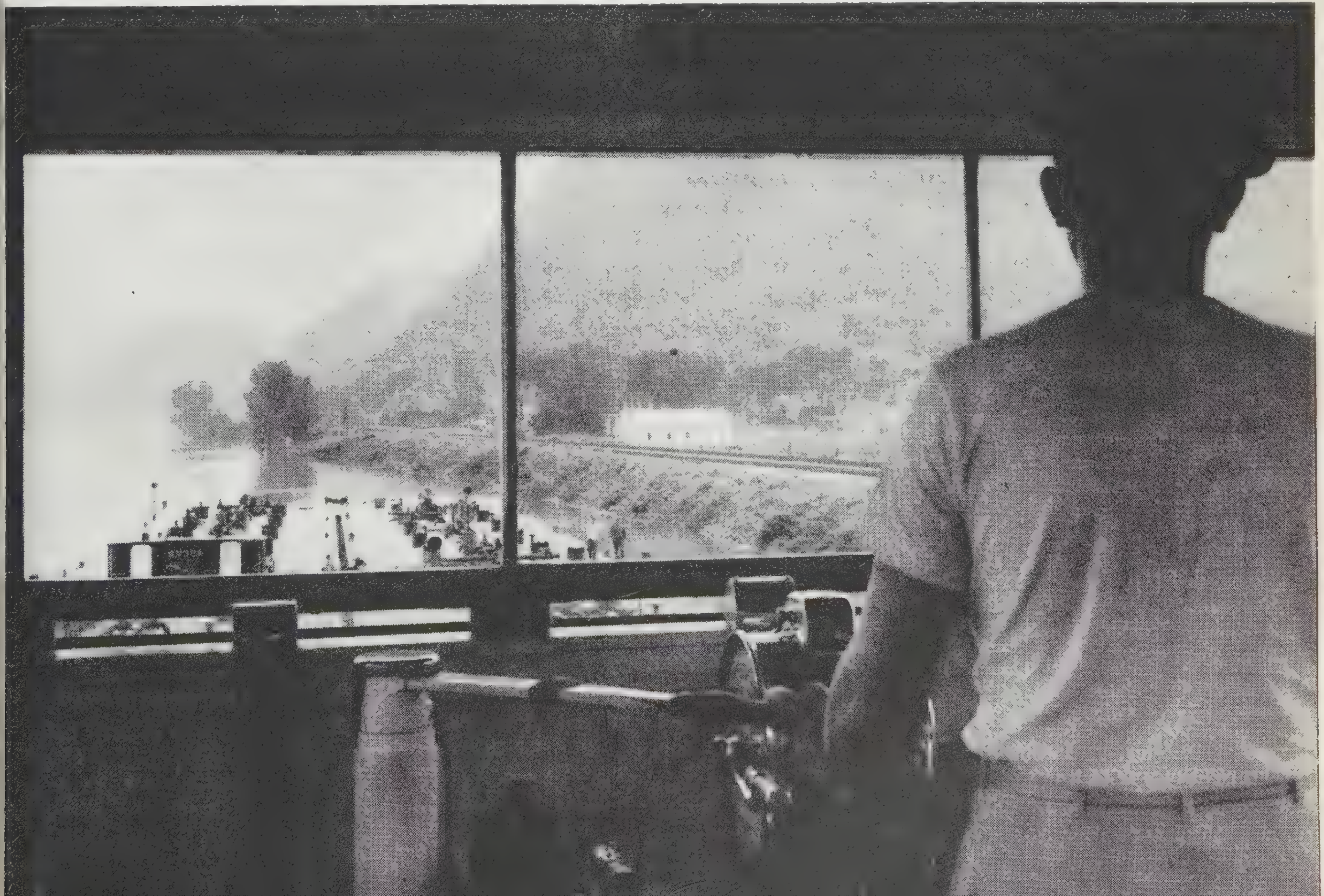
The water transportation facilities provided by these works e vital to the commercial and economic development of the ited States in normal times and are of the utmost importance the nation in time of war.

During the fiscal year ending June 30, 1942, national defense eparation and the advent of war required concentration of ort and the utilization of available construction equipment, terials and manpower on those authorized projects having e greatest connection with the preparedness program and the war effort. In addition to the regular river and harbour operations, work was undertaken on emergency river and harbour projects required by the armed forces.

The principal items of improvement works prosecuted during the fiscal year included the completion of the deep-draught Delaware river channel from Philadelphia to the sea; dredging and rock removal in the Kennebec river from the mouth to Bath, Me.; removal of rock ledge in the main channel of Portland harbour, Me.; dredging of a deep-draught branch channel at Boston harbour, Mass.; dredging and rock removal to deepen and widen the channel in the Hudson river between Albany and the entrance to the New York State Barge canal at Waterford; improvement of the entrance channel from the Gulf of Mexico to Calcasieu river and pass, La.; improvement of the channel in the Saginaw river to Saginaw, Mich.; channel widening and turning basin extension in the Cuyahoga river at Cleveland, O.; continuation of work on the construction of a new landward lock above Hastings, Minn.; dike construction and revetment works on the Missouri river between the mouth and Sioux City, Ia., in the interest of light-draught barge navigation; extension of the breakwater system at Los Angeles and Long Beach harbours, Calif.; power house extension at the Bonneville dam on the Columbia river; and the construction of a power plant at the Fort Peck dam, Mont.

In addition to the above-mentioned waterway and harbour improvements, operations in the interest of water-borne commerce and navigation were undertaken at other localities along the Atlantic, Gulf and Pacific coasts, on inland rivers, and on the Great Lakes. These localities included the Cape Cod canal, Mass.; Providence river and harbour, R.I.; Stamford harbour, Conn.; Bronx river and New York harbour, N.Y.; the New York and New Jersey channels; the Great Lakes to Hudson river waterway; Great Kills harbour, N.Y.; Raritan river and Sandy Hook bay, N.J.; the Chesapeake and Delaware canal; Curtis

EW FROM THE PILOT HOUSE of a petroleum barge train being pushed up Mississippi river in 1942. Traffic on U.S. rivers reached high levels during year as inland waterways were used to relieve the war load on U.S. railroads



creek, Middle river, Wicomico river and Fishing creek, Md.; Norfolk and Portsmouth harbours, Va.; Mattaponi river, Va.; Roanoke river, Oregon inlet and Silver Lake harbour, N.C.; St. Augustine harbour, Fla.; Mobile harbour, Ala.; Pascagoula harbour, Miss.; the Sabine-Neches waterway, Tex.; the Louisiana-Texas Intracoastal waterway; the Mississippi river between the Ohio river and Minneapolis, Minn.; San Francisco harbour, San Pablo bay and Mare Island strait, and Bodega bay, Calif.; the Columbia river between Vancouver, Wash., and Bonneville, Ore.; the Upper Columbia and Snake rivers, Ore., Wash. and Ida.; and Neah bay, Wash. An act of congress approved March 7, 1942, authorized the construction of a new navigation lock at Sault Ste. Marie, Mich. (*See* also AQUEDUCTS; CANALS AND INLAND WATERWAYS; DAMS; FLOODS AND FLOOD CONTROL.) (E. RD.)

Great Britain.—Dock labour schemes were formulated at the leading ports in connection with the Essential Work (Dock Labour) Order, 1941, under the control of a National Dock Labour corporation (with two exceptions, the Merseyside and Clydeside districts which were directly under the minister of war transport) and the seaboard was divided into areas under regional port directors. These schemes, combined with the formation of mobile squads of dock workers, were devised to expedite the loading and discharge of cargo. Perhaps the most notable event in port constructions was the completion, on June 24, 1942, of the Galway harbour development scheme. At a cost of about £200,000 the Dun Aengus dock at the port was lengthened and deepened so as to admit vessels up to 350 ft. in length. The entrance was widened from 54 ft. to 65 ft. and an extension pier, 350 ft. long and 65 ft. wide, constructed with a deep water lay-by on the eastern side. A rocky ledge outside was removed as well as a sand bar, 800 yd. long by 260 ft. wide, in order to afford passage to deep water. Passenger tenders could now leave the dock at all stages of the tide to reach transatlantic liners in Galway bay.

Europe.—In France, there were reports of port reinstatement and development plans at Dunkirk and Fécamp and of further extension of the basin system at Marseilles. The Spanish government displayed activity in promoting schemes at Vigo and Bilbao, while the port of Odense in Denmark had been marked out for various improvements.

Africa.—Very great general interest attached to the practical completion in its general outline of the new Duncan dock at Cape Town, of nearly 300 ac., the construction of which had been in progress for several years. As an appendage thereto, much discussion took place in regard to a proposed new dry dock of outstanding dimensions, which was finally sanctioned by the Union government. It was to be 1,200 ft. long by 150 ft. wide with a depth of 45 ft. of water over sill. The cost was estimated at £2,034,000 and the work was already being commenced.

Development schemes at Durban and East London were also well under way.

It was officially announced towards the close of 1942 that plans and estimates had been approved for the construction of the new port of Nacala in Portuguese East Africa. Nacala has a fine natural harbour where vessels drawing up to 18 ft. can anchor within 200 yd. of the shore. It lies 30 mi. north of Lumbo, which is south of the town of Mozambique.

Australia.—There was also a large graving dock in hand at the port of Sydney, 1,050 ft. long by 137 ft. wide. There was reason to believe that the temporary enclosure dam at the site had been completed and that work on the dock proper had begun. (B. CU.)

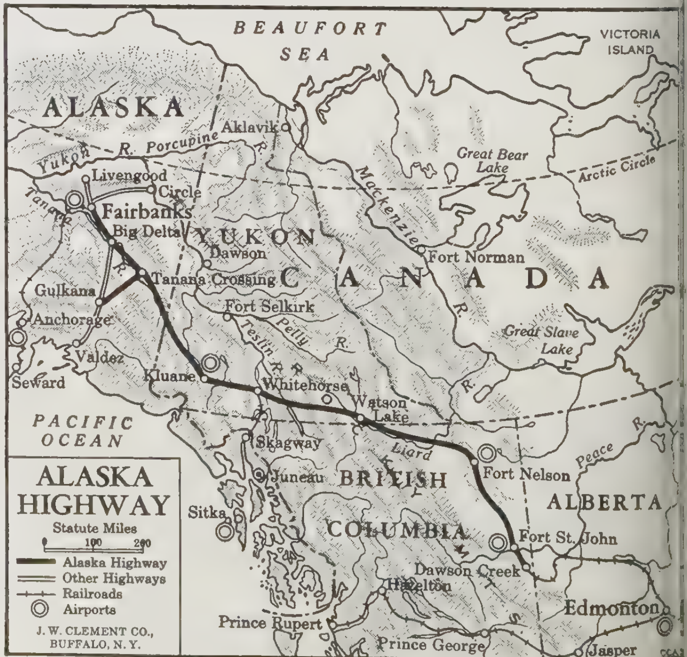
Roads and Highways.

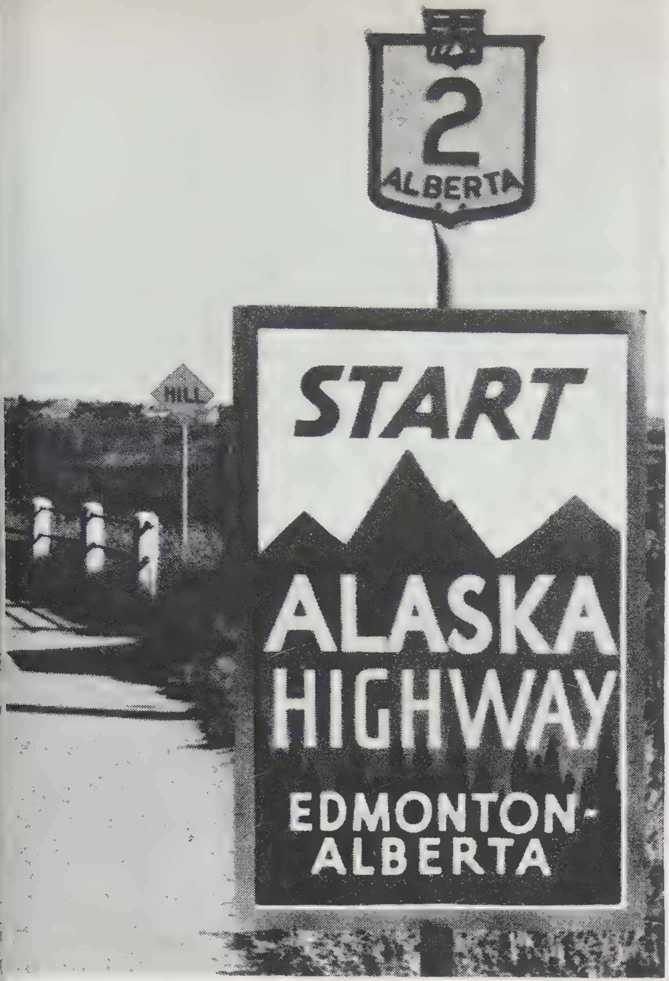
In the United States there were great changes in the highway construction program and in highway use because of the war. At the beginning of 1942 the program was already affected by shortage of men and materials. During the year it became necessary to place one restriction after another on the work and by the end of 1942 practically all major highway work not of direct war importance had been stopped. However, a considerable program of road construction to give access to war industries and military and naval installations was carried on. Also, certain critical deficiencies in main highways that were potential dangers or would have dammed back the flow of war traffic were corrected.

The access road program was authorized by the Defense Highway act of Nov. 1941 which provided $150,000,000 for access roads. During the year this was supplemented by an additional $110,000,000. Roads were being built to relieve the great traffic congestion that existed at aeroplane plants, shipyards and munition factories. At many of these places, 75% to 95% of the workers travelled by car and existing roads were unable to accommodate thousands of new workers. Many new roads were needed to open up new sources of raw materials for manufacture into the tools of war—for example, five roads in southwestern Colorado to reach scattered vanadium deposits. Road networks were built interconnecting primary and outlying fields for training flyers. At war centres along U.S. coasts the activities of armed services produced a traffic enormously in excess of that for which the highways were built. Streets were widened and new roads built at these places.

One hundred and twenty access road projects, aggregating 240 mi. in length, were completed, and 888 projects exceeding 4,000 miles in length were under construction or approved for construction. (*See* MOTOR TRANSPORTATION.)

The Highway to Alaska.—Construction of a 1,600-mile highway from the rail and highway terminal at Dawson Creek, Can to central Alaska has been the outstanding highway work of the year. At the beginning of war with Japan, it was considered highly important to establish a land supply route to airports and military bases in northwest Canada and Alaska. The corps of engineers of the army undertook the work and requested the assistance of the Public Roads administration in locating and constructing a highway. The route selected runs from Dawson Creek through Fort St. John, Fort Nelson, Watson Lake, Whitehorse, Tanana Crossing, to Fairbanks. Near Tanana Crossing a branch of the highway connects with the Richardson Highway





ve, left: SIGN marking the start of the Alaska highway on the outskirts of onton, Alberta, Canada

ve, right: CONSTRUCTION of the Alaska highway progressed at the rate of t miles per day in 1942, and traffic was operating on the road in the er part of October. This photograph was taken near Fort St. John, British mbia

tre: CLEARING the roadway through a dense forest for the highway to ka in 1942

w, left: AUSTRALIAN ARMY MECHANICS repairing convoy vehicles on 1,000-mi. transcontinental road from Alice Springs to Port Darwin, under truction in 1942 as a vital military supply link

w, right: "CARRY-ALL" removing tops of earth from a section of the ka highway, opened to military traffic in 1942

leading to the seaport at Valdez and to Anchorage.

Construction of the highway was pushed rapidly during the summer and fall months by 10,000 engineer troops, and more than 6,000 civilian workers employed by 52 contractors working under the direction of the Public Roads administration.

The road was opened to army traffic in November. The road was not open to civilian traffic and it was probable that civilian use would be possible only under special permit for the duration of the war.

The Inter-American Highway.—Important progress was made on this highway extending from the Mexico-United States border to Panama, thence down the west coast of South America to Valparaiso, thence across the Andes to Buenos Aires and Rio de Janeiro. There was an alternate interior route from Vitor, Peru to Buenos Aires.

After many years of effort, closing of gaps in the United States-Panama section was in sight. At the close of 1941 the United States authorized $20,000,000 to be used on the section of the highway between Mexico and Panama upon the condition that each country in which work was done paid one-third the cost. In 1942, such co-operative construction was under way in Costa Rica, El Salvador and Nicaragua, and it was expected that work would begin soon in Honduras. Mexico was extending the road toward its Guatemala border.

Because of the importance of this route in giving access to raw materials and tropical products, and for continental defense, the war department of the United States was engaged in building a pioneer road to fill in those gaps not being closed by the co-operative construction. On this work the Public Roads administration was indicating the location of a permanent highway and the pioneer road followed this route as closely as was practicable. It was also supervising the construction of permanent bridges over the larger streams. The gaps being closed, including work in co-operation with Central American countries, totalled 625 mi. in length. It was hoped that a road suitable for use by trucks would be available before the beginning of the rainy season in the summer of 1943.

Progress was made on the section of the route from La Guaira, Venezuela to Rio de Janeiro, Brazil, a distance of 8,200 mi. by way of Lake Titicaca, or 325 mi. longer if one went by way of Santiago, Chile. Reports from South America indicated that much of the route might be travelled at any time of the year, but 20% was suitable for use only six months of the year. Work during 1942 increased the mileage that might be travelled in good weather.

The principal bottlenecks on the entire route were the section in Panama adjacent to the Colombian border, for which no provision had been made, and a 290-mi. stretch in Ecuador through mountainous country. A portion of this last section was being improved with a $900,000 loan made by the Export-Import Bank of Washington.

Other work in the Americas.—In the first six months of the year, a 50-mile concrete surface was constructed by Public Roads administration across the Isthmus of Panama, completing the first modern highway across the isthmus which is of great importance in defense of the Panama canal. Mexico announced that construction was continuing on a highway that would link eventually the Gulf of Mexico to the Pacific Ocean across the Isthmus of Tehuantepec. Peru completed a section of its great internal highway from the Pacific across the Andes to Peru's Amazonian jungles.

It was to be extended to navigable water on the Pucalpa river, a branch of the Amazon.

War demands produced great activity in the mines of Bolivia. The western mining district was to be connected with the eastern food producing district by a 225-mi. highway connecti Cochabamba with Santa Cruz. An aerial transporter bridge wa being built across the Espiritu Santo river, a tributary of th Amazon at the edge of a little-explored jungle region of th Amazon. The bridge was to be a combination tramway and sus pension bridge. A tram car, geared to a two-cable track an capable of carrying 80 persons or a 7-ton truck was to provid the means of conveyance across the river. Two 100-foot towe would support the tramway cable.

Argentine publications announced that final agreement betwee Argentina and Brazil had been reached for the construction of a international bridge across the Uruguay river and constructio was scheduled to begin late in 1942. Brazil was making progres on its system of national highways and in 1942 pushed the co struction of main highways in central, southern and wester Brazil. A system of 19,000 kilometres (12,000 mi.) was sched uled for completion within 20 years. Brazil started building de fense highways because of the often-repeated nazi threat to cros the narrow south Atlantic to attack the Americas by way of th Brazilian bulge. Many miles of new strategic highways were com pleted or were in the process of completion, including long sec tions of a coastal military road stretching 4,113 miles fro Fortaleza (north of the bulge) to Porto Alegre (near the Ur guayan border).

Australia.—After the beginning of the war highway work wa directed solely at the war effort. Roads to mineral deposits, wa factories, agricultural areas and military establishments wer built. The road across the centre of Australia to Darwin playe an important part in throwing back the Japanese advance, bu details concerning use of this road and other new military road were not available.

Europe.—Censorship prevented obtaining more than frag mentary information on highway work in England, Germany an other European countries. It was evident that only highwa work of considerable military importance was undertaken.

During the year, England completed a monumental concret bridge across the Thames river to serve traffic bound for the hea of London. Construction of the bridge was carried on success fully while England was subject to heavy bombing attacks.

Germany began the war with approximately half of its 4,20 mile system of Autobahnen completed. There was no evidenc that any considerable improvements were made since, or tha Germany possessed the vehicles and fuel to use additional road if they had been built. Grandiose schemes for extension of Aut bahnen into occupied countries were announced, but if work wa done it was concealed with great success. German technical lit erature reported construction of roads to mineral deposits, fish ing centres, and military establishments in Norway, and als extension of main German roads into Holland.

Union of Soviet Socialist Republics.—This country had littl time for road building in 1942, but extensive roads constructe before war came to Russia, were extremely useful. On the Trans Siberian railroad in the Amur valley, a road struck deep into th wilderness across the Yablonoi mountains to Yakut on the Len river. This road is 540 mi. in length and makes valuable re sources available. In the southern portion of Soviet Turkesta the Osh-Khorog highway crosses the Pamirs at an altitude o 15,587 feet.

The 1,000-mi. road across Iran from an unnamed seaport, b way of Tehran to the Caspian sea, was of great importance to th Caucasus front. It was reported that streams of trucks flowe over this road carrying munitions and supplies. The road through extremely rough country, crossing mountains with de gorges. In a distance of 20 mi. it drops 7,000 ft. to below s level.

hina.—The Burma Road, over which supplies for Chinese
ies flowed from Burma's seaports, was closed to this traffic
it still had much military significance. A Japanese army ad-
ced along the road to the Salween river but Chinese still held
greater portion of the road. The suspension bridge across the
veen was destroyed by the Chinese.

s an alternate to the Burma route the Chinese were increas-
the capacity of the ancient caravan trade route through the
70-ft. Karakorem pass to Sinkiang. A more important route
rom Darjeeling in northern India through Tibet to China.
character of these roads was not such as to permit movement
rge quantities of supplies. General road construction in Free
a continued throughout Japanese occupation of coastal areas.
China had in 1942 about 30,000 mi. of road.

pan.—Statistics of roads given in the Japanese year books
data for March 1939 of 5,350 mi. of national roads more
24 ft. in width; 70,700 mi. of prefectural roads more than
. in width; 35,200 mi. of municipal roads more than 18 ft.
idth; and 456,000 miles of town and village roads 12 ft. in
h.

his last class of roads is generally not fit for motor trans-
ation. There has been a standardization of roads and the
ng of road systems. The most important recent development
the projected trunk highways to strike through the centre of
n from Tokyo to Fukuoko. Progress on this road was un-
vn. There were also important developments on highways
nd cities. (T. H. MacD.)

son, May (1858–1942), U.S. actress, was born April 19 in Melbourne, Australia, the daughter of a
sh naval captain. She was educated in Paris, London and
sels, and moved to New York city with her husband when
was a young bride. Left widowed in her twenties, she found
with a theatre company and made her first appearance
rooklyn, 1884. Her first starring vehicle was *The Rejuvena-*
of Aunt Mary, 1907. Miss Robson made her film debut
silent pictures were in their infancy, survived the transition
lkies, and starred in a score of films. Her most popular
was in a screen version of *The Rejuvenation of Aunt Mary.*
also starred in *Lady for a Day, Mother's Millions* and as
Etta in a series of Lemp "family films." She died at Bev-
Hills, Calif., Oct. 20.

a, Julio Argentino (1873–1942), Argentine politician, was born May 17 in Córdoba. The
f the former president of Argentina, he was groomed for a
r in politics. He was graduated from the University of
os Aires, Faculty of Law and Social Sciences, and then en-
politics. He became national senator, governor of the
ince of Córdoba, 1922–25, and was vice-president during
conservative Justo administration, 1932–38, following which
ecame ambassador to Brazil. During his tenure in the foreign
stry, 1940–41, he negotiated with Uruguay a co-operative plan
he defense of the River Plate area against non-American
ession.

died in Buenos Aires, Oct. 8.

kefeller Foundation was chartered in 1913 for the permanent purpose of "pro-
ng the well-being of mankind throughout the world." Its
ram is concerned with certain definite problems in the
cal, natural, and social sciences, the humanities, and public
h. In the field of medicine its interest is centred mainly in
ous and mental diseases, and a large part of its contributions
nade for the furtherance of research and teaching in psychiatry and allied subjects. Its program in the natural sciences is concerned with experimental biology. In the social sciences the emphasis is on projects contributing not only to the understanding of important social problems, but also to the development of personnel and methods. The program in the humanities centres around the techniques by which cultural levels of contemporary society are being influenced—such as museums, the radio, drama and libraries—and the promotion of better international understanding through cultural interchanges. The program in public health includes research on a number of selected diseases; demonstrations in the control of some of these diseases in their environments; co-operation with governments in services of central or local health departments; and the development of public-health education. During 1942 the foundation appropriated approximately $8,175,000 for work in its various fields of interest. The chairman of the board of trustees in 1942 was Walter W. Stewart; the president, Raymond B. Fosdick; and the secretary, Norma S. Thompson.

General Education Board was incorporated by an act of congress in 1903, with the stated object of "promoting education within the United States of America without distinction of race, sex, or creed." Its program is restricted largely to the support of education in the southern states. During 1942 appropriations approximating $2,235,000 were made by the board. The chairman of the board of trustees in 1942 was Ernest M. Hopkins; the president, Raymond B. Fosdick; and the secretary, William W. Brierley. (H. B. v. W.)

Roleo: *see* Birling.

Roman Catholic Church. The pope, Pius XII (*q.v.*), is recognized as the supreme spiritual ruler. In his person reside plenary power, spiritual, legislative, executive and judicial, in all matters of faith and morals. To him, the Catholic faithful throughout the world owe spiritual allegiance, as they owe full civil allegiance to their respective governments.

Appointed by the pope are the cardinals, patriarchs, archbishops, bishops, vicars who govern the ecclesiastical jurisdictions throughout the world. The college of cardinals consists of 70 members with its full complement. Through 1942, no new cardinals had been created by Pius XII since he became pope in 1939. The Sacred college consists of 6 cardinal bishops, 50 cardinal priests, 14 cardinal deacons. Cardinal bishops and priests are always bishops or archbishops. At the beginning of 1942, the college of cardinals consisted of 52 members. The complement was reduced to 49 by three deaths, and at the close of the year the cardinals numbered 29 Italians and 20 non-Italians. Religious orders of men and women in the church consisted of 789,338 members.

The Catholic population of the world in 1942 was estimated at between 399,000,000 and 400,000,000. The number of patriarchates was 14; 7 of the Latin rite, that of the West Indies being vacant, and 7 of the Oriental rites. The number of residential sees in the Catholic Church in 1942 was 1,223, including archbishoprics and bishoprics. Since he became pope in 1939 Pius XII had created 72 new ecclesiastical jurisdictions. Ecclesiastical jurisdictions in the Americas were: United States 117; Brazil 101; Canada 50.

The number of Catholics on the American continent was estimated to be about 111,000,000 in 1942. Catholics in the United States and territories numbered some 22,556,000. There were 2 cardinals, 20 archbishops, 97 bishops and apostolic vicars. The clergy numbered 36,580—23,818 secular and 12,762 regular. Parishes and missions were 18,985. According to Archbishop

ONE HUNDRED THOUSAND ROMAN CATHOLICS prayed for men in the U.S. armed services at a holy hour Sept. 13, 1942, in Soldier field, Chicago

Vehr of Denver, the number of Catholics in the United States armed services was expected to reach a total of 3,500,000. Converts in the United States numbered 82,087. Chaplains in the services numbered 1,101 in July. But the war department and the military ordinariate no longer reveal the actual number of Catholic chaplains in the services. Catholics in the English-speaking countries were estimated to be approximately 56,301,820.

Catholics in England and Wales, excluding the Channel islands under German occupation, were estimated to be 2,334,427. The two dioceses in Wales counted 15,000. Owing to war conditions in England and Wales, 86,000 Catholics were not accounted for. There were 3,903 in the secular clergy of England and Wales and 1,981 regular clergy. Converts in England and Wales for 1942 were estimated to be at least 9,511. Canada, with 50 episcopal jurisdictions, had 5,288,609 Catholics in 1942, an increase over 1941. Catholics in the whole of Ireland were estimated to be 3,250,000; in Scotland, 615,000. The total Catholic population of Australasia was estimated at 1,700,000; of which Australia had 1,500,000 and New Zealand 200,000. Total Catholic populations of the British Commonwealth were estimated at 20,438,856. In Germany and German-occupied countries, Catholics were estimated at 48,000,000.

The Church and World War II.—A stubborn resistance against totalitarianism had been evidenced by the church since the start of World War II. In Belgium Cardinal Van Roey of Malines refused to accept nazi domination of religion in Belgium in a pastoral issued Feb. 1, 1942. The Benedictine abbeys of St. André, Mont César and Maredsous were confiscated by the nazis. Father Weechmans was sentenced to 8 years of hard labour for publishing the Catholic journal *La Belge*. Cardinal Van Roey forbade Holy Communion to Flemish nazis wearing uniforms in church.

The hierarchy of Brazil condemned totalitarianism on Oct. 30, 1942, and urged all Catholics to defend their country in a just war in defense of Christian civilization. Cardinal Hinsley of Westminster, London, on Poland Day, Dec. 8, denounced the nazi persecution of Jews. French Catholic journals opposing collaboration were suppressed by the nazis, as were papal communications. French prisoners of war in Germany had been unable for two years to receive Holy Communion. French archbishops and bishops in pastorals and sermons condemned the barbaric treatment of Jews.

In Germany, in a pastoral, Bishop Von Preysing of Berlin challenged the nazis in their fight against the Catholic Church. Cardinal Faulhaber of Munich denounced insults to the papacy in nazi Germany. Bishop Von Preysing succeeded Cardi Bertram of Breslau as president of the Fulda Episcopal conf ence. On Jan. 1 Dr. Alfred Rosenberg released a 30-point pr gram for a nazi national church. On March 22, in a joint pastor the German bishops cited their protests to the nazi governme charging them with wishing to destroy Christianity. Bishops V Galen of Muenster and Bornewasser of Trier denounced a na government order interning priests in concentration camps.

Many leading Catholic clerics and laymen of the Netherla were interned by the invaders, and some of them died in c centration camps. On April 19, in a joint pastoral, the Du Catholic bishops warned all Catholics against the nazi comp sory labour service. Three Catholic seminaries and a Jes retreat house were closed by the nazis, and the entire religi press was suppressed. Cardinal Rocca of Bologna, Italy, cal for peace and brotherly reconciliation. Three Italian bish protested against the persecution of Slovene Catholics by Itali authorities. In Yugoslavia Croat Catholic bishops condemn attempts to force Orthodox Croats to join the Catholic Chur Archbishop Martinez of Mexico City on May 30 called upon Mexican Catholics to support the government in the war. ligious instruction in Philippine public schools was abolished the Japanese military administration on Aug. 5. Father Mari Morawski, Jesuit professor at the University of Cracow, Pola died of gangrene in the nazi concentration camp at Oswieci All church property in the Polish diocese of Gnezno and Pozn was officially confiscated by the German authorities.

The hierarchy of the United States in a statement issu Nov. 14 declared there could be no compromise with the ax The Bishops' War Emergency Relief committee distribut $1,322,493 for relief of prisoners of war and war sufferers. Co mander John J. Shea of the aircraft carrier "Wasp," sunk in t battle of the Solomons, wrote a final letter to his little s exhorting him to be a good Catholic and a good American. T letter was printed in newspapers throughout the United Stat In Great Britain the Bournemouth Union of Christian Thoug and Action, representing Catholics, Protestants and Jews, pr sented an irreducible minimum on which Christians would su port any political party.

Papal Official Acts.—In 1942, the pope approved the cau for the beatification of Margaret Sinclair, Scots working gi Steps were taken for the beatification of Kateri Tekakwith Louis Grignon de Montfort; Joanna Delanoue; Mother Fran Cabrini, U.S. citizen (canonization); Brother Andrew Bauer the Franciscan order, brother of a U.S. citizen. The cause w introduced on Dec. 21 for beatification of Princess Marie Clotil daughter of Victor Emmanuel II of Italy. On Nov. 28 the cau for beatification of Christians martyred in China during t Boxer uprising was approved. A papal rescript of July authorized the apostolic delegate to the United States to designa matrimonial courts to hear cases usually delegated to the Rom Rota. The Roman Rota heard 87 matrimonial cases during t judicial year. Out of the total, 29 decrees of nullity were grant In a majority of cases no fees were asked from applicants.

United States.—In the United States the following even took place in 1942: Bishop Crimont, S.J., vicar apostolic Alaska, celebrated his episcopal silver jubilee on July 29. V lanova College of the Augustinians celebrated the centenary its foundation on Sept. 20. Sisters of the Holy Family for Neg work celebrated their centenary at St. Louis on Nov. 21.

The National Evidence conference held its 11th annual c vention at Boston Aug. 23. The Catholic Biblical associat held its sixth general meeting at Cleveland Sept. 1–2. T Third Annual Liturgical Week was held at St. Meinrad's, In Oct. 12–16. The Catholic Press association's annual conventi is held at Birmingham, Ala., May 28–30. The Catholic Col- giate congress met at Cincinnati during the Christmas holidays r four-day sessions.

By a special papal privilege, Catholic chaplains with the United ates forces were allowed to celebrate mass in the evening for spiritual benefit of members of the services. The first evening ss was celebrated at Quantico, Va.

The Laetare medal was presented to Helen Constance White, thor. The Commander of Haitian Order of Honor and Merit nt to Mother M. Katharine Drexel, the DeSmet medal to . E. S. Murphy, the Mendel medal to Dr. Joseph A. Becher, Hoey medal for Interracial Justice to Frank A. Hall and ward LaSalle. Dr. Carlton J. H. Hayes of Columbia univer- y was appointed United States ambassador to Spain.

Missions.—Bishop Aerts of Dutch New Guinea and seven other ssionaries were massacred by Japanese soldiers July 13. Father nry Engberink, Father Arthur Duhamel, Sister Odilia and ter Sylvia of the Marist missionary order were murdered by panese soldiers on Guadalcanal island. United States Catholic ssionaries, both men and women, were still engaged on foreign ssions estimated to number about 2,693 in 1942. The total mber of Catholics in the African missions was 6,974,951. The pe appointed two Japanese priests to be bishops in Korea— her A. Hayasaka and Father Thomas Wakida. (*See* also THOLIC LIBRARY ASSOCIATION; PIUS XII; VATICAN CITY ATE.) (J. LaF.)

mmel, Erwin (1891–), German army officer, fought on the western front and the Italian front World War I. He joined the postwar Reichswehr and fought a storm-troop leader in the nazi party. He advanced rapidly the German army and his brilliant strategy and tactics in chanized warfare won him early recognition. In the battle France, Rommel's tank units smashed through the Maginot at Sedan in May 1940 and swept to the coast at Abbeville, sing a ring around 1,000,000 Allied soldiers in northern France Belgium. He was made commander of the German desert ces in 1940 to bolster the crumbling Italian armies in Libya. March 1941 he hurled Allied forces back across the Egyptian der and held a defense line near the Libya-Egypt border oughout the summer. The British struck again on Nov. 18, 1, with a large mechanized army, and Rommel fell back ond Bengasi, which was taken on Christmas day, 1941. In e 1942, Rommel destroyed a British tank force and then ad- ced to El Alamein in Egypt, 70 mi. from Alexandria. Four nths later, however, the British again struck back with such ngth that Rommel was compelled to retreat more than 1,000 from his original lines by the end of 1942.

His armies were reported to have been smashed almost beyond air.

osevelt, Franklin Delano (1882–), 32nd president of the United States, born Jan. 30, 1882 at Hyde Park, N.Y. (see *Encyclopædia tannica* for extended biography).

irection of America's war effort and the preparation, with ted Nations leaders, of plans to defeat the axis were the chief cern of President Roosevelt in 1942, commanding most of his e and energies.

n Jan. 6, in his annual message to congress, he called for a t arms program—185,000 planes, 120,000 tanks, 55,000 anti- raft guns, and 18,000,000 tons of shipping—to be completed r a two-year period at a cost of more than half the nation's ual income. Stressing the need for increased war production, president warned that "we must guard against complacency" and that "we must not underrate the enemy." Promising co-ordinated and co-operative action by the United Nations, the message declared that "our objectives are clear—smashing the militarism imposed by the war lords upon their enslaved peoples." The following day he submitted a budget of $58,927,000,000, for the fiscal year 1943, the bulk to be used for the war program.

On Feb. 2, the president asked congress to approve a $500,000,000 loan to China. On Feb. 9, he created a War Shipping administration, under the direction of Rear Admiral Emory S. Land. The same day he sent to the senate the nomination of Admiral William H. Standley, former chief of naval operations, as ambassador to Russia. In a radio address on Washington's birthday, he said that the damage inflicted by the Pearl Harbor attack was not as great as indicated by published reports, and declared that World War II differed from all other wars in which the country had been engaged, "not only in its methods and weapons, but in its geography."

On March 11, the president told congress that during the first year of lend-lease operations to the United Nations, military and other supplies valued at $2,570,552,441 had been shipped to allies of the U.S. "Lend-lease is now a prime mechanism through which the United Nations are pooling their entire resources," he explained. On March 28, he signed the second War Powers bill, which further widened the emergency authority vested in the chief executive in the first War Powers bill, enacted the preceding December. On March 29, he announced the creation of a Pacific War Council to sit in Washington. The council held its first meeting in April, with Mr. Roosevelt presiding. On April 3, he named Carlton J. Hayes, professor of history at Columbia, as ambassador to Spain.

As national income—estimated at $117,000,000,000 in 1942—continued to rise, and as the demands of war production progressively reduced the supplies of available civilian goods, administration leaders became increasingly concerned over the threat of inflation. Congress late in January had passed a price control act. Though signing the bill, Mr. Roosevelt sharply criticized the provision forbidding ceilings on farm prices below 110% of the parity price.

Despite this legislation, and other federal action, prices and living costs continued their upward trend, and it soon became evident that even more drastic measures would be needed to keep the nation's wartime economy on an even keel. On April 27, the president, in a special message to congress, proposed a seven-point program to combat inflation. This embraced (1) heavier taxes, (2) ceilings on prices, (3) wage stabilization, (4) control of prices for agricultural products, (5) increased buying of war bonds, (6) rationing of scarce essential commodities, and (7) a curtailment of installment buying. As part of his program, he also proposed a $25,000 limit on salaries, after payment of federal taxes.

The expansion in the armed forces, and the demands of war industries created widespread labour shortages in 1942. To study the problem, and apply corrective measures, the president, on April 18 established a War Manpower commission, headed by Federal Security Administrator Paul V. McNutt. On May 16, he ordered the release from prison of Earl Browder, Communist party leader, and on May 22 directed the registration of all men between the ages of 18 and 20.

On May 30, Soviet Foreign Minister Molotov arrived secretly in Washington for conferences with U.S. officials. On June 18, Prime Minister Churchill arrived in the United States to discuss with Mr. Roosevelt the war strategy of the United Nations.

On July 2, the president appointed a military commission, headed by Maj. Gen. Frank R. McCoy, to try eight nazi saboteurs,

PRESIDENT AND MRS. ROOSEVELT at the Detroit tank arsenal during his secret two-week inspection tour of the U.S. in Sept. 1942. At the left is Donald M. Nelson, chief of the War Production board

arrested by federal agents in June soon after they had landed on U.S. shores from an enemy submarine. Following a trial of several weeks behind closed doors at the Justice department, the judgment of the commission was approved by the president, and on Aug. 8, six of the saboteurs were executed in Washington. Of the others, one was sentenced to life, and the other to 30 years' imprisonment.

On August 6, the President vetoed a synthetic rubber bill sponsored by the congressional farm bloc, and appointed his own fact-finding committee headed by Bernard M. Baruch, to formulate a program to meet the emergency created by the growing rubber shortage. On Sept. 10, the committee reported that the situation was so dangerous that "unless corrective measures are taken immediately this country will face both a military and civilian collapse." Five days later William M. Jeffers was placed in charge of the nation's rubber program.

The spectre of inflation continued to menace the home front, and in a Labor day address on Sept. 7, the president asked congress to bolster the anti-inflation program, with new legislation to control farm prices and increase taxes, and promised to follow this with executive action to curb wage increases. The delay in enacting inflationary curbs had reached "the point of danger to our whole economy" he declared; telling congress that if it did not act by Oct. 1, he would accept the responsibility and take appropriate executive action to establish anti-inflation controls. Under the spur of the presidential whip, congress passed the anti-inflation bill, which was signed by Mr. Roosevelt on Oct. 2. The following day, he established the Office of Economic Stabilization, appointing as its director Associate Justice James F. Byrnes of the supreme court. He also ordered a $25,000 ceiling on salaries, after payment of federal taxes.

Late in September, the president embarked on an extended tour of the nation's war plants. Newspapers were requested to keep the tour a "secret," until its completion, as a means of better assuring the president's personal safety. Though the press obeye the request, made by the office of censorship, the secrecy rul brought a formal protest to Mr. Roosevelt from reporters assigne to cover the White House. In a radio address Oct. 12, reportin on the results of his trip, the president criticized "typewrite strategists," praised the "unbeatable spirit" of the U.S. peopl and reiterated that the war objective was to "destroy complete the military power of Germany, Italy and Japan."

On Nov. 8 (late Nov. 7 in the U.S.A.), the significance of th June strategy conferences between the president and Prim Minister Churchill was more fully revealed, with the announce ment of the landing of U.S. forces in North Africa. On Nov. 1 Mr. Roosevelt signed an amendment to the draft act lowerin the draft age from 20 to 18, a measure that had met with stron opposition. Taking cognizance of the opposition to Admiral Da lan, onetime collaborationist, as head of the civil government i North Africa, the president on Nov. 17 issued a statement tha the French alone would determine the form of their post-wa government.

On Dec. 4, the president ordered the abolition of the WPA and on Dec. 6 he named Secretary of Agriculture Claude F Wickard as food administrator. On Dec. 11, he told Congress tha more than 1,000,000 U.S. soldiers were serving outside the country

Following the adjournment of congress, the president devote most of his time to preparing his annual budget message fo presentation to the new congress. As the year ended, Mr. Roose velt and his aides gave increasing thought to the problems o rehabilitating the stricken lands of Europe, and post-war recon struction.

The health of the president, despite the great burden of direct ing the American war effort, remained good throughout the yea (*See* also UNITED STATES.) (O. McK.)

Roquer, Emma de: *see* CALVÉ, EMMA.

Rosenwald Fund, The Julius. The Rosenwald fund di fers from other large U ndations in that the trustees not only are permitted to spend ital as well as income at any time but are compelled to ex- d all its funds within 25 years of the death of its founder, t is, before Jan. 6, 1957. During the 25 years since its estab- ment in 1917 by Julius Rosenwald, this fund has expended roximately $18,000,000, being all of its income from year to r and about seven-eighths of its principal fund. At the close he fiscal year June 30, 1942, the assets of the fund (held fly in capital stock of Sears, Roebuck and Co. of Chicago) a value of approximately $2,500,000.

he chief program of the fund during its early years was aid in building of rural public schools for Negroes. The main pro- ns in 1942 were: (1) improving the content and quality of l education in both white and Negro schools in the south; (2) in building up four important centres of higher education for roes: Howard university in Washington, D.C., Atlanta uni- ity in Atlanta, Ga., Fisk university in Nashville, Tenn., and ard university in New Orleans, La.; (3) efforts in behalf of ro health; and (4) a series of fellowships for Negroes and white southerners.

uring the year 1941–42 the fund expended $575,000 upon e and related programs.

tary International.

On Dec. 15, 1942, there were 5,105 Rotary clubs in more than ountries of the world, with a membership in excess of 205,000. ers for the fiscal year 1942–43 were: president, Fernando ajal, Lima, Peru; vice-presidents, J. Raymond Tiffany, oken, N.J., U.S.A.; C. J. Steiger, Zurich, Switzerland; Ar- do Hamel, Santiago, Chile; secretary, Philip Lovejoy, Chi- , Ill., U.S.A.; treasurer, Rufus F. Chapin, Chicago, Ill., A. Headquarters in Chicago, Ill.; additional offices in Lon- England; Zurich, Switzerland; and Bombay, India. During Rotary activities included general community betterment rtakings, work for crippled children and underprivileged chil- , the establishment and supervision of camps and clubs for and girls, assistance to students through scholarships and ent loan funds, and the promotion of high ethical standards in esses and professions. In addition, Rotary clubs actively co- ated with their governments in rationing, salvaging and fund- g campaigns, in all phases of civilian defense, and in activi- for the alleviation of war suffering. In the U.S.A. 150 itutes of International Understanding" were sponsored by ry clubs, presenting to community forums and to high- l audiences outstanding speakers on vital world problems. teen weekly radio programs called "The Americas Speak" presented by the Rotary clubs of the Americas as a contri- n to international friendship and understanding. The 33rd al convention of Rotary International was held in Toronto, da, June 21 to 25, 1942. The official Rotary magazine is *Rotarian,* which has a Spanish edition, *Revista Rotaria.* In ion, there are numerous regional Rotary magazines published ghout the world in several different languages. (P. Ly.)

tenstone: *see* ABRASIVES.

ving.

The 1942 intercollegiate rowing season opened in the United States on April 1 with a race between ers and Princeton on Lake Carnegie at Princeton, N.J. By margin of one length and for the first time, Rutgers defeated eton.

the following Saturday the two western crews, Washington California, met on Lake Washington at Seattle for the 39th al west coast championship regatta. Washington rowed to mplete victory over the California shells, winning all three races and establishing new course records in each event. The varsity crew won by three lengths in 15:54 over the three-mile Leschi-Madison park course, the junior varsity by only a few feet in 15:55, and the freshmen won the two-mile event in 10:20.5. Navy, with an inexperienced but powerful crew, gave Princeton its second defeat of the season. Rowing against a strong head wind that caused whitecaps on the usually calm surface of Lake Carnegie, Navy took an early lead and finished a length ahead in the mile-and-three-quarters race. The Princeton junior varsity crossed the line four lengths in front of the Navy second boat. On the same day the Columbia varsity crews won in close races over Rutgers on the Harlem river in New York.

On April 25 the balance of the eastern crews went into action. The largest of the three regattas held on this day was for the Rowe Cup at Cambridge over the Henley distance on the Charles river basin. Harvard nosed out Cornell by a deck length, with Syracuse, Massachusetts Institute of Technology and Boston university trailing in that order. Cornell took the junior varsity race and Harvard the freshman. At Annapolis the Navy varsity and plebe crews had everything their own way over Columbia. Rutgers won its second victory of the year by defeating a green University of Pennsylvania eight by a length on the Schuylkill river at Philadelphia, Pa.

The Blackwell Cup regatta was held on the Housatonic river near Derby, Conn., on May 2. Yale won the varsity race over Pennsylvania by about three lengths, with Columbia last. Pennsylvania was the victor in all three of the preliminary races, with Yale second. The Naval academy varsity proved itself to be one of the best in the east on this same Saturday by taking a gruelling race from Cornell by one-eighth length on the Severn river. The heavily-favoured Harvard crews won all three races in the Compton Cup regatta at Princeton over the mile-and-three-quarters course to write their name on the cup for the sixth straight time. Princeton took second in each event, with Syracuse, an added starter and not competing for the cup, in third place, with M.I.T. last.

Four regattas were held on May 9. On the Harlem river, Pennsylvania, revamped after their defeat of the week before, staved off Princeton's last-minute challenge to win the Childs Cup by a margin of about four feet. Columbia, the third starter, was last. Princeton took the honours in the junior varsity and freshman races. At Ithaca, N.Y., Cornell, beaten by Harvard and Navy by only a few feet in early races, won its first victory of the year in a clean sweep over three Syracuse crews at two miles. The Dad Vail regatta was held on the Henley course in the Charles river basin with Rutgers, Boston university, American International and Dartmouth finishing in that order. Harvard's 150-lb. crew retained possession of the Goldthwaite cup when it defeated Princeton and Yale by a length on Lake Carnegie.

On May 16 at Derby a Princeton eight that had lost all of its previous races rowed to a surprising victory over Cornell and Yale to win major honours in the Carnegie Cup regatta. Cornell finished three-quarters of a length back of Princeton and the same amount in front of Yale. The Cornell junior varsity and freshman crews won their races easily. The year's only intersectional race took place at Cambridge on the same day. For almost a mile of the mile-and-three-quarters course, Harvard, Wisconsin, Navy, M.I.T. and Pennsylvania rowed on even terms in the race for the Adams Cup. In the final drive for the finish line, Harvard pulled out to a two-lengths win over a big Wisconsin crew that was only two feet in front of Navy. The undefeated Harvard freshmen won their event while Pennsylvania was first in the junior varsity race. Syracuse won its final race of the year by defeating Columbia on the Harlem river. The Princeton 150-lb. crew set a new course record of 6:40.8 for the

Henley distance on Lake Carnegie to win the Joe Wright cup for lightweight crews. Pennsylvania and Harvard were only a few feet back of the winner to take second and third place; Cornell, Columbia and M.I.T. finished several lengths back of the leaders.

Due to the naval activity on the Thames river at New London, the Harvard-Yale regatta was rowed over the two-mile Housatonic river course near Derby, Conn., on May 23. Harvard again showed its rowing supremacy over Yale by impressive victories in varsity, junior varsity and freshman races.

The annual Poughkeepsie regatta, usually held in June, was cancelled for the second time in its history because of war.

Harvard's fine varsity and freshman eights were the only eastern crews to remain undefeated for the entire season and the University of Washington crews were still champions on the west coast. (E. O. Le.)

Ruanda and Urundi: *see* Belgian Colonial Empire; Mandates.

Rubber and Rubber Manufacture.

As never before the importance of rubber both to military and civilian pursuits was impressed on the people of the world during the year 1942. Never before did so many in the United States know how much rubber was imported nor how much the requirements would change because of the war. Synthetic rubber was discussed at length in the daily press and by radio commentators.

Notwithstanding all this publicity concerning the general features of the rubber situation, but little information concerning technical advances in the industry was published. The patent office, for example, withheld issuance of all patents considered by military authorities to disclose information of possible importance to the enemy; manufacturers were refused permission to publish descriptions of many of the new products developed for the army or the navy and papers planned for presentation at meetings of scientific societies were deleted from the programs because of the war. Nevertheless, it is possible to outline in general terms the fields of development in the rubber situation during the year.

Federal Organization.—Immediately after their attack on Pearl Harbor, the Japanese invaded the rubber-producing countries of the far east and soon seized control of all but a sm per cent of the world's sources of this vital material. Fortunat the Rubber Reserve corporation accumulated during 1941 a la stock of crude rubber and this was available for the manufact during 1942 of the vastly increased variety and quantity of ru ber products needed for war equipment and for the continuan of essential industrial operations. It became evident that all m ters relating to the securing and utilizing of rubber should directed from one source and, in accordance with recommend tions of the so-called Baruch committee appointed by the pre dent to investigate the rubber situation, control of all rub problems was placed under the direction of a rubber administrat

Conservation.—Conservation policies both for crude rub and for the vast amount in the form of finished goods we established. Production of non-essential products was stopp and crude rubber was allocated to each manufacturer for defin purposes. This control extended to rubber latex as well as c rubber and later to reclaimed rubber. The useful life of the m lions of automobile tires was extended by the indirect means limiting the amount of gasoline each vehicle might use and compelling each motorist to sell, in accordance with governme regulations, all tires in excess of five for each vehicle in orc that these might be reconditioned for service and later ration to vehicles employed in promoting the war effort. Those unfit repair were to be converted into reclaimed rubber suitable for t manufacture of retreading material or of new tires of infer quality but useful at limited loads and speeds. In many ca studies by government groups led to the substitution for spec requirements of more readily available materials in place of ru ber. Many of these replacements were undoubtedly tempora but in a few instances no disadvantage resulted from the chang and, if economical, they might be permanently adopted. In the various ways the program of conservation was promoted.

Reclaimed Rubber.—Manufacturers of rubber goods report that reclaimed rubber judiciously used would help to increase t amount of crude available for applications where nothing e would serve, and a scrap drive for old rubber, conducted by sch children throughout the United States, resulted in the collecti of much greater amounts than had been anticipated. Reclaim rubber from this scrap was being used wherever it would impa sufficiently good quality.

NEOPRENE fabric replaced rubber during 1942 in U.S. barrage balloons

FORMULAS FOR PRODUCING SYNTHETIC RUBBER
DELIVERY
DANIEL BISHOP

ɔN'T SOMEBODY INVENT A NEW FAUCET?" A view of U.S. confusion in s for producing synthetic rubber in 1942, by Bishop of the *St. Louis Star-ies*

latural Rubber.—Rubber from natural sources outside Jap- se-controlled areas was sought to reduce the rate of shrinkage the stock amassed by the Rubber Reserve corporation. To end the federal government made arrangements with prac- lly all Central and South American governments in whose ter- ry rubber-bearing trees suitable for commercial production existed to resume extraction of rubber from these regions ; since abandoned as rubber producing areas. Some of these ded rubber during 1942 and were expected to turn out still e in 1943.

second development in this direction was the study and ex- sion of plantings of rubber-bearing plants vigorously pursued ing the year. Guayule, rabbit brush, golden rod, cryptostegia other plants already existing in the western hemisphere, as as kok-sagyz, a species of dandelion recently imported from sia, have all been exploited. Remarkable progress has been le with some of these, notably guayule, but substantial ounts of rubber cannot be expected from these sources for a years to come. Guayule rubber has been found to improve processing of synthetic rubber when blended with it in mod- e proportions.

ynthetic Rubbers.—Most important of all sources of rubber the immediate future was the manufacture of synthetic rub- The variety selected for general use was the butadiene- ene type and the government plan contemplated erection both lants for producing the raw materials and of others for con- ing these into synthetic rubber.

he raw materials were to be produced by petroleum refiners chemical manufacturers and the polymerization to rubber was e under the supervision of the largest rubber manufacturing orations of the country. In addition to an output capacity 00,000 tons a year by Oct. 1943, of the butadiene variety, lities for 132,000 tons of butyl rubber, 40,000 tons of neoprene, 30,000 tons of thiokol per year were expected to be com- ed by that time also.

lanufacturing Operations.—Much work had to be carried in order to ascertain how best to process the new synthetic butadiene rubber, how to design its compositions and the products into which it was to be incorporated. As soon as it began to be produced, sufficient was made available to suppliers of materials to the rubber industry for experimental examination, and during 1942 many studies were made to ascertain the effects produced by various pigments, softeners, extenders and other ingredients. Committees of technicians in the employ of rubber manufacturers and suppliers were actively working with government agencies to ascertain for the benefit of the industry as a whole how the synthetic rubber might best be processed, to compile the results produced by various compounding ingredients and outline the principles of designing articles in order to meet the rigid requirements of the army, navy and other governmental branches.

Products.—War products dominated the attention of rubber manufacturers. Many were not publicized but others were mentioned by manufacturers in their advertising. Principal of these were vibration insulators for supporting instruments on planes and tanks, pontons, boats, life rafts, crash pads and bullet sealing fuel cells. Notable developments of articles for civilian consumption were noticeably absent. (*See* also BUSINESS REVIEW; CHEMURGY; RATIONING; WAR PRODUCTION, U.S.) (J. W. Sc.)

Ruckstull, Frederick Wellington

(1853–1942), U.S. sculptor, was born May 22 in Breitenbach, Alsace, and was taken to the United States as a child. He studied art in Paris, where he won honourable mention in the salon of 1888. Among his principal works are "Evening," a female figure in marble at the Metropolitan museum, New York city; "Wisdom" and "Force," two seated figures of marble, New York; "Phoenicia," marble façade on the customs house, New York; "Mercury Amusing Himself," bronze group, St. Louis; "Franklin," "Goethe" and "Macaulay," granite heads on the façade of the Library of Congress, Washington, D.C., and an equestrian statue of Brig. Gen. John F. Hartranft, Capitol Hill, Harrisburg, Pa. Ruckstull was also an art critic, editor of *The Art World,* and author of *The Great Works of Art and What Makes Them Great* (1925). He died in New York city, May 26.

Ruff, Robert Hamric

(1887–1942), U.S. college president, was born July 27 in Chester, Miss. After receiving his B.A. and M.A. from Millsaps college, Jackson, Miss., and a B.D. from Emory university, Atlanta, he was ordained to the ministry of the Methodist Episcopal Church, South, in 1915. He was a leader in the church during the following decade, later serving as president of Morris Harvey college, Barboursville, W.Va., 1927–29. He was also president of Central college, Fayette, Mo., 1930–41. He died in Fayette, May 5.

Rugby: *see* FOOTBALL: *Great Britain.*

Rugh, James Torrance

(1867?–1942), U.S. orthopaedist, was born in western Pennsylvania and was a graduate of Adrian college and Jefferson Medical college. He was staff member of several Philadelphia hospitals as well as professor of orthopaedic surgery at Jefferson. Dr. Rugh joined the U.S. army medical corps in World War I, and served as supervisor of orthopaedic surgery at army camps in the south. Later he was assigned to duty in the surgeon general's office and in 1918 was made lieutenant colonel and senior consulting orthopaedic surgeon to all the camps and base hospitals. He was credited with having established standardization of orthopaedic surgery and prophylactic treatment. Dr. Rugh died in Cynwyd, Pa., Oct. 12.

Rulers: *see* PRESIDENTS, SOVEREIGNS AND RULERS.

Rumania. A kingdom in southeastern Europe. Area on Jan. 1, 1941 *c.* 74,000 sq. mi.; pop. *c.* 16,000,000. Capital, Bucharest. Principal cities: Bucharest (648,162); Yassy (104,471); Galatz (102,232); Timisoara (89,872). Religion, mostly Greek Orthodox. King: Michael (Mihai); prime minister (1942): Gen. Ion Antonescu (*q.v.*).

History.—The dictatorship of Gen. Ion Antonescu which was established at the abdication of King Carol on Sept. 6, 1940, according to which Antonescu became Conducator (leader) of a National Legionary state, did not bring any lasting order. The different elements which had joined to form the dictatorship continued in 1942 to fight bitter internal wars. In 1940 Rumania had lost the southern Dobruja to Bulgaria, northern Transylvania to Hungary, and Bessarabia and northern Bukovina to the soviet union. In 1941 Rumania, having joined Germany in the war against the Soviet Union, reconquered Bessarabia and northern Bukovina, and beyond that a territory of about 16,000 sq.mi. between the Dniester and the Bug rivers, with Odessa which was named Transnistria and put under Prof. Alexianu as governor. The territory of Rumania as it existed on Jan. 1, 1941 was divided into 11 provinces, of which 7 were organized in the territory of old Rumania, as it had existed in 1914, 1 in the Banat and 3 in southern Transylvania. Each province was divided into four districts. The territories conquered from the soviet union in the summer and fall of 1941 were put under a special form of administration, the task of which was the gradual transformation and adaptation of the economic system.

Of all the satellite states of the axis, Rumania was probably more closely under direct German control than any other. Not only the Rumanian army but the whole economic life of the nation was strictly co-ordinated to Germany's needs. A large number of German officers, training specialists and technicians coordinated Rumania's army. In Feb. 1942 Marshal Antonescu visited Germany, where he conferred with Chancellor Hitler, foreign minister von Ribbentrop, Marshal Wilhelm Keitel and Marshal Hermann Goering on questions of political, military and economic co-ordination. During his absence Deputy Premier Mihail Antonescu represented the premier in the government of the country.

In spite of the iron rule of the dictatorship, opposition was strong within Rumania, from two different sources. One was the extremist Rumanian youth, the supporters of the Iron Guard, whose last great revolt had been suppressed at the end of Jan. 1941; the other was the democratic peasant party around Julius Maniu, who insisted on regaining northern Transylvania and on a "western orientation" against Antonescu's expansion eastward. Throughout 1942 many arrests were made. All persons found possessing fire arms or explosives after Jan. 20 were threatened with the death sentence. This decree was aimed also at demobilized soldiers. Among the many men arrested and sentenced, there were on the one hand young students, on the other hand personalities of high Rumanian society, among them the former minister of propaganda, Eugene Titeanu, Radu Lobei, secretary of the former premier Armand Calinescu, and George Deoharl, former deputy mayor of Bucharest. The unrest in the country was increased by the great rise in prices. From Aug. 1939 to Jan. 1942 the increase averaged 300% and even the domestic food stuffs rose about 200%. In spite of the great initial successes, the war grew less and less popular after the hardships of the winter of 1942 and the very great sacrifices to which the Rumanian troops were exposed before Stalingrad and in the Caucasus. The war demanded an ever increasing participation of the Rumanian army, much against the expectations of leading Rumanian circles responsible for Rumania's subservience to the axis, and it was believed that the German army command was using Rumanian troops at specially dangerous positions. The vigorous Russian counteroffensive and the British successes in North Africa in the last two months of 1942 increased the feeling of apprehension In June 1942 a small number of United States Liberator bombers flew over Rumania to raid the oil fields of Ploesti.

Some Rumanians abroad tried to organize a "Free Rumania" movement. In the United States Charles Davila, the former Rumanian minister in Washington, was at the head of a democratic movement of Rumanians. Attempts by former king Carol, who was living in Mexico, to go to the United States and organize a movement on the side of the United Nations were turned down by the U.S. department of state and were opposed by Rumanian democrats.

The most important issue of Rumanian foreign policy was her relations with Hungary. These relations were extremely strained on account of northern Transylvania, which the axis had given to Hungary in 1940. Julius Maniu, leader of the peasant party, and Constantin Bratianu, leader of the old liberals, signed on Jan. 2 a memorandum to Marshal Antonescu in which they demanded renewed efforts for the re-incorporation of Transylvania. On Feb. 22 Maniu sent another letter to vice premier Mihail Antonescu, and the text of the letter was also made public by leaflets. As a result Mihail Antonescu delivered on March 19 an address in the crowded assembly hall of the Bucharest law faculty where among the cheers and shouts of "give us back Transylvania!" he declared that the Rumanian army had been insulted by words and in writing in a way incompatible with its position and its dignity. "Let the whole world remember," he warned, "if the Rumanian knows how to hold love in his heart, he also knows how to hate." He spoke of the relations with Hungary as a "truce" which would be respected only as long as Hungary respected it. Thus an open split, and even a war, between two important axis satellites seemed threatening. Antonescu called northern Transylvania "the cradle of our fatherland" which was subject to a regime of oppression, humiliation and discrimination. "Its population has been offended and tortured, its churches were destroyed, and the peasants were deprived of their holdings which they had received thanks to the social justice of Rumania." He emphasized that all Rumanians thought always with greatest sympathy of their brethren suffering under the Hungarian yoke The Rumanian vice premier, who was also acting foreign minister, rejected Hungary's claims of dominating the Danubian basin. Rumania tried a rapprochement with Slovakia and Croatia to check Hungary's aspirations. Only with greatest difficulty did Germany succeed in maintaining the "truce" between Rumania and Hungary, pointing out that a final decision could be taken only after a successful conclusion of World War II.

Agriculture, Minerals and Trade.—Rumania is predominantly an agricultural country. The few industries which exist, like flour milling, brewing and distilling, are directly connected with agriculture. The chief crops of the country are maize, wheat, barley rye and oats. The principal minerals are petroleum and natural gas, iron and copper ores, salt and lignite. The output of crude oil amounted in 1938 to 6,610,000 metric tons, and in 1939–40 to 4,527,204 metric tons, the output of natural gas in 1937 to 1,760,595,424 cubic metres; 1,390,000 tons of petroleum were exported in 1940 as against 2,790,000 in 1939.

The total imports in 1938 amounted to 18,767,000,000 lei, the exports to 21,532,000,000 lei. The chief importers were Germany, Czechoslovakia, Great Britain, France and Italy, the chief exporters Germany, Great Britain, Czechoslovakia, Italy and France. The monetary unit is the leu, valued at 47 cents U.S. in 1940. (*See* also WORLD WAR II.) (H. Ko.)

Ruml Plan: *see* TAXATION.

ndstedt, Karl Rudolf Gerd von (1875–), German army officer, born Dec. 12 at Aschersleben, descendant of a noble family Brandenburg. He served in Alsace and Poland during World I and acquired military fame in 1939 during the Polish camn. He was in command at the fall of Cracow, Lodz and emysl. The battles of the river San and the bend of the ula, and the entry into Warsaw were further milestones in . Rundstedt's career. For these accomplishments and for his esses during the invasion of the Low Countries and France 940 he was created marshal of the reich July 19, 1940. Rundt was in command of the southern group of German armies he Russian campaign of 1941, and it was against his forces the Russians first began their counter-offensive, at Rostov in November. The Germans' rout from that city was their major defeat of World War II.

undstedt was shifted to France in 1942 where, on April 16, he put in charge of German defenses along the Atlantic coast. then directed the German armies that occupied all France on . 11, 1942. On Nov. 27, after the scuttling of the French in Toulon, Hitler announced that Rundstedt would have ary rule over all France.

al Electrification. The electrification of rural areas in the United States, which reed its impetus in 1935 with the establishment of the Rural trification Administration, continued in 1942 at a reduced because of the impact of war and the shortage of critical erials for new line construction. During the year increased hasis was placed on the utilization of electric power to inse food production and to alleviate growing rural labour short. The estimated number of farms receiving central station ce was 2,400,000 on Dec. 31, about 39% of the total, in parison with approximately 2,250,000, or 37%, at the end 941.

he growth in rural electrification in recent years is shown by approximate number and percentage of electrified farms at end of each year as follows: 1934, 744,000 farms, 10.9%; , 789,000 farms, 11.6%; 1936, 1,043,000 farms, 15.4%; , 1,242,000 farms, 18.2%; 1938, 1,407,000 farms, 20.5%; , 1,786,000 farms, 27.8%; 1940, 2,060,000 farms, 33.8%. r to 1935 rural electrification was almost entirely controlled rivate utility companies; after 1935, rural electric, nonprofit peratives were organized and by the end of 1942 were serving tly over 1,000,000 consumers. More than 92% of the Fed rural electrification loans were made to these quasi-public perative enterprises which were essentially communityed and operated businesses.

y the end of 1942 Rural Electrification administration had ted $461,000,000 to 873 borrowers to finance on a selfdating basis the construction of nearly 410,000 mi. of distrion lines and other electric facilities to serve nearly 1,350,000 consumers. At the close of the year, 796 systems had in ation 378,000 mi. of line serving over 1,000,000 consumers in parison with 347,000 mi. serving 900,000 consumers at the of 1941. Approximately 80% of the consumers were farms; balance consisted of industrial and commercial enterprises and nunity institutions. During 1942 the rural electric coatives made notable advances toward more stable operations as indicated by payments in advance of due date of about 00,000 on their debts to the government in contrast to overamounts of $205,000 at the year end.

ar and Rural Electrification.—Rural electric service ased an added significance during 1942 as a result of the war s for food. Electric power was utilized widely in the production of vital foods, particularly milk, poultry and livestock, and in the processing and preservation of foodstuffs. Further, it was being employed on an extensive basis to replace rural manpower lost to military services and war factories. Many essential war activities such as military establishments, air beacons, mines and industrial plants located in rural areas were dependent on electric service for their operation.

The more intensive use of power in rural areas during 1942, in part as a reflection of war demands, was indicated by a 57% increase over the previous year in energy sold by REA-financed systems. Wider application of electric power to farm operations continued to receive considerable attention of research agencies and others although many new developments in electrical farm equipment were not manufactured because materials were not made available. To meet their need for equipment for food production there was an active interest in homemade equipment and many farmers were making items of electrical equipment that were no longer available in the markets, including dehydrators for preserving fruits and vegetables, stock tank heaters, and brooders for chickens and pigs to prevent loss of stock.

(R. B. C.)

Russell Sage Foundation. The Russell Sage foundation was established in 1907 by Mrs. Russell Sage, for the purpose of improving social and living conditions in the United States of America, with an endowment of $15,000,000. In carrying out its purpose the foundation conducts studies aimed through public education to help in correcting adverse living conditions on the one hand and in promoting healthful and helpful conditions on the other. More than 60% of its income in 1942 was devoted to work carried on by its own staff; the remainder was granted to endeavours which seemed likely to be carried on with greater economy by other agencies.

The foundation had published more than 100 books and 200 pamphlets by 1942.

The offices of the foundation are at 130 East 22nd street, New York city. (S. M. Ha.)

Russia: *see* Union of Soviet Socialist Republics.

Russian Literature. Several leading novelists, including Alexei Tolstoy and Ehrenburg, collected their war articles and sketches in book form. At the close of 1942 no major work of lasting literary value seemed to have emerged from this welter of documentation. But there were attempts to picture the war in verse (one of the best was Tikhonov's poem about the 28 heroic guardsmen of the Panfilov division), in drama (Korneychuk's rather conventional and lifeless *Guerrillas in the Steppes of the Ukraine,* Simonov's *Russian People* and *Boy from Our Town*) and in short stories (Tikhonov's stories of besieged Leningrad and many others). In most of the stories dealing with the war the predominant subject was the heroism of ordinary Russian people, whether soldiers or civilians, the "simplicity of life and death," that "sacred simplicity" (to use Tikhonov's words) which is "simpler than any complex truths."

Apart from the war itself, the pride of place in contemporary Russian fiction belonged to historical subjects. Never was there such a glorying in the traditions and achievements of the past, and especially in the great deeds of the Russian army as embodied in such figures as Suvorov and Kutusov, or—to go much further back—in Alexander Nevski and Dmitry Donskoi. The taboo was lifted even from World War I, hitherto officially considered, in keeping with Lenin's view, as purely "imperialistic." Among the works for which Stalin literary prizes for 1941 were awarded were two historical novels—Sergei Borodin's *Dmitry Donskoi* and V.

Yan's (V. Yanchevetsky's) *Chingis Khan* (planned as a trilogy, the second instalment of which appeared later under the title of *Batu.*) A. Tolstoy was engaged on a play about John the Dread. The words of a soviet critic reviewing Borodin's novel—"In our days the remote history of Russia is being read afresh"—characterized well the new prevailing attitude.

Besides Borodin and Yan, other recipients of Stalin prizes for literature were Ilya Ehrenburg (for his novel *The Fall of Paris*), K. Simonov (for his play *Boy from Our Town*), A. Korneychuk (for his play *In the Steppes of the Ukraine*) and N. Tikhonov (for his poem *Kirov Is with Us*).

A. Afinogenov, the author of *Fear, Distant Point* and other plays, was killed during an air raid on Moscow while fire-watching. E. Petrov, *nom de plume* of Evgeny Petrovich Katayev, the author, with Ilya Ilf (who died in 1940), of two very successful picaresque novels (*Twelve Chairs* and *The Little Golden Calf*, both translated into English), a book of travelling impressions *One-storied America,* and a number of short stories and sketches, died "at his post," in Sevastopol in April 1942 while covering the siege for the Soviet Information bureau.

The émigré Russian literature as an independent force could not recover from the blow dealt to it by the war. Most of its leading representatives were apparently still in France, though a few (Aldanov, Nabokov-Sirin) found refuge in the United States. Nabokov-Sirin published in America his first novel written in English. Whether he was now lost to Russian literature remained to be seen. No other publications of émigré writers came to notice. (G. St.)

Russian S.F.S.R.: *see* Union of Soviet Socialist Republics.

Ryder, Charles W.

(1892–), U.S. army officer, was born Jan. 16 in Kansas. After graduating from West Point, 1915, he was commissioned a 2nd lieutenant. During World War I he fought on the western front, was cited for extraordinary heroism and was awarded a number of decorations. After the war he was stationed in China and served for awhile in military intelligence. One of the commanders of the U.S. armies that landed in French North Africa on Nov. 8, 1942, Maj. Gen. Ryder led the force that landed at Algiers. His army met little resistance, and 16 hours after the initial landings he negotiated surrender terms with the French garrison commander. After the occupation of all French North Africa, Gen. Ryder's armies were associated with the British 1st army, led by Gen. K. A. N. Anderson in the offensive against the axis armies in Tunisia.

Rye.

The 1942 crop of rye in the United States yielded at the rate of 14.9 bu. per ac., a production that has been equalled only once previously, in 1922. The crop was estimated by the department of agriculture at 57,341,000 bu. from 3,837,000 ac. The 1941 crop was 45,364,000 bu. from 3,570,000 ac.; the ten-year (1930–39) average, 37,870,000 bu. from 3,298,000 ac. The yield in 1941 was 12.7 bu. per ac.; the ten-year average, 11.1 bu. per ac. The Canadian crop in 1942 was 24,703,000 bu. (second official estimate Nov. 13) compared with 11,659,000 b in 1941. (S. O. R.)

U.S. Production of Rye in Leading States, 1942 and 1941

State	1942 bu.	1941 bu.	State	1942 bu.	1941 bu.
North Dakota .	16,082,000	13,195,000	Colorado . . .	1,250,000	1,034,000
South Dakota .	13,872,000	7,510,000	Oklahoma . . .	1,188,000	1,224,000
Nebraska . . .	5,926,000	4,464,000	Michigan . . .	1,160,000	783,000
Minnesota .	3,345,000	3,335,000	Pennsylvania .	841,000	798,000
Indiana	1,944,000	2,015,000	Montana . . .	720,000	540,000
Ohio	1,649,000	1,332,000	Virginia	585,000	448,000
Wisconsin . . .	1,620,000	1,633,000	Illinois	539,000	754,000
Kansas	1,287,000	979,000	Missouri . . .	495,000	425,000

Sabotage: *see* Federal Bureau of Investigation; Intern tional Law.

St. Christopher: *see* West Indies, British.

St. Croix: *see* Virgin Islands.

St. Helena and Ascension Islands: *see* British We Africa.

St. John: *see* Virgin Islands.

St. Kitts-Nevis: *see* West Indies, British.

St. Louis.

Eighth largest city of the United States, St. Lou Mo., had a population of 816,048 by the fede census of 1940, with an additional 541,567 persons living with the greater metropolitan district. Mayor (Jan. 1, 1943): Willia Dee Becker (Rep.).

Central location, minimum vulnerability to enemy attack a access to labour, fuel and raw materials made St. Louis a fo point for war industries in 1942. Largely as a consequence, t population of the greater metropolitan area had increased 97,0 since the last decennial census, the U.S. census bureau estimat The attendant boom increased bank clearings 15%, departme store sales 11%, and railroad freight through the St. Louis ma ket 35%. The city's mass transportation system, long in financ doldrums, showed a net profit of $1,348,841 during the first t months of 1942, with passenger revenue 32% above the cor sponding period of 1941.

Politically, the Republican party expanded its hold on ci offices in the Nov. 1942 election to the near exclusion of t Democrats, who had reigned from 1933 until the 1941 electic Made operative Sept. 15, 1942, after much controversy and test suit, was the civil service system which St. Louisans a ye earlier had voted into the city charter. There was more dallian with an Aldermanic resolution requiring the redistricting of t city's 28 wards to equalize their size, and by the end of 19 (after 18 months) little progress had been made.

At the beginning of the 1942–43 fiscal year (April 1942) t city deficit was $651,853.20 (lowest since 1934); indebtedne $62,838,000; assessed valuation of all property, $1,045,348,68 and the tax rate (including state and school), $2.77.

In the field of sport, the St. Louis Cardinals brought to t city the world baseball championship. (E. L. R.)

St. Lucia: *see* West Indies, British.

St. Pierre and Miquelon: *see* French Colonial Empire.

St. Thomas: *see* Virgin Islands.

St. Vincent: *see* West Indies, British.

Salazar, António de Oliveira

(1889–), Port guese statesman, w born at Santa Comba Dão (Coimbra) on April 28, 1889. Train for the church, he decided later on an academic career and in 19 became professor of economics at Coimbra university. Short after the revolution of May 1926, the Portuguese president, Ge eral Carmona, invited him to join the government as finan minister; he accepted the post, but, finding himself unduly r stricted, resigned within a week. Less than two years later, oth means of redressing the country's finances having failed, he w approached again, and, after stipulating that complete freedo within his department should be given him, reassumed office April 27, 1928.

In 1930 Dr. Salazar founded the civil organization known as National Union. On July 5, 1932, he became president of council of ministers; in the following year the new corporat onstitution of the Portuguese republic was submitted to the counry in a plebiscite and a national assembly elected. In 1936 Dr. alazar assumed the portfolios of war and foreign affairs, which e retained through 1942. (E. A. P.)

ales, Retail and Wholesale: *see* Business Review: *Wholele and Retail Trade.*

alt.

The production of salt in the United States in 1941 increased 23% over 1940, to 12,720,629 short tons, while onsumption showed the same increase, to 12,619,025 tons; of e total 53% was in the form of brine, 26% in evaporated salt, nd 21% in rock salt. Purely industrial uses took 70% of the otal, while the food industry and table use accounted for 17%.

In Canada the 1941 output was 560,845 short tons, 21% more an in 1940, while that of the first seven months of 1942 was 4% greater than for the same period of 1940. (G. A. Ro.)

alvador, El.

The smallest of the Central American republics and the only one without a Caribbean littoral. rea, including islands, 13,176 sq.mi. Pop. (official est. June 941): 1,811,036, the densest per sq.mi. in Central America. apital, San Salvador (106,000). Other cities: Santa Ana (85,00); San Miguel (44,000); Santa Tecla (33,000). Language: panish; religion: Roman Catholic. President in 1942: Gen. aximiliano Hernández Martínez.

History.—El Salvador, at war with the axis nations, enacted e usual legislation to control enemy alien property and activities. ost-favoured-nation treaties with Germany and Italy had been ncelled Dec. 15, 1941. A state of siege, declared with the start the war, was extended in March, again in June, and once more Sept. 1942. In February arrangements were made with the nited States to secure additional arms for defense. Shortages essential materials—nails, newsprint, steel wire, tools, etc.—ecessitated early extension of government control over many mmodities through the establishment of an Economic Codination board. The movement of United States currency was ohibited to prevent its use in subversive activities.

Education.—In 1941 primary schools numbered some 1,300, d secondary schools about 45. Education was allotted 2,211,000 lones in the 1942 budget.

Defense.—In normal times the regular army numbers 3,000, th a national guard of 1,900. Defense was assigned 3,664,000 lones in the 1942 budget.

Finance.—The monetary unit is the colón (value: 40 cents S. in 1942). The 1942 budget estimated revenue at 23,723,000 lones and expenditures at 23,721,000 colones. The public debt ay 31, 1942) was 44,091,000 colones (external: 38,917,000; ernal: 5,174,000).

Trade.—For the first half of 1942, trade totalled 27,415,804 lones in value (imports: 9,322,479; exports: 18,093,325). offee, normally 90% of El Salvador's exports, was limited to a ota of 79,200,000 lb. (later raised to 80,700,000 lb.) by the ter-American Coffee Conference. The cotton crop was reduced rough damage by locusts.

Communication.—Communication by sea was curtailed by e war. Railroad mileage (1942) was estimated as 375 mi. ghways totalled some 3,700 mi., of which 1,600 mi. were unproved. Highway expenditure for the year ending June 1942 s $669,852.

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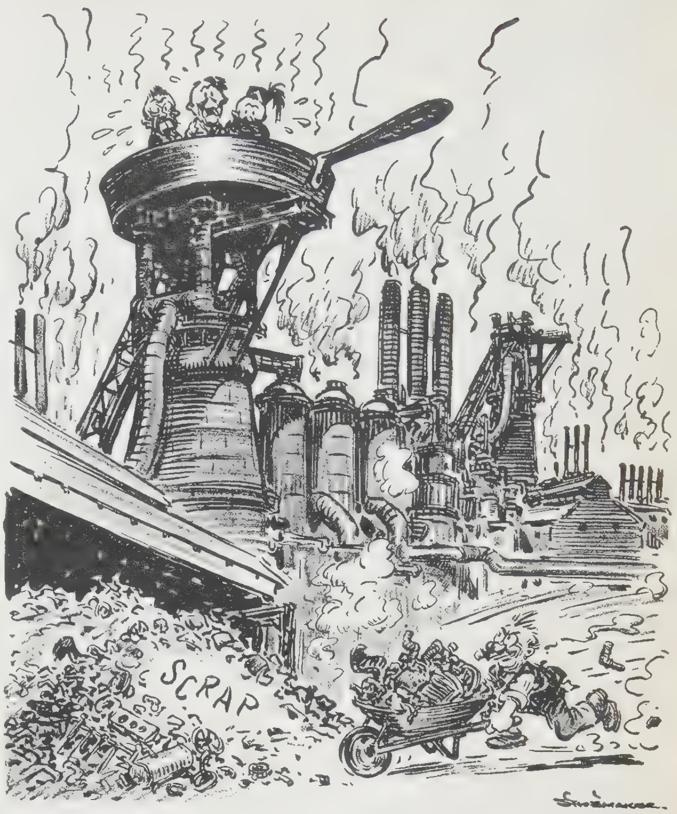
lvage Drives, U.S.



"KEEP 'EM FRYING." Shoemaker's portrayal in *The Chicago Daily News* of the U.S. scrap metal drives of 1942

Soon after the United States entered World War II, it became apparent that the nation had to change several of its wasteful ways or risk a dangerous shortage of raw materials vital for the manufacture of fighting equipment. More than 90% of the U.S. tin supply had come from Malaya. Scrap metal, which comprised about 50% of steel, was going to war overseas and not coming back. In time, normal scrap sources were sure to dry up. In fact, during the winter of 1941–42—under the pressure of greatly increased production—more than 40 steel mills were forced to close down temporarily for lack of scrap.

The first steps in action that was to change the nation's scrap habits were taken early in 1942 by the War Production board. Its conservation division secured skilled men from business and industry. These men trained those who were sent into the field after the scrap. Communities, cities and states were organized and a huge new activity was born—*salvage for war.*

Early in Sept. 1942, when scrap was beginning to be an old story to most of the country, Donald Nelson called the newspaper publishers together and asked them to make it a new story with a nation-wide "punch." In only a few days, 1,800 dailies and 10,000 weeklies went into action.

The results were spectacular and effective. In three weeks about 5,000,000 tons of metal were placed on the United States' scrap piles. People in home and industry found their interest stimulated, their understanding of the continuous need for scrap clarified. When 1942 figures were totalled, the nation had dug up more than 30,000,000 tons of scrap metal—enough to avoid steel mill shutdowns caused by scrap shortage. Tin collection figures were improving each month; women were turning in tons of worn silk hosiery to be made into gunpowder bags: waste fats and greases were going into the manufacture of explosives instead of down the drain; some 30,000,000 families had "enlisted" as scrap scouts—for the duration. (*See* also Business Review; Iron and Steel; Newspapers and Magazines; Rubber and Rubber Manufacture; War Production, U.S.) (J. H. Wt.)

Salvation Army. In the United States, the war services of the Salvation Army were continued and intensified in 1942 through five principal channels: (1) Operation of clubhouses and mobile canteens for service men, as designated through the United Service organizations (*q.v.*); (2) Operation of Red Shield clubhouses and mobile and stationary canteens for service men, solely under Salvation Army direction; (3) Volunteer women's activities for service men and civilians; (4) Evacuation and emergency housing of civilians; (5) Collection and salvage of scrap metals, rubber, waste paper, clothing and other discarded materials of value for defense.

As a constituent member of the United Service organizations, the Salvation Army was operating 120 clubs for service men in the United States and off-shore bases, with a field staff of 500, at the close of 1942. The program included community planning, home hospitality, co-operation with army and navy officials, and service club activities. In many local communities, Salvation Army Red Shield clubs and mobile and stationary canteens became a regular part of the program, with all the officer and soldier personnel participating.

In addition, the Salvation Army was administering to U.S. as well as Allied service men in all lands, through more than 1,200 Red Shield clubs and 500 mobile canteens. In the clubs, in the camps, at the hospitals, or actually under fire, the Salvation army performed in the same manner that characterized its outstanding service in World War I.

About 50,000 volunteers from the Salvation Army's Women's Auxiliaries, Women's Advisory councils, Home Leagues and Leagues of Mercy throughout the United States united in a diversified program of national and local war service and civilian aid.

General George L. Carpenter of London, England, international leader of the Salvation Army, made a 30,000-mile tour of the United States, Canada, the West Indies and South America during 1942, inspecting the work of the organization and discussing the army's postwar plans.

Administration of the Salvation Army's war services and regular program is conducted from four territorial centres, where officers' training colleges are situated and the *War Cry*, the official gazette, is issued. The four territorial commanders in 1942 were: (Eastern) Commissioner Ernest I. Pugmire, 120 West 14th st., New York city; (Southern) Commissioner William C. Arnold, 54 Ellis st., Atlanta, Ga.; (Central) Lt.-Commissioner John J. Allan, 713 N. State st., Chicago, Ill.; and (Western) Lt.-Commissioner Donald McMillan, 115 Valencia st., San Francisco, Calif. Commissioner Edward J. Parker, national commander, with headquarters at 120 West 14th st., New York city, coordinated the administration of national policies.

Because of global war conditions, Salvation Army work was seriously handicapped in 20 of the 96 countries and colonies of the world where it had been carried on. Official correspondence ceased, but information from private sources revealed that a limited program was still in operation. The Italian government forbade Salvationists to wear their uniforms and to hold indoor and outdoor meetings.

In the United States, the war made heavy demands upon the personnel and finances of the Salvation Army, principally in the fields of family welfare, juvenile delinquency, the unmarried mother and settlement work. (E. J. Pa.)

Samoa, American. A possession of the United States of America. It lies about 2,700 mi. east of the northern tip of Australia and 2,200 mi. south of the Hawaiian islands; comprises the island of Tutuila and all other islands of the Samoan group E. of longitude 171° W., including Rose island, Tau, Olosega, Ofu, Aunuu and Swains. The principal island is Tutuila, area about 40 sq.mi. Pago Pago, the capital, population 934, has the safest and best harbour in the South Seas. Total population by census of April 1, 1940, 12,908, including 11,919 natives of Samoa (Polynesians); the remainder are foreign born and personnel of the U.S. naval establishment.

Public schools had an average enrolment of 3,000 during 1940–1941. Health and sanitary conditions were excellent. All medical attention is given by naval medical officers who treat the natives free of charge.

The only bank is the Bank of American Samoa, conducting a commercial banking business as a division of the treasury of the naval government of American Samoa, which owns the capital stock. Copra is the chief export; 862 tons, returning $23,557, were exported during the copra crop year ending Jan. 31, 1941; 325 tons of mats, rugs and native curios, returning $69,582, were exported during the fiscal year ending June 30, 1941. Imports: from U.S. $112,998; from New Zealand-Australia $131,984; other $18,721. The island has no indebtedness and receives no financial aid from the U.S. government.

In view of the intimate connection of these island areas with the conflict in the Pacific, it is not practicable to supply up-to-date information because any accurate information would reflect military secrets.

Samoa, Western: *see* MANDATES; PACIFIC ISLANDS, MANDATED.

Sand and Gravel. The United States production of sand in 1941 was 103,835,000 short tons, and of gravel 184,880,000 tons, a total of 288,715,000 tons; these are respectively increases of 32%, 16% and 21% over 1940. In 1941 building construction took 44% of the sand, road paving 38%, and railroads used 4%, partly as ballast, and partly as engine sand. Of the gravel output building took 25%, paving 64%, and railroad ballast 9%. (G. A. Ro.)

Sand Island: *see* MIDWAY ISLANDS.
Sandstone: *see* STONE.

San Francisco. Twelfth largest city of the United States, San Francisco, Calif., by the federal census of 1940, had a population of 634,536. Newcomers crowded into the city during 1941 and 1942 to aid in the war effort, raising the population to about 725,000 as of the Dec. 1, 1942, wartime census taken by the air-raid warden service of San Francisco. Newcomers, streaming into the San Francisco bay area, boosted the metropolitan population about 350,000 above the 1940 United States census of 1,734,308. Mayor (Jan. 1, 1943): Angelo J. Rossi.

War supply contracts to San Francisco bay industries approximating $2,000,000,000, a large percentage of which was shipbuilding, pushed the industrial production volume of this area in 1942 to an all-time new high, bringing employment to about 250,000 wage earners as the year ended, double the total of 1941 and about three times the 1939 total reported by the United States census of manufactures. Industrial payrolls rose 164% during 1942. Financial transactions, retail sales, wholesale trade and carloadings were all about one-fifth greater than the previous year, with the living costs up about 12%.

San Francisco education facilities in 1942 included 184 public schools and many private, parochial, nonsectarian and technical schools; also the University of San Francisco and the San Francisco State Teachers college. Located in San Francisco also are e colleges of medicine, dentistry, pharmacy and law and the hool of fine arts, all branches of the University of California, cated at Berkeley. Also located in San Francisco is the college dentistry and medicine of Stanford university, whose main mpus is located nearby on the San Francisco peninsula.

Situated on the threshold to the far-flung battlefields of the rld, San Francisco was converted into one of the nation's im- rtant production and distribution centres in 1942. Its post ice was second most important in the nation from the stand- int of mail handled for the armed forces, averaging better than 00,000 pieces of first-class mail daily. (R. B. Kr.)

nto Domingo: *see* Dominican Republic.
o Tomé: *see* Portuguese Colonial Empire.

pru, Sir Tej Bahadur (1875–), president of the Indian Liberal federation and vocate of the high court of judicature at Allahabad, was edu- ed at Agra college. He was at one time a member of the All- dia Congress committee and was a delegate at the round table ıferences in London in 1930–31. He also served on the United ovinces Legislative council and on the Imperial Legislative ıncil. In Jan. 1942 he and a number of other Liberal leaders ealed to Prime Minister Churchill to declare that India's con- utional position and powers would be identical with those of ıer units of the British commonwealth. As representing the ıparty group, he had several discussions with Sir Stafford pps, and in July suggested that the British government should equivocally declare that India should have the fullest measure self-government within a year after the war, in order to re- ve the unhappy impression created by the withdrawal of the pps declaration. Later he urged Britain to re-open negotiations h Indian leaders, and in Sept. 1942 he renewed this proposal.

racoglu, Shukru (1890?–) Turkish statesman, was born in Odemis, Turkey. He was edu- ed in Turkish civil service schools and studied law at Lausanne versity, Switzerland. He enlisted in the Turkish army during rld War I, joined with Mustafa Kemal Pasha (Kemal Ata- k) after the armistice and fought against the Greek forces in 1. After the destruction of the Greek armies and the aboli- ı of the sultanate, Saracoglu became a member of the national embly as deputy from Izmir, and rose swiftly in the ranks of stafa Kemal's party. An advocate of westernization for Tur- , he instituted many legal reforms during his tenure as justice ıister, 1932–38. After Ataturk's death in Nov. 1938, Saracoglu named foreign minister and clung to a consistent course of trality, although he was frequently pressed by both the allied ions and the axis for an alliance during the first three years of rld War II. After the death of Refik Saydam in July 1942, acoglu became prime minister of Turkey.

rawak: *see* British Empire.

rg, Tony (Anthony Frederick) (1882–1942), U.S. artist and creator marionettes, was born April 24 in Guatemala, the son of Ger- ı and English parents. He was educated in German military ools and became an officer at the age of 21. He gave up his ımission two years later to study art in London. He later went the United States, became a naturalized citizen in 1921 and ieved fame as a creator of marionettes. He designed marionette ws, illustrated books and experimented with animated cartoons. ong the many books he wrote and illustrated are: *Book for ldren* (1924); *Animal Book* (1925); *Trick Book* (1928); *Book of Marionette Plays* (1927); *Wonder Zoo* (1939); and *Wonder Book* (1941). He died in New York city, March 7.

Saskatchewan. The central of the three prairie provinces of Canada, Saskatchewan was created a province by the dominion parliament in 1905. Area, 251,700 sq.mi., comprising open plains country in the south, and broken wooded land in the north. Pop. (1941 census) 895,992. Saskatchewan sent 21 members to the house of commons, and 6 senators to the senate, as of 1941. Local administration is in the hands of a provincial parliament. In the general elections of 1938, William Patterson, the Liberal prime minister, was continued in office. There were no changes of political importance during 1942. The chief cities of Saskatchewan (population based on the 1941 census) are as follows, Regina, capital (56,520), Saskatoon (42,269), Moose Jaw (20,496), Prince Albert (12,290), and Weyburn (6,119).

Communication.—In 1941 there were 4,450 mi. of surfaced roads, and 147,505 mi. of improved earth roads. In 1940 there were 126,970 automobiles registered within the province.

Agriculture.—The total value of crops in 1941 was $117,117,000; in 1940 it was $176,078,000. The following figures show the value of individual crops for 1941; wheat $68,000,000; oats $24,810,000; barley $10,640,000; flax seed $4,500,000; potatoes $2,197,000.

Finance.—Ordinary revenue in 1940 was $24,958,420; ordinary expenditure $25,258,324; bonded indebtedness $123,677,353. A notable feature of the year was the importation into the province of more than 1,000 volunteer college students to aid in harvesting the bountiful, but exceptionally late, wheat crop.

(J. I. C.)

Saudi Arabia: *see* Arabia.

Sauer, Emil von (1862–1942), German pianist, was born Oct. 8 in Hamburg. A pupil of Nicholas Rubinstein in Moscow and Franz Liszt in Weimar, he made his debut in Berlin before the German imperial family in 1895. After a triumphal tour through England, Russia and the United States, he settled in Vienna. He taught at the Vienna conservatory, 1901–07, and was director of the piano master-classes from 1915 until his death. He was knighted by the Austro-Hungarian monarchy in 1917. He composed two piano concertos, two piano sonatas, 32 concert études, edited the complete works of many composers and was the author of an autobiography *Meine Welt* (1901). He had been appointed chamber virtuoso by the royal courts of Saxony, Rumania and Bulgaria. He died in Vienna, according to a Berne dispatch of April 29.

Savings and Loan Insurance Corporation, Federal: *see* National Housing Agency.
Savings Banks: *see* Banking.

Saydam, Refik (1881–1942), Turkish premier, had been medical attendant to Kemal Ataturk, first president of Turkey. He held the post of minister of health and in that capacity was invited by the Rockefeller foundation in 1929 to study health and social service institutions in the United States. Under his guidance, Turkey established public health and welfare services. He resigned from the health ministry to become minister of the interior, 1938–39. In 1939, Dr. Saydam was named premier. After the outbreak of World War II, he advocated a policy of neutrality but warned aggressor nations that the Turkish army was capable of warding off an invasion. His government signed the Anglo-French treaty of mutual assistance in Oct. 1939. Shukru Saracoglu replaced him as acting premier in Nov. 1941. Dr. Saydam died in Istanbul, July 7.

Schizophrenia: *see* Psychiatry.

Schneider, Eugene (1868–1942), French munitions maker, financier and politician, was born Oct. 29 in Le Creusot. He inherited the Creusot foundries, bought by his grandfather in 1836, and built up these works until the Schneider-Creusot armaments plants ranked with Krupp and Vickers-Armstrong in munitions and armaments production. Schneider was in the French chamber of deputies from 1900 to 1925. After the war, Schneider established a holding company, 1920, through which he controlled 182 French and 230 foreign armament works. Before the outbreak of World War II, he held 56% of the stock of the Czechoslovak Skoda works and allied firms, and was the power behind the Comité des Forges, the French steel trust. The principal Schneider plant at Le Creusot was bombed by the royal air force in 1942. The death of Schneider was reported in a Paris dispatch received in Berne on Nov. 17.

Schofield, Frank Herman (1869–1942), U.S. naval officer, was born Jan. 4 at Jerusalem, N.Y. A graduate of the U.S. Naval academy, 1890, he served in the Spanish-American War with a squadron in the Cuban blockade. During World War I, he was on the staff of the office of the chief of naval operations and was later attached to the U.S. naval forces in European waters, serving in London on Admiral Sims's staff. He assisted in drawing up the naval peace terms with Germany, and was naval representative at the three-power conference in Geneva in 1927. He was made commander of the battleship division in 1929, later serving as commander in chief of the U.S. fleet until his retirement in 1933. He was named rear admiral in 1924 and had been awarded the Navy cross. He died at the National Naval Medical centre, Bethesda, Md., Feb. 20.

Schurman, Jacob Gould (1854–1942), U.S. educator and diplomat, was born May 22 in Freetown, Prince Edward Island. For a biographical note see *Encyclopædia Britannica*. He was ambassador to Berlin from 1925 to 1930, and honorary lecturer on international relations at the Institute of Technology in Pasadena, Calif., from 1931 to 1932. He died in New York city, Aug. 12.

Scientific Research and Development, Office of. The Office of Scientific Research and Development (OSRD) was created in the Office for Emergency Management (*q.v.*) by executive order 8807 of June 28, 1941. Dr. Vannevar Bush of the Carnegie institution of Washington was appointed director. The functions of the office were outlined as follows:

(a) Advise the president with regard to the status of scientific and medical research relating to national defense and the measures necessary to assure continued and increasing progress in this field.

(b) Serve as the centre for the mobilization of U.S. scientific personnel and resources in order to assure maximum utilization of such personnel and resources in developing and applying the results of scientific research to defense purposes.

(c) Co-ordinate, aid and, where desirable, supplement the experimental and other scientific and medical research activities relating to national defense carried on by the departments of war and navy and other departments and agencies of the federal government.

(d) Develop broad and co-ordinated plans for the conduct of scientific research in the defense program, in collaboration with representatives of the war and navy departments; review existing scientific research programs formulated by the departments of war and navy and other agencies of the government, and advise them with respect to the relationship of their proposed activities to the total research program.

(e) Initiate and support scientific research on the mechanisms and devices of warfare with the objective of creating, developing and improving instrumentalities, methods and materials required for national defense.

(f) Initiate and support scientific research on medical problems affecting national defense.

(g) Initiate and support such scientific and medical research as may be requested by the government of any country whose defense the president deems vital to the defense of the United States under the terms of the act of March 11, 1941, entitled "An Act to Promote the Defense of the United States"; and serve as the central liaison office for the conduct o such scientific and medical research for such countries.

(h) Perform such other duties relating to scientific and medical research and development as the president may from time to time assign or delegat to it.

Within the OSRD were set up the National Defense Research committee (NDRC) and the Committee on Medical Research (CMR), the former to assist the director of the OSRD in the mobilization of the scientific personnel and resources of the U.S. and the latter to advise and assist with special reference to the medical personnel and resources of the U.S. The NDRC operated as a committee of the Council of National Defense from June 27, 1940 until June 28, 1941, during which time it entered into a number of contracts which were assumed by the OSRD.

The OSRD in 1942 operated through contracts with scientific laboratories in academic and industrial establishments. As o Nov. 30, 1942, the OSRD had concluded 1,725 contracts, while work was actively under way under approximately 425 additional letters of intention for which covering contracts were in the process of negotiation. These contracts and authorizations were with a total of 107 academic and 173 industrial establishments. Most of the work of the OSRD was started at the direct request of the armed services. Practically all of it was of a confidential nature which made it impossible to reveal details. However, results o the OSRD efforts had already been shown at the end of 1942 in very substantial orders placed by the armed services for equipment. Between June 27, 1940 and Nov. 30, 1942 the OSRD and its predecessor NDRC had received a total of $141,655,618 to be used in carrying out its objectives. (I. St.)

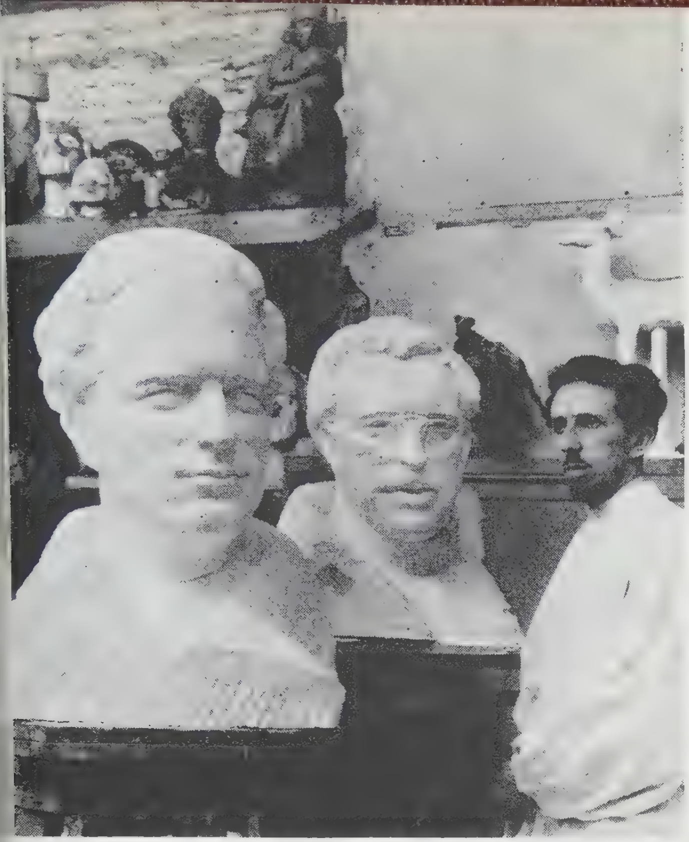
Scotland: *see* Great Britain and Northern Ireland, United Kingdom of.

Scott, Norman (1889–1942), U.S. naval officer, was born Aug. 10 in Indianapolis. He was graduated from Annapolis naval academy in 1911 and served aboard destroyers in World War I. He later served as an instructor in electrical engineering and physics at the Naval academy, and was a member of a United States naval mission to Brazil, 1937–39 Rear Adm. Scott was killed while leading a task force during the U.S. naval victory at the Solomons, Nov. 13–15.

Scrap: *see* Salvage Drives, U.S.; Secondary Metals.

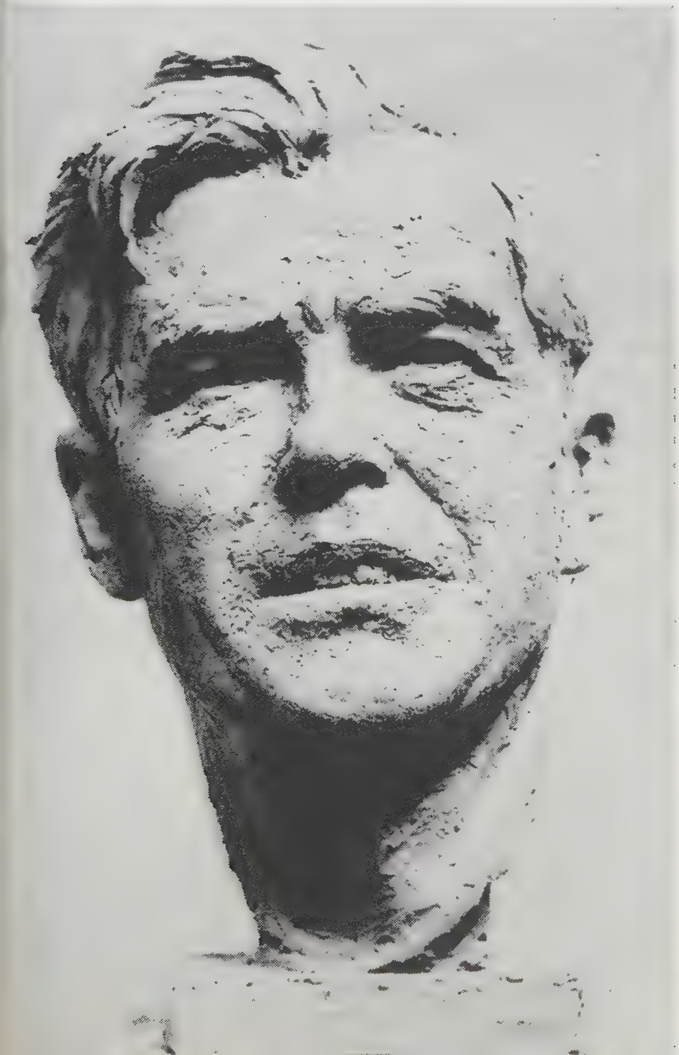
Sculpture. Special exhibitions and competitions were held in 1942, revealing fresh accomplishments; museum made valuable additions to their collections, a few public work already projected were completed. While there was an inevitable decline in government-sponsored sculpture projects, patronage was assumed by civic and local groups in important instances and gave renewed assurance of support.

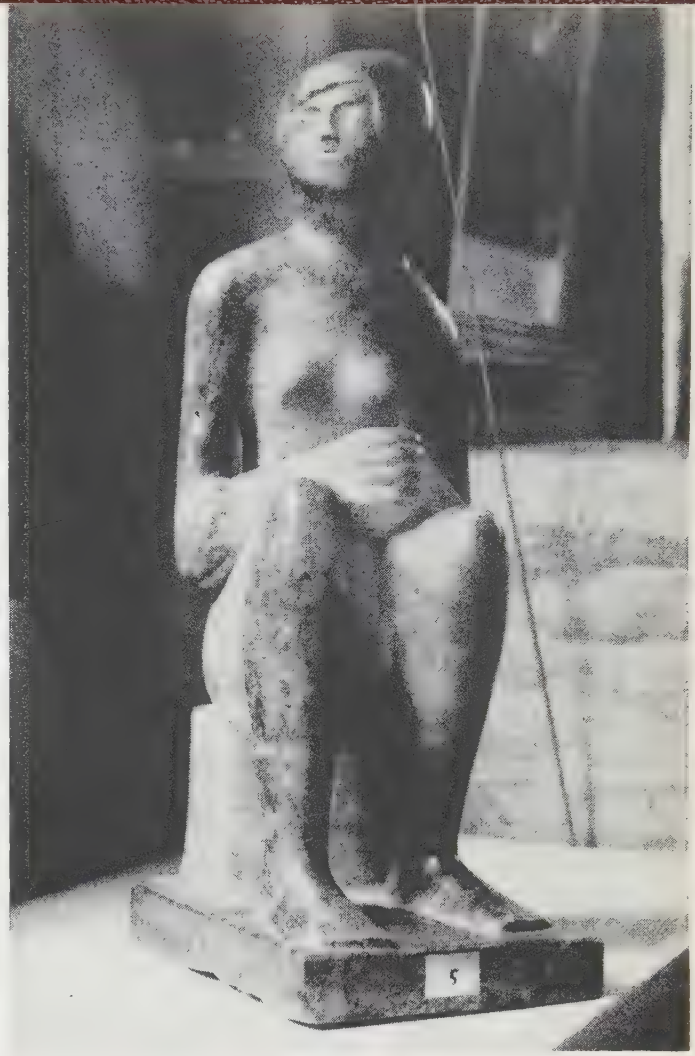
Artists for Victory Inc., an emergency wartime organization o 17 leading local and national art associations, represented by members of all the leading branches of art, showed the way fo specific progress. It proved advantageous to sculpture by drawing the profession together under a common leadership and by providing opportunities for new work and for exhibiting before the public. Under the auspices of the group large sums of money were distributed as exhibition prizes and through other compet



CAR NEMON, exiled Yugoslav sculptor in London, with his heads of King opold III and King Albert I of Belgium, commissioned by the Belgian govern- nt in Britain

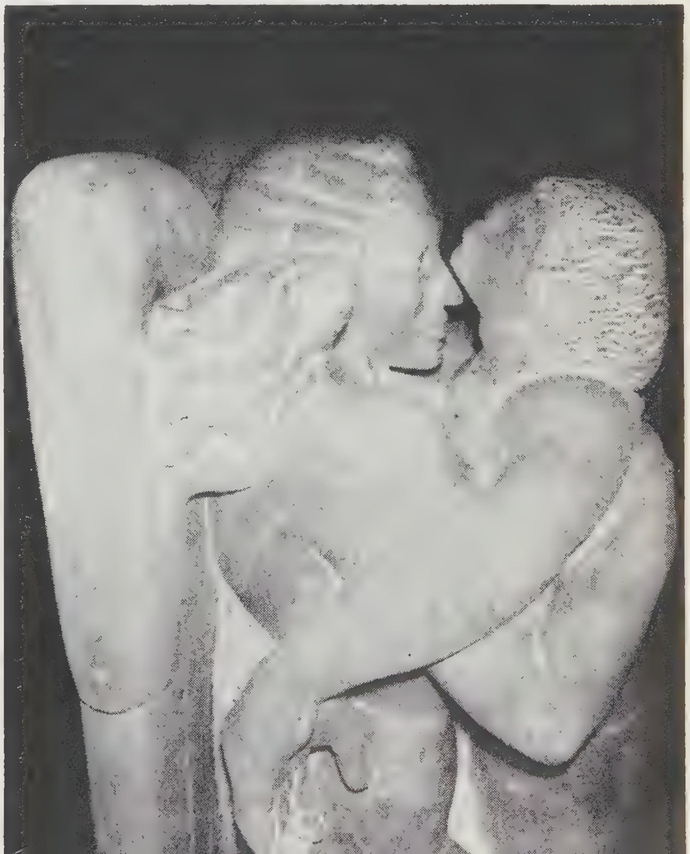
UST OF VICE-PRESIDENT WALLACE completed by Jo Davidson in 1942





"SEATED GIRL" by Henry Moore, on exhibit in the "Art for the People" series at the British Institute for Adult Education, London, in 1942

JACOB EPSTEIN finished his "Jacob and the Angel," a detail of which is shown here, in London early in 1942. He carved the work—a representation of the Old Testament story—from a six-ton block of alabaster



tion to sculptors throughout the United States.

The most conspicuous achievements of Artists for Victory were the awarding of $25,000 to 14 of the sculptors participating in the special exhibition of contemporary American art at the Metropolitan museum, and the promoting of a competition at the Whitney Museum of American Art for a temporary monument to "The Spirit of Aviation," in which six prizes amounting to $1,500 were awarded to successful contestants. Both events brought eager responses from hundreds of sculptors, and many works by outstanding artists were exhibited in both instances.

Apart from such special incentives which tended to offset the decline in federal patronage, sculpture received the support of long-established groups. The National Academy of Design, the Art Institute of Chicago and the Whitney museum continued their annual shows, each giving sculpture a prominent representation. The progressive Sculptors' Guild arranged a stimulating show more broadly defined than any of the others, in which United Nations artists of both Europe and Latin America took part, as well as many of the younger sculptors of the eastern area of the United States. While the authoritative National Sculpture society refrained from making any major demonstration under wartime conditions, it furthered its educational program with the preparation of a circulating exhibition of large-scale photographs of the recent work of the members, designed for presentation in museums, colleges and universities throughout the country. In this field of education, the Museum of Modern Art of New York also was active in circulating work in the more advanced categories.

While the curtailment of international trade doubtless limited importations of historical sculpture, and few important acquisitions were recorded, notable gifts were made to leading institutions. The gift of the famous Widener collection to the National Gallery of Art by Joseph E Widener of Philadelphia added another magnificent group of Renaissance sculpture to the public treasure store, including masterpieces of Italian artists such as Desiderio da Settignano, Donatello (represented by the celebrated "David" of the Casa Martelli), Rossellino, Luca della Robbia, Benvenuto Cellini, Jacopo Sansovino and Giovanni da Bologna. In the year's most munificent gift to an American museum French 18th century sculpture in the Renaissance tradition also included the work of Coysevox, Lemoyne and Houdon, the latter represented by several distinguished portraits.

Counting the acquisitions made by the Metropolitan museum through Artists for Victory, the latter made the most contemporary sculpture additions to the art of the museums Besides the "Maternity" group of Jose de Creeft, winner of the first purchase-prize, a monumental wood carving of St. Francis by the noted Brazilian sculptress, Maria Martins, also was acquired during the year

While relatively few imposing memorials were recorded as completed and unveiled to the public, progress on public works was noted in the final realization of two massive stone groups, each consisting of a titanic horse and a man, on either side of the terrace of the Federal Trade Commission building, in Washington. The groups were designed by Michael Lantz, who was awarded the commission four years ago as the outcome of a nation-wide federal competition which was held under the program then being carried out by the Section of Fine Arts. To commemorate the destruction of Lidice, however, Jo Davidson completed a memorial group which was sponsored by the Writers' War board on behalf of the Lidice Lives committee, and a statue of George Washington by George M. Proctor, also was erected at the Valley Forge National Shrine.

In Europe sculpture retained the status quo, its activity and production varying little from the position in which it found itself during the first two years of the war. Apart from the dedication of a sculpture of Lenin in Holford square, London, and the completion by Jacob Epstein of a monumental carving of "Jacob and the Angel" in his studio there, few developments in sculpture were reported from Europe. (*See* also ART EXHIBITIONS.) (C. BU.)

Sea Blockade: *see* BLOCKADE.

SEC: *see* SECURITIES AND EXCHANGE COMMISSION.

Secondary Education: *see* EDUCATION.

Secondary Metals. So far as data were available at the close of 1942, the following table presents the recovery of secondary metals in the United States in recent years; this material may either be scrap made in the producers' plants in the working of new metal, and thus has never been in use, or may be old and worn-out products discarded from the pool of metal in use and collected as "junk."

Secondary Nonferrous Metals Recovered in the United States

	1937	1938	1939	1940	1941
Copper—Thousands of short tons					
As metal	285.6	192.4	151.4	170.8	135.9
In alloys	246.5	167.4	345.1	351.8	580.7
In chemical compounds	?	?	3.2	9.4	9.8
Total	532.1	359.8	499.7	532.0	726.4
Percentage*	62–78	60–74	62–57	53–63	?–57
Lead—Thousands of short tons					
As metal	154.5	119.4	86.9	59.6	75.3
In alloys	120.6	105.5	148.8	200.8	322.1
In chemical compounds	?	?	5.8		
Total	275.1	224.9	241.5	260.3	397.4
Percentage*	41	41	36–87	33–87	?–96
Zinc—Thousands of short tons					
As metal	64.5	42.3	36.0	69.0	89.7
In alloys	62.8	44.8	98.9	112.3	143.2
In chemical compounds	?	?	54.8	40.8	48.5
Total	127.3	87.1	189.6	222.0	284.0
Percentage*	21	21	33–24	31–29	?–39
Tin—Thousands of short tons					
As metal	8.3	4.9	4.4	5.1	5.9
In alloys	20.3	17.3	23.0	26.5	36.1
In chemical compounds	1.7	1.4	0.7	0.7	1.1
Total	30.3	23.6	29.2	32.2	42.0
Percentage*	35	47	42–58	44–62	?–70
Aluminum—Thousands of short tons					
As metal	29.4	16.7	2.9	5.6	8.3
In alloys	33.2	22.1	51.0	74.7	97.6
Total	62.6	38.8	53.9	80.4	106.9
Percentage	38	26.5	38–70	41–57	?–41
Nickel—Thousands of short tons					
As metal	0.9	0.8	2.9	5.2	5.3
In alloys†	1.5	1.5			
Total	2.4	2.3	2.9	5.2	5.3
Percentage*	5	10	5–35	6–46	?–40
Antimony—Thousands of short tons					
As metal	11.5	7.8	9.8	11.4	21.6
In alloys	0.8	0.7			
Total	12.3	8.5	9.8	11.4	21.6
Percentage*	69	77	83–98	60–98	?–99+
Platinum—Thousands of troy ounces	55.9	44.7	45.4	47.7	?
O.P.M.‡—Thousands of troy ounces	16.4	19.7	18.0	18.8	?
Gold—Thousands of troy ounces	?	870.9	895.1	?	?
Silver—Thousands of troy ounces	?	18,438.8	24,972.3	?	?

*Ratio of secondary recovery to consumption of new metal; where a second figure appears, this is the percentage of the total secondary metal recovered from *old* materials, the remainder having come from the reworking of new plant scrap.

†Includes some in chemical compounds. ‡Other platinum group metals.

In addition to the nonferrous metals listed above, there was consumed in the United States in 1941 in the production of steel a total of 59,216,000 short tons of ferrous scrap, an increase of 31% over 1940. This total included 33,905 tons of scrap made in the producers' own plants (mainly new scrap), and 25,311,000 tons of purchased scrap (mainly old scrap). (G. A. RO.)

Second World War: *see* WORLD WAR II

Secret Service, U. S. Established during the Civil War, this division of the treasury department is one of the oldest federal law enforcement agencies. Its major duties include the protection of the person of the president of the United States, the members of his immediate family and the president-elect; the policing of the White House and its grounds; the suppression of the counterfeiting and altera-

UNTERFEITERS' EQUIPMENT seized by U.S. Secret Service agents in New k city in Jan. 1942

n of all government obligations; the protection of treasury ldings, money and securities and the enforcement of other s relating to the treasury department.

The outstanding accomplishment of the secret service during year ended June 30, 1942, was the smashing of a conspiracy flood the country with counterfeit 25-cent war savings stamps. New York city on May 12, 1942, secret service agents and post ce inspectors arrested 6 men comprising the engravers, printers, ancial backers and distributors and captured 200,692 bogus mps with a representative value of $50,173, together with a -design plate from which the counterfeits were printed. This ortive counterfeiting venture was suppressed before anyone was frauded, since the stamps had not been placed in circulation. ve of the defendants were sentenced in New York on June 11 serve 10 years each, and the sixth was sentenced to serve 8 ars.

Losses suffered by victims of counterfeit notes totalled $47,882 the fiscal year ended June 30, 1942, a drop of 93% from the arly average during the period 1933 to 1936, which preceded the ret service program of Crime Prevention through Education.

The secret service early in 1942, in co-operation with the board governors of the federal reserve system, distributed to all nks a card index describing all counterfeit bills which have apared in circulation since the size of the currency was changed 1929. An order issued January 29, 1942, authorized all banks d banking institutions of any nature whatsoever, organized der general or special federal or state statutes, to take possession of and deliver to the secret service all counterfeit money presented at their places of business.

During the fiscal year 1942, 22 new counterfeit note issues were detected. Secret service agents captured 34 metal plates for the printing of counterfeit obligations, as well as 12 steel dies, 252½ plaster moulds and 26½ metal moulds for the manufacture of counterfeit coins.

Agents seized bogus and altered notes with a total representative value of $72,950. Of this amount, $10,440 was seized before it reached circulation and of the balance, only $47,882 represented losses suffered by victims of passers of counterfeit notes.

Counterfeit coin seizures totalled $39,806.56, of which $5,288.84 was captured before it reached circulation. Of the balance, only $28,767 represented losses suffered by victims of passers of counterfeit coins.

During the fiscal year 26,821 cases were disposed of. In the 1,898 cases brought to trial, convictions were obtained in 97.6% of the cases, as compared with 97.1% of convictions during the previous year. Fines in criminal cases totalled $32,988.10 and imprisonments totalled 1,692 years 3 months 3 days and 5 hours. Additional sentences totalling 2,260 years and 7 days were suspended or probated.

The secret service investigated 11,985 cases relating to forged government checks. (F. J. W.)

Securities: *see* Business Review; Stocks and Bonds.

Securities and Exchange Commission.

Substantial progress was made by the Securities and Exchange commission during its fiscal year ending June 30, 1942, towards reaching the objectives sought by the geographic integration and corporate simplification provisions of the Public Utility Holding Company act of 1935. There were 26 new proceedings begun during the year to require registered holding companies to comply with the integration and simplification provisions of the statute.

During the year ended June 30, 1942, 124 applications or declarations relating to security issuances filed by registered public utility holding companies and their subsidiaries were approved by the commission. These effective filings totalled $631,661,484 in principal amount compared with $1,065,893,281 for the preceding fiscal year. The total of new securities issued during the period from December 1, 1935, the effective date of the act, to June 30, 1942, amounted to $4,583,487,267. There were 134 public utility holding companies registered with the commission at June 30, 1942. The total consolidated assets of these companies amounted to approximately $16,000,000,000, or about 68% of the private electric and gas utility industry of the United States. These 134 registered holding companies constituted 53 public utility holding company systems, which included 1,342 holding, subholding and operating companies. The holding company systems involved in integration or simplification proceedings under the act at June 30, had consolidated assets aggregating $14,237,000,000.

Securities effectively registered under the Securities act of 1933 during the fiscal year ended June 30, 1942, aggregated $2,052,000,000, compared with $2,611,000,000 for the preceding fiscal year, and with $1,787,000,000 for the fiscal year ended June 30, 1940. Securities proposed for sale by issuers totalled $1,461,000,000 compared with $2,081,000,000 in the preceding fiscal year and with $1,433,000,000 in the 1940 period.

The main offices of the Securities and Exchange commission were moved in 1942 to Philadelphia, Pa. There were also offices in Washington, D.C., and ten regional offices at Atlanta, Ga.; Baltimore, Md.; Boston, Mass.; Chicago, Ill.; Cleveland, O.; Fort

Worth, Tex.; New York, N.Y.; San Francisco, Calif., Seattle, Wash.; and Denver, Colo.

During the fiscal year ended June 30, 1942 the commission received nearly 12,000 items of mail classified as "complaint-enforcement." Up to July 1, 1942 the commission had referred to the department of justice 378 criminal cases, including 49 which were referred during the 1942 fiscal year. Since the organization of the commission in 1934, a total of 2,035 defendants had been indicted in 306 cases, including 27 cases which had been referred to the post office department. During the 1942 fiscal year, indictments were returned against 183 defendants. Convictions had been obtained against 885 defendants in 216 cases, representing 91.3% of the 259 cases which had been disposed of as to principal defendants. There were 142 defendants named in 44 cases who were convicted during the 1942 fiscal year.

There were ten civil proceedings pending at the beginning of the commission's 1942 fiscal year. During the year the commission instituted 36 additional proceedings including 33 injunctive actions brought against 91 persons to restrain them from fraudulent and otherwise illegal practices in the sale of securities. Of this total of 46 proceedings, 35 were disposed of during the year, including 28 cases which resulted in the entry of injunctions against 61 persons.

Investment advisers registered with the commission under the Investment Advisers act on June 30, 1942 totalled 732 as compared with 753 at the end of the previous fiscal year. At the same date there were 5,557 broker-dealers registered with the commission under the Securities Exchange act.

The chairman of the commission in 1942 was Ganson Purcell of New York. Other members of the commission were: Robert E. Healy of Vermont; Sumner T. Pike of Maine, Edmund Burke, Jr. of New York and Robert H. O'Brien of Montana. (*See* also STOCKS AND BONDS.) (G. PL.)

Seeing Eye.

This organization, which teaches dogs to guide blind persons, began to operate in 1928 when Morris Frank brought his German shepherd, Buddy I—bred and trained by Mrs. Harrison Eustis and Elliott S. Humphrey in Switzerland—to New York and proved that American street traffic could not baffle the expert animal. In 1942, 716 blind men and women, from every State in the Union, were using dogs educated by the Seeing Eye at Morristown, N.J. and were thus made happy and capable of earning their living as lawyers, ministers, journalists, musicians, beekeepers, electrical and radio engineers, teachers, pharmacists, salesmen, undertakers and as factory workers in war industries. Some of these self-reliant blind persons were using their second dogs; a few their third. A dog's life is not long, and the Seeing Eye guarantees not to let slip back into dogless darkness anyone whom a guide dog has once set free.

Immediately after Pearl Harbor it was resolved that, "The Seeing Eye will, at no expense to the federal government, endeavour to provide Seeing Eye dog guides for eligible persons who, as members of the armed forces of the United States, have lost their sight in line of duty." Moreover, Elliott S. Humphrey was "lent" to the Army to help set up a system for training war dogs.

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(B. TA.)

Seignobos, Charles

(1854–1942). French historian, was born Sept. 10 at Lamastre. He was professor of history at the Sorbonne, 1890–1927, and honorary professor until his death. Prof. Seignobos was regarded as one of France's great historians His last work, *Histoire comparée des peuples de l'Europe,* was published in 1938. He died at his home in Brittany, according to a Vichy dispatch of April 29. (See *Encyclopædia Britannica.*)

Seismology.

Progress in seismology during 1942 was affected by the war. An unknown number of observing stations must have been destroyed or suspended, and much of the major earthquake belts was in active war zones without communications. However, the principal earthquakes were located and their intensity appraised from instrumental records of distant stations. While there was no major earthquake there were about 13 in which loss of life or property or both occurred, the most severe being that of May 13 in Ecuador.

Two new seismograph stations were established in the United States, and four of its stations and one in Colombia were provided with new instruments. Two stations were maintained in Greenland. Canada, the United States, Mexico, El Salvador, Guatemala, Australia and New Zealand co-operated in earthquake location. Records of earth motion associated with destruction were obtained, the most important being those of the earthquake of Oct. 21 in southern California. Vibration periods of buildings and other structures were obtained to aid in earthquake-resistant design. This involved a range of vibration periods not otherwise observed and such measurements formed an important war contribution.

Geodetic surveys of the year provided many new points from which to determine crustal movements possibly associated with earthquake. Tilt measurements continued with inconclusive results. Tide gauges established through co-operation of American republics in South and Central America with the United States aided in detecting crustal movements and the study of seismic seawaves. Special investigations requiring additional observations were stopped because of war demands on personnel, but some studies of accumulated data were made. The activities of international seismological organizations were curtailed and in some cases discontinued. (*See* also DISASTERS.) (N. H. H.)

Selective Service.

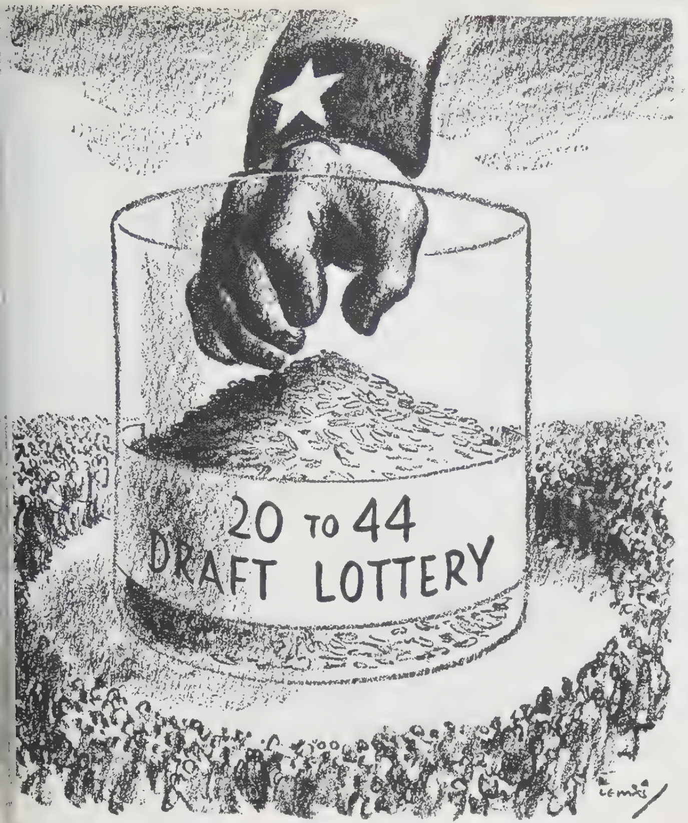
Fifteen months of actual operations brought Selective Service to the beginning of 1942 with a trained and experienced organization that extended into every community in the U.S. and numbered more than 200,000 citizens, the large majority of whom were patriotic volunteer workers.

As the need for men and the size of the army increased, the physical standards were lowered, because there were increased opportunities for service by men who were not fit for full combat duty. As the need for men increased, Selective Service became increasingly severe in the classification of men for occupational reasons and judged requests for deferment on a basis of comparative contribution to the total war effort.

As the need for men increased, Selective Service became increasingly severe in the classification of men for dependency reasons, and more and more curious and concerned about the kind and amount of dependency involved in each individual case.

In all of this process of selecting the men who would serve in the armed forces, and selecting the men who would stay at home to continue in their civilian occupations to serve the national war effort or care for their dependents, the local board comprised of patriotic volunteer workers from the individual community had the first jurisdiction and made the decision regarding its neighbours who were registered in the local board.

On Jan. 31, 1942 there were 6,269 of these local boards throughout the U.S., at least one in each county. Alaska had 24 boards; Puerto Rico, 122 boards; Hawaii, 25 boards. The entire Selective Service system numbered more than 200,000 persons, the very large majority of whom were patriotic volunteer workers who served as local board, appeal board and advisory board members, government appeal agents, medical and dental examiners and re-employment committeemen. The Selective Service system was



E THIRD U.S. SELECTIVE SERVICE LOTTERY, March 17, 1942, to deter-
e the order numbers of men between 20 and 44, was the subject of this
oon by Lewis in the *Milwaukee Journal*. The drawing carried the caption,
ch Man, Poor Man, Beggar Man....." etc.

anized and its personnel trained over 15 months of actual
rations to do anything the armed forces required in personnel
curement.

arly in 1942, Secretary of War Stimson announced that the
l for the armed forces by the end of 1942 was 3,600,000 men
he army, 400,000 in the navy and 200,000 in the marine corps.
is would have indicated a total induction into the army for
2 by Selective Service of 1,900,000 men, an average of 158,000
month. Actual inductions during the year many times ex-
ded that figure. In addition, volunteer recruiting by the army,
y and marine corps many times exceeded announced schedules.
military reasons, the actual figures on inductions and the real
of U.S. armed forces were not made public.

t was a special objective of Selective Service to preserve the
ily life of the U.S. intact, to the greatest extent possible. It
particularly concerned with families with children, but it was
to be socially desirable that the family as the foundation
ial institution should be maintained during the emergency.
s was so, even though the fundamental problem which Se-
ive Service dealt with was not marriage, but dependency.
ile practically all the "dependencies" recognized by the regula-
s grow out of marriage, the fact of dependency and not of
riage was to be administratively determined. The dependents
st, in fact, depend on the registrant's income for their support,
while the financial problem was the main one, the spiritual
tionship and dependence was not to be entirely disregarded.
s was the substance of advice sent by national headquarters
published widely in the newspapers. In the light of the facts,
the statistics of increased marriages, the Selective Service
l boards were on the alert for evidence where marriage might
used as a means to create dependency in order to evade mili-
training and service. Generally speaking, the deferments on
unds of dependency were generous and were warranted by the peacetime situation in which the decisions were made.

In the first two registrations, with their 17,000,000 registrants, more than 10,000,000 registrants were placed in Class III. This was one indication of the social importance of this class. It aimed at maintaining, in its unity, the family. But, from the social viewpoint, the indirect social results not related to family life were not less important in this period of world-wide war. The protection of the great body of skilled workers on the farms and in the factories was made possible by this more deferred classification in Class III formally on dependency grounds. Here was the industrial and agricultural manpower pool. The maintenance of the ordinary processes of war production and of the morale of the civilian life was also achieved indirectly by this classification.

Section 5 (e) of the law reads as follows:

". . . The President is also authorized, under such rules and regulations as he may prescribe, to provide for the deferment from training and service under this act in the land or naval forces of the United States (1) of those men in a status with respect to persons dependent upon them for support which renders their deferment advisable, . . ."

The law specifically limited dependency deferments by the following words:

"Section 15. When used in this act . . . (c) the term 'dependency' when used with respect to a person registered under the provisions of this act, includes only an individual (1) who is dependent, in fact, on such persons for support in a reasonable manner, and (2) whose support in such manner depends on income earned by such person in a business, occupation, or employment."

The regulations provided that registrants upon whom one or more dependents depended for support in a reasonable manner should be placed in Class III. The regulations restricted the persons who could be dependent upon a registrant as follows: The registrant's wife; divorced wife; child, including adopted child, or a child born out of wedlock; parent, including persons who were supported in good faith by the registrant and whose relationship was similar to that of the parent; grandparents; brother or sister (brother or sister included only a person having one or both parents in common with the registrant, who was either under 18 years of age, or was physically or mentally handicapped); and other persons under 18 years of age, or a person of any age who was physically or mentally handicapped whose support the registrant assumed in good faith.

On June 23, 1942 the whole concept and determination of dependency deferments was changed when the Serviceman's Dependents Allowance Act of 1942 was approved. It was entitled, "An Act—To provide family allowances for the dependents of enlisted men of the Army, Navy, Marine Corps and Coast Guard of the United States . . ." It provided that:

"SEC. 101. The dependent or dependents of any enlisted man of the fourth, fifth, sixth, or seventh grades in the Army of the United States, the United States Navy, the Marine Corps, or the Coast Guard, including any and all retired and reserve components of such services, shall be entitled to receive a monthly family allowance for any period during which such enlisted man is in the active military or naval service of the United States on or after June 1, 1942, during the existence of any war declared by Congress and the six months immediately following the termination of any such war.

"SEC. 102. The monthly family allowance payable under this title to the dependent or dependents of any such enlisted man shall consist of the Government's contribution to such allowance and the reduction in or charge to the pay of such enlisted man.

"SEC. 103. The dependents of any such enlisted man to whom

BEFORE CONGRESS lowered the Selective Service minimum age to 18 years in 1942, thousands of 18- and 19-year-olds volunteered for service. The picture shows some of these youths being sworn into the army at New York city in Oct. 1942

a family allowance is payable under the provisions of this title shall be divided into two classes to be known as "Class A" and as "Class B" dependents. The Class A dependents of any such enlisted man shall include any person who is the wife, the child, or the former wife divorced of any such enlisted man. The Class B dependents of any such enlisted man shall include any person who is the parent, grandchild, brother, or sister of such enlisted man and who is found by the Secretary of the department concerned to be dependent upon such enlisted man for a substantial portion of his support.

"Sec. 104. A monthly family allowance shall be granted and paid by the United States to the Class A dependent or dependents of any such enlisted man upon written application to the department concerned made by such enlisted man or made by or on behalf of such dependent or dependents. A monthly family allowance shall be granted and paid by the United States to the Class B dependent or dependents of any such enlisted man upon written application to the department concerned made by such enlisted man, or upon written application to the department concerned made by or on behalf of such dependent or dependents in any case in which the Secretary of the department concerned finds that it is impracticable for such enlisted man to request the payment of such allowance. The payment of a monthly family allowance to any Class B dependent or dependents of any such enlisted man shall be terminated upon the receipt by the department concerned of a written request by such enlisted man that such allowance be terminated.

"Sec. 105. (a) The amount of the Government's contribution to the family allowance payable to the dependent or dependents of any such enlisted man shall be the aggregate of the amount of the Government's contribution to the Class A dependent or dependents of such enlisted man and the amount of the Government's contribution to the Class B dependent or dependents of such enlisted man.

"(b) The amount of the Government's contribution to the Class A dependent or dependents of such enlisted man shall be at a monthly rate of—

(1) $28, if such enlisted man has a wife but no child;
(2) $40, if such enlisted man has a wife and one child, and an additional $10 for each additional child;
(3) $20, if such enlisted man has no wife but has one child;
(4) $30, if such enlisted man has no wife, but has two children, and an additional $10 for each additional child; and
(5) $20, in addition to the amounts, if any, payable under clauses (1), (2), (3), or (4) of this subsection, if such enlisted man has a former wife divorced.

"(c) The amount of the Government's contribution to the Class B dependent or dependents of any such enlisted man shall be a a monthly rate of—

(1) $15, if such enlisted man has only one parent who is a Class B dependent, and an additional $5 for each grandchild, brother, or siste which such enlisted man has who is a Class B dependent, but not mor than $50 in the aggregate;
(2) $25, if such enlisted man has two parents who are Class B dependents, and an additional $5 for each grandchild, brother, or siste which such enlisted man has who is a Class B dependent, but not mor than $50 in the aggregate; and
(3) $5, if such enlisted man has no parent who is a Class B dependent, for each grandchild, brother, or sister which such enlisted man ha who is a Class B dependent, but not more than $50 in the aggregate

"In any case in which the amount of the Government's contribution to the Class B dependents of any enlisted man would be greater than $50, if there is no limitation upon the aggregate amount of the Government's contribution to such dependents the amount contributed by the Government to each such dependent shall be reduced in the same proportion as the aggregate amount of the Government's contribution to all such dependents is reduced.

"Sec. 106. (a) For any month for which a monthly family allowance is paid under this title to the dependent or dependents of any such enlisted man the monthly pay of such enlisted man shall be reduced by, or charged with, the amount of $22, and shall be reduced by, or charged with, an additional amount of $5 if the dependents to whom such allowance is payable include both Class A and Class B dependents. The amount by which the pay of any such enlisted man is so reduced or with which it is s charged shall constitute part of the monthly family allowance payable to his dependent or dependents.

“(b) In any case in which the mily allowance is payable to ore than one dependent of any ch enlisted man, the amount which the pay of such en- ted man is reduced or with hich it is charged shall be ap- rtioned among and paid for e benefit of such dependents the following proportions:

“(1) If such dependents are all Class A dependents or are all Class B dependents, such amount shall be apportioned among such dependents in the same ratio in which they share the total Government contribution payable to them under section 105.

“(2) If one or more of such dependents are Class A dependents and one or more of such dependents are Class B dependents, $22 of such amount shall be apportioned among such Class A dependents in the same ratio in which they share the total Government contribution payable to such Class A dependents under section 105 and $5 of such amount shall be apportioned among such Class B dependents in the same ratio in which they share the total Government contribution payable to such Class B dependents under section 105.

‘(c) Notwithstanding any other provision of this title, in any e in which a family allowance is granted under this title to a e or a child living separate and apart from the enlisted man der a court order or a written agreement, or to a former wife orced, the amount of the family allowance payable to such e, child, or former wife divorced shall not exceed the amount d in the court order or decree or in the written agreement as amount to be paid to such wife, child, or former wife divorced. any case in which the application of the provisions of the ceding sentence results in a reduction in a family allowance ich would otherwise be payable under this title, the amount by ich the pay of the enlisted man is reduced or with which it is rged and the amount of the Government contribution to such ily allowance may each be reduced in accordance with such ulations as may be prescribed by the Secretary of the depart- nt concerned.”

The immediate result of the passage of this act was that usands of men with dependents volunteered for induction ough their local boards. The amount of the allowance in many es exceeded the financial contribution the registrant had been king to his family.

Re-employment.—The demobilization of armies has always ated a serious problem which lasted until the ex-soldiers were orbed into civilian life. The infant government of the United tes granted large tracts of land to the soldiers who fought in Revolutionary War, as a soldier's bonus. This served as a tial solution of the re-employment program. Free land for soldiers was available for the veterans of the wars up to and luding the armies of 1861–65.

The demobilization of nearly 5,000,000 men after World War I sented a re-employment problem of great magnitude. The free d, for all practical purposes, had been exhausted. That a total 213,000 individual World War I veterans had been enrolled the CCC camps about 23 years after the war was proof of the d of a comprehensive re-employment program. The figure would surely have been larger except that the veteran enrolments were limited by law to not more than 10% of the total number of enrollees.

All efforts in job restoration and job procurement were purely on a voluntary basis by veterans' organizations and patriotic groups within the several communities. One example was that of the 77th division of the army. When this division returned from overseas, the officers and men had contributed money to cover the necessary expenses of supervision which achieved close to 100% placement of the former members of this division in civilian occupations.

No provisions were made for handling re-employment in the studies prepared by the joint army and navy Selective Service committee, although the importance of the problem was fully realized. It was assumed that this work would, in all probability, be entrusted to some other agency. Immediately after the passage of the Selective Service act a “personnel division,” as required by the law, was established. It was designated as the re-employment division.

The objectives of the re-employment division were determined to be as follows:

1. To assist, at the local board level, trainees in being restored to their former positions.
2. To give active assistance, at the local board level, to all trainees who were unemployed at the time they entered the army.
3. To assist trainees to find better jobs than those they formerly held.
4. To encourage trainees to take pre-employment or supplemental training courses so as to fit themselves for positions in the defense industries.

The early objectives of the re-employment division were much broader than those required by the law; but under the training program it was contemplated that there would be a fairly steady flow of men into the army, and out of the army back to civil life, in the peacetime conditions prevailing, and the numbers involved would not place a burden upon the organization. It was also realized that the national policy concerning the defense industries would require many additional workers in the defense industries and the upgrading of many employees.

The re-employment program called for the appointment of a re-employment committee or committeeman for each local board,

Table I.—*Accumulative Report of Classification, Dec. 31, Nov. 30 and Oct. 31, 1942*

Group 1, 2, 3 and 5 Registrants
(Continental United States)

Classification	Dec. 31, 1942*		Nov. 30, 1942†		Oct. 31, 1942‡	
	Number of registrants	% of total reg.	Number of registrants	% of total reg.	Number of registrants	% of total reg.
Total living registrants	28,864,091	100.0	28,952,151	100.0	27,198,116	100.0
Unclassified and pending	2,819,613	9.8	3,816,891	13.2	2,706,638	10.0
Classes I-A and I-A-O	1,285,972	4.5	1,282,745	4.4	1,296,168	4.8
Classes I-A and I-A Remediable	101,192	0.4	107,728	0.4	116,462	0.4
Classes I-B and I-B-O (Incl. Rem.)	184,625	0.6	222,935	0.8	311,871	1.1
Class I-C (Inductees)	3,698,221	12.8	3,375,583	11.7	3,035,048	11.1
Class I-C (Enlistees)	2,079,439	7.2	1,776,134	6.1	1,491,431	5.5
Class II-A	419,930	1.5	457,082	1.6	429,264	1.6
Class II-B	631,846	2.2	609,191	2.1	564,797	2.1
Class II-C	136,670	0.5	15,523	0.1	0	..
Class III-A	12,650,268	43.8	13,214,536	45.6	13,807,031	50.8
Class III-B	1,785,949	6.2	1,653,100	5.7	1,357,854	5.0
Class III-C	55,694	0.2	8,755	§	0	..
Class IV-B	9,185	§	9,015	§	8,637	§
Class IV-C	61,142	0.2	61,636	0.2	64,973	0.2
Class IV-D	128,556	0.4	124,926	0.4	121,780	0.4
Classes IV-E and IV-E-LS	10,703	§	10,256	§	9,714	§
Class IV-F	2,417,875	8.4	2,206,115	7.6	1,876,448	6.9
Class IV-H	387,211	1.3	0	..	0	..

*Preliminary. Excludes Group 3 and Group 5 data not received from two local boards in two states.
†Revised. Excludes Group 3 and Group 5 data not received from four local boards in four states.
‡Revised. Includes Group 5 registrants that were militarily liable, *i.e.*, 20-year olds. Excludes Group 3 and Group 5 data not received from eight local boards in five states.
§Less than .05%.

Table II.—*Accumulative Report of Classification Through Dec. 31, 1942, According to States*

Group 1, 2, 3 and 5 Registrants*
(Preliminary)

State	Total living registrants	Unclassified and pending		Classes I-A and I-A-O		Classes I-A and I-A-O Remediable		Classes I-B and I-B-O (incl. remediable)		Class I-C				Class II-A		Class II-B		Class II-C	
										Inductees		Enlistees							
		Number of registrants	% of total reg.	Number of registrants	% of total reg.	Number of registrants	% of total reg.	Number of registrants	% of total reg.	Number of registrants	% of total reg.	Number of registrants	% of total reg	Number of registrants	% of total reg.	Number of registrants	% of total reg.	Number of registrants	% of total reg.
United States (Continental)	28,864,091	2,819,613	9.8	1,285,972	4.5	101,192	0.4	184,625	0.6	3,698,221	12.8	2,070,439	7.2	419,930	1.5	631,846	2.2	136,670	0.5
Alabama	596,881	49,359	8.3	35,164	5.9	3,586	0.6	4,936	0.8	70,981	11.9	27,962	4.7	4,811	0.8	5,781	1.0	2,546	0.4
Arizona	113,447	13,990	12.3	3,366	3.0	676	0.6	718	0.6	11,158	9.8	7,767	6.8	790	0.7	2,632	2.3	247	0.2
Arkansas	404,766	48,071	11.9	20,617	5.1	1,577	0.4	4,149	1.0	51,831	12.8	21,260	5.3	2,566	0.6	2,792	0.7	566	0.1
California	1,692,792	162,115	9.6	86,045	5.1	6,049	0.4	10,239	0.6	184,590	10.9	181,534	10.7	26,214	1.5	73,455	4.3	6,383	0.4
Colorado	231,104	13,628	6.0	7,274	3.1	1,086	0.5	575	0.2	31,117	13.5	24,733	10.7	3,841	1.7	3,906	1.7	1,515	0.7
Connecticut	402,910	36,691	9.1	22,150	5.5	347	0.1	1,601	0.4	48,809	12.1	31,330	7.8	3,855	1.0	18,506	4.6	471	0.1
Delaware	61,199	5,153	8.4	2,343	3.8	184	0.3	544	0.9	7,801	12.7	3,494	5.7	493	0.8	1,601	2.6	288	0.5
District of Columbia	191,786	19,942	10.4	7,924	4.1	193	0.1	5,059	2.6	19,672	10.3	15,842	8.3	1,752	0.9	5,486	2.9	17	†
Florida	432,484	57,552	13.3	22,769	5.3	2,086	0.5	7,035	1.6	47,762	11.0	36,129	8.4	3,887	0.9	4,307	1.0	872	0.2
Georgia	664,944	86,475	13.0	36,075	5.4	6,569	1.0	7,459	1.1	67,377	10.1	33,738	5.1	6,526	1.0	3,828	0.6	1,409	0.2
Idaho	113,863	9,018	7.9	3,621	3.2	217	0.2	246	0.2	14,144	12.4	9,708	8.5	4,621	4.1	2,464	2.2	2,859	2.5
Illinois	1,778,412	158,285	8.9	60,436	3.4	8,662	0.5	10,544	0.6	231,879	13.0	128,025	7.2	23,314	1.3	34,761	2.0	5,485	0.3
Indiana	737,898	40,207	5.4	31,926	4.3	1,066	0.1	3,062	0.4	97,555	13.2	54,355	7.4	9,755	1.3	11,827	1.6	4,180	0.6
Iowa	502,029	38,256	7.6	16,327	3.3	1,260	0.3	2,401	0.5	62,177	12.4	44,268	8.8	17,667	3.5	8,382	1.7	11,957	2.4
Kansas	350,376	25,266	7.2	14,206	4.1	857	0.2	899	0.3	48,004	13.7	30,690	8.8	10,687	3.1	7,796	2.2	4,467	1.3
Kentucky	578,494	57,817	9.0	25,661	4.4	1,697	0.3	3,787	0.7	82,613	14.3	27,422	4.7	4,313	0.7	3,942	0.7	1,834	0.3
Louisiana	531,154	44,925	8.5	30,531	5.7	3,380	0.6	4,583	0.9	79,840	15.0	34,909	6.6	6,323	1.2	6,475	1.2	1,875	0.4
Maine	166,040	11,130	6.7	7,738	4.7	904	0.0	292	0.2	21,354	12.9	11,299	6.8	1,665	1.0	3,459	2.1	833	0.5
Maryland	437,681	65,653	15.0	18,888	4.3	471	0.1	5,046	1.2	41,659	9.5	23,215	5.3	8,250	1.9	15,516	3.5	1,131	0.3
Massachusetts	889,265	66,049	7.4	32,453	3.6	1,470	0.2	2,152	0.2	120,377	13.5	101,202	11.4	7,691	0.9	31,700	3.6	1,003	0.1
Michigan	1,217,981	149,805	12.3	35,061	2.9	2,762	0.2	6,724	0.6	151,181	12.4	71,976	5.9	15,614	1.3	24,647	2.0	3,419	0.3
Minnesota	574,118	26,306	4.6	19,793	3.4	1,754	0.3	936	0.2	90,462	15.8	49,070	8.5	30,653	5.3	7,793	1.4	14,943	2.6
Mississippi	445,874	64,633	14.5	24,312	5.5	1,382	0.3	3,444	0.8	63,475	14.2	17,918	4.0	2,042	0.5	1,562	0.4	800	0.2
Missouri	784,424	88,074	11.2	38,056	4.9	3,213	0.4	5,748	0.7	96,146	12.3	46,531	5.9	9,190	1.2	10,849	1.4	3,458	0.4
Montana	119,001	8,983	7.5	4,397	3.7	666	0.6	1,041	0.9	17,353	14.6	11,336	9.5	3,010	2.6	5,414	4.5	1,305	1.1
Nebraska	252,744	19,305	7.6	12,255	4.8	933	0.4	736	0.3	35,505	14.0	20,672	8.2	6,649	2.6	3,860	1.5	5,334	2.1
Nevada	30,001	2,902	9.7	1,873	6.2	113	0.4	48	0.2	4,146	13.8	3,045	10.1	461	1.5	1,222	4.1	223	0.7
New Hampshire	97,931	7,925	8.1	4,273	4.4	510	0.5	326	0.3	12,832	13.1	8,632	8.8	1,498	1.5	2,211	2.3	288	0.3
New Jersey	970,046	99,110	10.2	40,419	4.2	168	†	5,936	0.6	143,141	14.8	73,501	7.6	9,085	0.9	26,308	2.7	1,157	0.1
New Mexico	111,517	3,301	3.0	3,891	3.5	466	0.4	589	0.5	17,212	15.4	8,192	7.3	1,337	1.2	1,659	1.5	786	0.7
New York	3,048,089	385,337	12.6	173,600	5.7	12,533	0.4	18,453	0.6	419,051	13.7	199,833	6.6	37,898	1.2	81,385	2.7	7,251	0.2
North Carolina	772,200	105,910	13.7	41,161	5.3	4,135	0.5	11,571	1.5	84,975	11.0	32,739	4.2	8,506	1.1	7,351	1.0	1,570	0.2
North Dakota	129,274	12,536	9.7	3,765	2.9	191	0.1	654	0.5	19,911	15.4	8,933	6.9	8,858	6.9	1,828	1.4	3,830	3.0
Ohio	1,510,215	134,985	8.9	59,498	3.9	3,309	0.2	6,651	0.4	213,318	14.1	97,934	6.5	20,315	1.3	31,688	2.1	4,827	0.3
Oklahoma	466,431	46,740	10.0	18,580	4.0	1,785	0.4	3,340	0.7	50,733	10.9	37,097	8.0	3,990	0.9	4,655	1.0	2,078	0.4
Oregon	234,762	14,164	6.0	10,385	4.4	628	0.3	410	0.2	27,900	11.9	27,699	11.8	5,414	2.3	6,837	2.9	1,291	0.5
Pennsylvania	2,174,895	168,787	7.8	80,244	3.7	8,553	0.4	13,056	0.6	300,831	13.8	143,238	6.6	24,032	1.1	62,632	2.9	5,504	0.3
Rhode Island	152,352	10,542	6.9	11,647	7.6	522	0.3	299	0.2	21,198	13.9	15,112	10.0	941	0.6	5,310	3.5	104	0.1
South Carolina	405,345	48,210	11.9	16,508	4.1	1,631	0.4	3,191	0.8	40,247	9.9	18,700	4.6	2,660	0.7	3,976	1.0	1,428	0.4
South Dakota	124,520	8,765	7.0	2,724	2.2	229	0.2	266	0.2	17,871	14.4	8,575	6.9	5,051	4.1	2,153	1.7	4,198	3.4
Tennessee	633,912	58,834	9.3	35,787	5.6	1,579	0.2	4,904	0.8	83,857	13.2	32,414	5.1	4,723	0.7	6,416	1.0	1,950	0.3
Texas	1,432,137	150,100	10.5	58,120	4.1	5,598	0.4	7,873	0.5	169,897	11.9	128,187	9.0	13,449	0.9	19,314	1.3	4,458	0.3
Utah	114,706	9,364	8.2	6,663	5.8	361	0.3	320	0.3	12,089	10.5	9,802	8.5	1,642	1.4	2,156	1.9	360	0.3
Vermont	69,018	4,255	6.2	2,614	3.8	321	0.5	262	0.4	8,380	12.1	5,698	8.3	2,234	3.2	1,309	1.9	1,164	1.7
Virginia	610,203	54,820	9.0	35,755	5.9	1,689	0.3	6,579	1.1	63,324	10.4	34,451	5.6	6,597	1.1	11,003	1.8	1,660	0.3
Washington	384,893	36,151	9.4	13,026	3.4	1,287	0.3	896	0.2	39,819	10.3	44,646	11.6	12,081	3.1	21,017	5.5	1,942	0.5
West Virginia	411,586	35,527	8.6	21,837	5.3	1,277	0.3	2,488	0.6	61,526	14.9	26,361	6.4	3,635	0.9	8,723	2.1	569	0.1
Wisconsin	654,146	56,751	8.7	22,890	3.5	1,108	0.2	2,433	0.4	84,090	12.9	42,724	6.5	28,055	4.3	19,151	2.9	9,858	1.5
Wyoming	54,245	3,909	7.2	1,324	2.4	92	0.2	124	0.2	7,051	13.0	5,541	10.2	1,259	2.3	801	1.5	977	1.8

*Exclusive of Group 3 and Group 5 data not received from two local boards in two states.
†Less than .05%.

nominated by the local board, and approved by the state Selective Service administration. In the more populous centres a clearing-house committee, consisting of civic leaders and representatives of industry and labour, was to be established. The occupational and educational history of each man was to be secured and forwarded to the local re-employment committeeman at least one month before the man returned to civil life. The first effort was made to find out if the demobilized soldier or sailor could be returned to the position he left. If it seemed possible to re-employ the soldier or sailor and the employer was recalcitrant, the re-employment committeeman was to personally see if he could adjust the matter; if not, it was to be turned over to the clearing-house committee for solution by moral suasion prior to being sent to the United States district attorney having jurisdiction, for prosecution of the employer for violating the law.

For the man who was unemployed, efforts of the United States employment service and the re-employment committeeman were to be co-ordinated so as to give him genuine assistance.

Extensive and detailed investigations were made to organize the occupational information about the men in the armed forces, and a final form had not been determined during the period covered by this report. The experiments continued in 1942. Post-war re-employment plans were under constant study.

During 1942, 80,000 men wounded and unfit for further military service were returned to civilian life. If physically able to take hi place in civilian life again, the returning soldier was placed in job immediately. If physically handicapped, an effort was mad to fit him for work by rehabilitation or special vocational training. (*See* also Heart and Heart Diseases; Indians, American Medicine; Nervous System; War Manpower Commission.)

(E. M. Cn.)

Europe.—In all belligerent countries, young men vigorou enough to fight or to work hard were comparatively scarce. Me of particular skills and aptitudes again were needed in greate numbers than were available. But these particular scarcities wer only two of the more important features of a general tightness.

Almost from the start of World War II the German manpowe position was difficult, but the difficulty did not necessarily represent a weakness in the German economy but rather indicated th strength of the German strategic position. Germany was short o men because it entered the war prepared with large armed force and with an industry tooled up to employ men on that vast sca necessary to maintain its powerful offensives. It is noteworth that Italy, the weaker partner, was able to send workers to Germany, for her armament industry was not designed on a bi enough scale to equip and maintain an army that would strain h resources of men.

As Great Britain emulated the warlike effort of Germany, th

Table II. (cont.)—*Accumulative Report of Classification Through Dec. 31, 1942, According to States*

Group 1, 2, 3 and 5 Registrants*
(Preliminary)

State	Total living registrants	Class III-A		Class III-B		Class III-C		Class IV-B		Class IV-C		Class IV-D		Classes IV-E and IV-E-LS		Class IV-F		Class IV-H	
		Number of registrants	% of total reg.	Number of registrants	% of total reg.	Number of registrants	% of total reg.	Number of registrants	% of total reg.	Number of registrants	% of total reg.	Number of registrants	% of total reg.	Number of registrants	% of total reg.	Number of registrants	% of total reg.	Number of registrants	% of total reg.
ited States ontinental)	28,864,091	12,650,268	43.8	1,785,949	6.2	55,694	0.2	9,185	†	61,142	0.2	128,556	0.4	10,703	†	2,417,875	8.4	387,211	1.3
labama	596,881	269,266	45.1	53,724	9.0	990	0.2	260	†	158	†	3,326	0.6	71	†	58,125	9.7	5,835	1.0
rizona	113,447	50,884	44.9	9,062	8.0	182	0.2	67	†	631	0.6	448	0.4	28	†	9,995	8.8	806	0.7
rkansas	404,766	182,449	45.1	8,296	2.0	468	0.1	93	†	75	†	1,900	0.5	32	†	45,698	11.3	12,326	3.0
alifornia	1,692,792	645,454	38.1	119,091	7.0	2,140	0.1	345	†	18,531	1.1	6,117	0.4	745	†	132,389	7.8	31,356	1.9
olorado	231,104	87,986	38.1	25,934	11.2	1,702	0.7	148	†	779	0.3	1,100	0.5	100	†	19,571	8.5	6,109	2.6
onnecticut	402,910	166,361	41.3	35,287	8.8	204	0.1	169	†	1,154	0.3	1,541	0.4	76	†	29,557	7.3	4,801	1.2
elaware	61,199	30,638	50.0	1,949	3.2	70	†	52	†	10	†	204	0.3	15	†	5,691	9.3	669	1.1
istrict of Columbia	191,786	81,675	42.6	4,852	2.5	2	†	73	†	154	†	1,836	1.0	42	†	24,139	12.6	3,126	1.6
lorida	432,484	182,834	42.3	15,688	3.6	605	0.1	182	†	867	0.2	1,763	0.4	49	†	46,835	10.8	1,262	0.3
eorgia	664,944	318,265	47.9	16,647	2.5	863	0.1	148	†	176	†	2,515	0.4	58	†	74,190	11.2	2,626	0.4
daho	113,863	31,608	27.8	25,694	22.6	664	0.6	50	†	336	0.3	729	0.6	73	†	7,008	6.2	803	0.7
linois	1,778,412	882,289	49.6	84,023	4.7	1,184	0.1	335	†	3,143	0.2	8,109	0.5	565	†	125,866	7.1	11,507	0.6
ndiana	737,898	351,767	47.7	60,942	8.3	1,511	0.2	317	†	398	†	4,080	0.6	847	0.1	63,697	8.6	406	0.1
wa	502,029	225,758	45.0	27,401	5.5	3,422	0.7	135	†	353	†	2,378	0.5	325	†	31,950	6.4	7,612	1.5
ansas	350,376	139,107	39.7	30,068	8.6	2,171	0.6	162	†	54	†	2,198	0.6	821	0.2	23,957	6.8	8,966	2.6
entucky	578,494	258,302	44.7	34,474	6.0	1,033	0.2	191	†	114	†	2,755	0.5	58	†	60,852	10.5	17,629	3.0
ouisiana	531,154	196,621	37.0	37,119	7.0	705	0.1	130	†	161	†	2,497	0.5	36	†	66,330	12.5	14,714	2.8
aine	166,040	73,302	44.1	17,159	10.3	638	0.4	81	†	178	0.1	815	0.5	47	†	11,323	6.8	3,763	2.3
aryland	437,681	182,759	41.8	34,224	7.8	196	†	103	†	905	0.2	2,303	0.5	114	†	33,652	7.7	3,596	0.8
assachusetts	889,265	356,675	40.1	90,997	10.2	406	†	248	†	1,160	0.1	4,602	0.5	155	†	68,710	7.7	2,215	0.2
ichigan	1,217,981	·573,210	47.1	70,970	5.8	852	0.1	250	†	1,150	†	3,711	0.3	346	†	90,723	7.4	15,580	1.3
innesota	574,118	239,839	41.8	28,609	5.0	2,373	0.4	148	†	285	†	3,385	0.6	207	†	45,600	7.9	11,962	2.1
ississippi	445,874	203,237	45.6	16,494	3.7	2,320	0.5	74	†	84	†	1,618	0.4	37	†	37,794	8.5	4,648	1.0
issouri	784,424	363,673	46.4	31,983	4.1	2,532	0.3	195	†	369	†	4,623	0.6	153	†	68,842	8.8	10,789	1.4
ontana	119,001	42,567	35.8	10,293	8.6	381	0.3	74	†	225	0.2	428	0.4	187	0.2	9,680	8.1	1,631	1.4
ebraska	252,744	93,238	36.9	20,687	8.2	1,978	0.8	90	†	238	†	1,506	0.6	191	†	19,135	7.6	10,432	4.1
evada	30,001	6,925	23.1	6,148	20.5	86	0.3	40	0.1	82	0.3	91	0.3	3	†	2,229	7.4	364	1.2
ew Hampshire	97,931	44,167	45.1	5,016	5.1	118	0.1	103	0.1	136	0.1	537	0.5	24	†	7,140	7.3	2,195	2.2
ew Jersey	970,046	433,709	44.7	46,539	4.8	179	0.2	231	†	1,959	0.2	3,215	0.3	189	†	72,213	7.4	12,987	1.3
ew Mexico	111,517	47,213	42.3	8,747	7.8	1,933	1.7	82	†	51	†	781	0.7	37	†	10,503	9.4	4.737	4.2
ew York	3,048,089	1,266,616	41.6	142,392	4.7	2,694	0.1	688	†	10,018	0.3	11,934	0.4	567	†	234,373	7.7	43,466	1.4
orth Carolina	772,200	377,107	48.8	17,433	2.3	868	0.1	170	†	152	†	2,741	0.4	144	†	73,057	9.5	2,610	0.3
orth Dakota	129,274	45,088	34.9	8,666	6.7	2,410	1.9	29	†	51	†	619	0.5	63	†	10,040	7.8	1,802	1.4
hio	1,510,215	656,739	43.5	123,727	8.2	1,294	0.1	383	†	1,854	0.1	6,430	0.4	1,185	†	117,911	7.8	28,167	1.9
klahoma	466,431	229,183	49.1	12,891	2.8	2,941	0.6	327	†	162	†	2,294	0.5	276	†	39,762	9.0	9,597	2.1
regon	234,762	85,756	36.5	27,504	11.7	363	0.2	133	0.1	358	0.2	1,209	0.5	248	0.1	16,509	7.0	7,954	3.4
nnsylvania	2,174,895	978,068	45.0	174,321	8.0	1,232	0.1	413	†	1,166	†	9,002	0.4	1,279	†	178,246	8.2	24,291	1.1
hode Island	152,352	65,555	43.0	7,030	4.6	5	†	64	†	113	†	662	0.4	15	†	12,042	8.0	1,191	0.8
uth Carolina	405,345	209,526	51.7	7,987	2.0	522	0.1	223	†	73	†	1,519	0.4	25	†	44,479	11.0	4,440	1.1
uth Dakota	124,520	42,339	34.0	11,137	8.9	1,444	1.2	32	†	43	†	691	0.6	155	0.1	9,388	7.5	9,459	7.6
nnessee	633,912	304,548	48.0	30,396	4.8	1,381	0.2	221	†	137	†	3,012	0.5	106	†	62,214	9.8	1,433	0.2
xas	1,432,137	656,363	45.8	55,188	3.9	3,143	0.2	714	†	9,102	0.6	6,978	0.5	206	†	124,703	8.7	18,744	1.3
ah	114,706	51,357	44.8	10,310	9.0	819	0.7	96	†	527	0.5	1,224	1.1	13	†	5,995	5.2	1,608	1.4
rmont	69,018	31,778	46.0	3,380	4.9	436	0.6	39	†	64	†	304	0.4	10	†	6,209	9.0	561	0.8
rginia	610,203	281,304	46.1	37,945	6.2	520	0.1	265	†	281	†	2,091	0.3	368	0.1	64,433	10.6	7,118	1.2
ashington	384,893	137,134	35.6	43,804	11.4	702	0.2	537	0.1	2,288	0.6	1,842	0.5	163	†	24,353	6.3	3,205	0.8
est Virginia	411,586	169,466	41.2	32,701	7.9	460	0.1	60	†	329	0.1	1,254	0.3	85	†	41,117	10.0	4,171	1.0
sconsin	654,146	288,034	44.0	45,751	7.0	1,771	0.3	175	†	326	0.1	3,430	0.5	150	†	46,859	7.2	590	0.1
yoming	54,245	12,529	23.1	15,269	28.1	781	1.4	40	0.1	182	0.3	209	0.4	14	†	2,791	5.1	1,352	2.5

xclusive of Group 3 and Group 5 data not received from two local boards in two states.
ess than .05%.

e signs of stringency made their appearance. As the factories e built to equip large armies, air forces and fleets, greater ed forces could be mobilized at the same time that greater bers could be employed on producing the armament and sups that made their mobilization possible. And into this vast ure of warlike activity each man needed to be placed where contribution to the sombre whole could have its most powereffect.

ot only men were needed but women too. The shortage of forced the substitution of women for men, to free men for jobs which only men can do—primarily, of course, to fight. he United Kingdom this process of substitution was pushed t up to the firing line. Women with the armed forces were only replacing men in sedentary or domestic duties; they were helping to man anti-aircraft batteries, maintain aeroplanes care for the guns of the fleet.

ow was this mosaic of effort fitted together to form a picture otal war? The answer, in general terms, may be put in this . There was selective drafting into the armed forces; there the direction of workers to selected industries; there was the rolled movement of workers from place to place; there was ing to give people more needed skills.

en and women of particular ages were required to register national service either with the armed forces or in industry. Up to Nov. 1942 men between the ages of 18 and 50 and women between the ages of 20 and 45 had registered for employment; and of these, men aged 18 to 41 and women aged 20 to 24 had been called primarily for the armed forces. But these younger men and women were not, even if medically fit, taken as a matter of course into the armed forces. The calling up of a man or woman depended upon the circumstances of his or her case—circumstances known to the ministry of labour and national service who was charged with the responsibility of directing the use of manpower. Inter alia, these circumstances were: the need of the armed forces for men (particularly for men of that individual's calibre and industrial skill); the need of industries of national importance for that man or woman; the shortage or superfluity of labour (particularly of that kind) near that person's home; the possibility of training some other person to do his or her work; the age and suitability of the person for the various branches of the armed forces. In the case of women, the preference of the individual to go into the armed forces or to be placed in essential work was also considered.

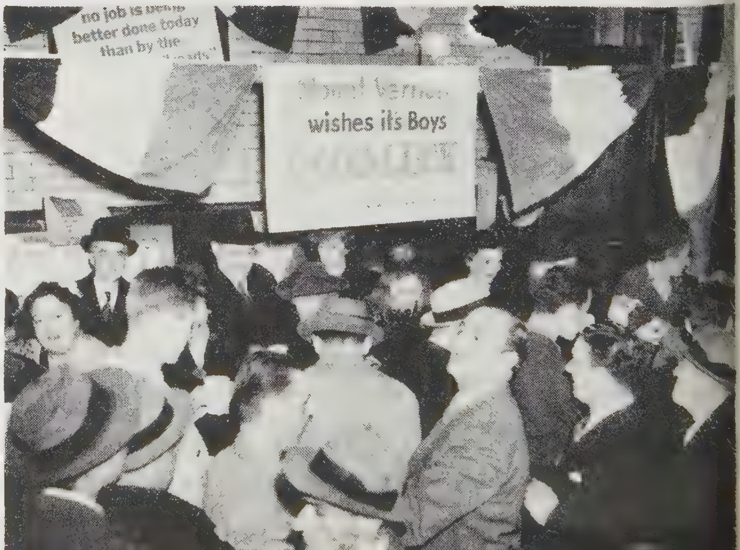
It will easily be seen that these were difficult criteria against which to measure the need for a man or woman. And it would be more than surprising if the calling up of men and women were done without mistakes and, even more, without criticism. What can be said is that the method seemed to be sound enough and

Above: THE BAND of Austin high school, Chicago, gave a concert for draftees on their way to induction in June 1942

Left: VICE-PRESIDENT HENRY A. WALLACE (left) and Speaker Sam Rayburn (seated, centre) were among the 375 members of congress who registered for the fourth U.S. draft April 27, 1942, for all men between the ages of 45 and 64

Below, left: WORKERS at the Selective Service headquarters in New York city checking lists during the lottery of March 17, 1942

Below, right: A TYPICAL "SEND-OFF," re-enacted many times in U.S. railroad stations during 1942, was given to draftees of Mount Vernon, N. Y. leaving for induction at New York city



at the various local employment exchanges, which were branches the ministry of labour and national service, should have the quisite information to make a better decision than anyone else. The same kind of considerations, together with the personal d domestic position of the persons registered, determined the ections given to the older individuals—*i.e.*, whether he or she s to stay in the present employment; to be moved to some lustry more urgently requiring labour or to some locality where e shortage of labour was particularly acute; or whether because ill-health or domestic ties the person could be allowed to remain the present employment or condition (*e.g.*, as housewife). ally, people could be trained in industrial training centres trolled by the ministry of labour and national service, to learn ne skill for which there was an acute demand, and at the same e receive remuneration comparable to wages earned during ployment.

There are two points which should be made to prevent a false pression. The first is that decisions were not irrevocable. Men d women could be directed to remain at their work to be called later to the armed forces. People could be moved from a ality to which they had been directed. An efficient utilization manpower demanded the ability to examine the position afresh often as conditions changed. This very essential condition was erved. The other, and even more important point was that the ection of labour did not imply the absence of voluntary service, less an unwillingness to serve. It implied that the individual ld not know the sphere in which he would be most useful. And directing people, the government was merely implementing the ire of people to serve.

Finally it should be said that this is a description of the mecha- n of control. The policy which directed it was the policy ch determined the size of the armed forces, the size of muni- industries, the number needed to operate essential civil in- tries and so on. For obvious reasons, nothing could be known this, save the equally obvious fact that more and more people e being directed away from the amenities of life to what were its necessities. (J. Sd.)

lenium. The production of selenium in the United States in 1941 increased 89% over 1940, to 620,500 lb., sales were up 85% to 681,650 lb., while imports in the first e months of the year were 139,500 lb., 4% more than in the year 1940. Canadian production increased, but no statistics e reported. (G. A. Ro.)

nate: *see* Congress, United States; Elections.

negal: *see* French Colonial Empire.

bia: *see* Yugoslavia.

rrano Suñer, Ramón (1901–), Spanish statesman, was born in Saragossa. ile studying law in the University of Bologna, Italy, he be- e interested in left-wing political theories. On his return to in he practised law in Saragossa, and in 1933 he became a nber of the cortes as a deputy of the Catholic party. Two rs after the outbreak of the Spanish civil war in 1936, he was pointed minister for press and propaganda in the cabinet of the rgents by his brother-in-law, Generalissimo Francisco Franco. s position gave him complete control over press and radio. In 7 he made a good-will visit to Germany, where he attended Nuremberg nazi congress and met Ribbentrop, Hitler and er ranking nazis. As a result of these visits and his talks with ssolini and Ciano in Italy he succeeded in getting more axis materials for the insurgent armies. On Oct. 18, 1940 he was e foreign minister of Spain. Serrano Suñer tied Spain to the coat tails of the axis in foreign policy, but dependence on Britain for food prevented a rupture with the Allies during 1940–42. On Sept. 3, 1942, Franco revamped his cabinet; Serrano Suñer was ousted from the foreign ministry and replaced by Gen. Francisco Gómez de Jordana. (*See* also Spain.)

Serum Therapy. Serum therapy is the treatment of disease by the use of serums prepared from the blood of animals, including human serum. Serum therapy includes the prevention as well as the treatment of disease, by vaccines as well as by serums or any analogous product. Vaccines and similar products are made from bacteria or viruses killed or changed or extracted or grown so that when injected into a person, instead of causing the disease, they allow him to build up his own immunity against the disease. Serums and products similar to them contain protective or curative properties, natural to the animal or artificially produced in the animal from which they are derived, properties which can be passively transferred to a person by injection under the skin or into a vein.

The most useful vaccine-like products have been smallpox vaccine, diphtheria toxoid and typhoid vaccine. During 1942 there was improvement and development in the use of tetanus toxoid; this had been found effective in the prevention of lockjaw and obviates the use of serum after dangerous injuries, provided one can be sure that the person has previously been immunized with the tetanus toxoid.

Other vaccines which underwent improvement as regards safety or efficacy or both were yellow fever vaccine and typhus vaccine. This was fortunate because both were of importance under wartime conditions. Rabies vaccine, used against lockjaw, was also improved. The use of vaccines against whooping cough received much study, and evidence was accumulating that a considerable degree of protection can be attained by their use.

The most useful serum-like product had always been diphtheria antitoxin. The development of tetanus toxoid may cause a decline in the use of tetanus antitoxin, especially among those who, like soldiers, can wear a tag to show in case of injury that they have been immunized. The greatest decline in the use of serums was in pneumonias due to the pneumococcus. Here the sulpha drugs were supplanting much of the former usefulness of antipneumococcus serums. A similar change took place in the treatment of the previously very fatal meningococcus meningitis.

The greatest recent development in serum therapy was the improvement and wide extension in the use of products made from the blood of man himself—human serum and plasma. Though there was some use for specific serums from persons who recovered, for example, from measles or scarlet fever and hence might be assumed to have protective substances in their blood, it was the more general use of the products from bleeding adults which had the widest attention. These products included human whole blood itself, human serum and human plasma, especially frozen or dried plasma which could be stored and transported for emergency use. These products were much blander, that is, much less likely to cause reactions, than blood from another species such as the horse. They were used chiefly in shock, haemorrhage and severe burns.

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Service Organizations, United: *see* United Service Organizations.

Seychelles: *see* BRITISH EAST AFRICA.

Shaposhnikov, Boris Mikhailovich (1882–), Russian army officer, was born Oct. 4 in Zlatoust, Russia. He won a scholarship to the imperial academy of the general staff, was graduated in 1910 at the top of his class and was commissioned an officer in the Czarist army. In May 1918 he offered his services to the red army and was appointed an assistant commissar by Lenin and Trotsky. In 1921 he was awarded the order of the red banner. He served in the red army for 13 years before joining the communist party. In 1937 he became chief of the general staff and a member of the powerful central executive committee of the U.S.S.R. He became generally recognized as the chief strategist of the red army when he succeeded in breaking Finnish resistance in the winter of 1940. In recognition of his achievements in the Finnish campaign, Stalin conferred on him the rank of marshal in May 1940. He was said to have been the author of the three-front plan of defense against Hitler's armies in the German-Russian war, and on Oct. 31, 1941 he was recalled as soviet chief of staff. Shaposhnikov was also said to have contrived the strategy that enabled the Russians to hurl back the nazis at the Volga river and Stalingrad in 1942. National recognition of his achievements was evidenced by the nationwide observance of his birthday on Oct. 4, 1942.

Sharpening Stones: *see* ABRASIVES.

Sheep. The number of sheep and lambs on United States farms at the beginning of 1942 reached an all-time high—55,979,000 head, compared to 54,283,000 in 1941—as reported by the department of agriculture. The 1942 figure was subsequently stated in round numbers of 56,000,000 in governmental reports. The lamb crop of 1942 was estimated at 32,300,000, thus bringing the total number of sheep and lambs in 1942 to 88,300,000 head. The lamb crop of 1941 was 32,900,000 head. This figure added to the number of sheep and lambs at the beginning of the year gave the 1941 total supply as 87,200,000 head.

High prices for lamb and mutton led to large marketings in 1942. As a result the number of sheep on farms Jan. 1, 1943, was forecast as 53,300,000. It was also expected that the lamb crop in 1943 would show a decline. Agricultural department estimates were that it would be 31,200,000 head, or a total supply of 84,500,000 head in 1943. The goal for lamb and mutton production in 1943 was announced by the department of agriculture as requiring the slaughter of only approximately 24,000,000 sheep and lambs. It was decided not to ask further reductions in 1943. Ceiling prices for lamb were put into effect Aug. 1, 1942; for mutton, Oct. 5, 1942. The ceiling on mutton was removed Dec. 3, and there was a sharp advance in retail prices. A new ceiling covering both lamb and mutton was then adopted Dec. 23 for the various grades of carcasses and wholesale cuts. Price differentials were based on 12 price zones covering the United States. (*See* also LIVESTOCK; MEAT; WOOL.) (S. O. R.)

Shipbuilding. Because of the global war and resulting restriction of authorized information, there were no accurate statistics of world shipbuilding for 1942 aside from certain data, American in origin, cleared through official sources. It was obvious, however, that all nations at war and neutral nations as well, wherever practicable, were devoting their utmost efforts to the production of both naval and commercial vessels for purposes of offense, defense and the maintenance of normal trade.

Losses of merchant tonnage due to torpedoing by submarine, aircraft bombing, mines, and other casualties were continuing, and the loss of United States tonnage was particularly heavy after the entrance of that country into the war. The latest reports indicated the sinking of more than 500 vessels as of Dec. 1942. This includes merchant vessels of all types and sizes, but there is no authorized record of losses by tonnage. (*See* SUBMARINE WARFARE; BLOCKADE.)

Detailed information regarding the American naval program could not be released. A statement made by the chairman of the House Naval Affairs committee as of June 30, 1942, however, revealed that at that time there were building 3,230 combatant, auxiliary, patrol and mine vessels for the United States navy; in addition to which, it was stated, the country was turning out 218 more war ships for the allied countries as well as 11,659 vessels, such as harbour craft, barges and small auxiliaries for essential and special needs.

Up to Dec. 1, 1942, 625 seagoing commercial vessels of 6,890,000 dead-weight tons were delivered by the private shipyards of the United States, which was more than six times the deliveries for the entire year 1941—an achievement never previously approached by any nation. President Roosevelt's call early in the year for 8,000,000 dead-weight tons of shipping in 1942 and 15,000,000 tons for 1943 was expected to be met, as the shipbuilding staffs and the facilities of the country were geared to meet this unusual demand. Privately owned shipyards produced both naval and commercial vessels, and the actual output of commercial vessels would depend upon the relative allocation of materials for these two types of craft.

Shipbuilding is a heavy industry. It is dependent for its output on the delivery of materials in the required sequence and when needed, and in the ability of the industry to maintain its productive manpower. Heavy and almost irreplaceable losses of skilled men resulted from enlistments and the draft. An official requirement that recruiting for all war services must be done through the Selective Service system was expected to help control manpower in the shipbuilding industry.

The building time required for merchant vessels was continually reduced during 1942. The average time from keel laying to completion of Liberty vessels, according to the October report of the Maritime commission was 66 days, compared with the original contract requirement of 105 days. The best previous average production time was 70.1 days per ship in September. The reasons for these records of construction were:

(1) The fact that several shipyards were devoted solely to the construction in their yards of large numbers of these vessels, all of one design, so that for the first time in the history of shipbuilding the full advantages of multiple construction were shown;

(2) The layouts of the shipyards building Liberty vessels provided for heavy lifting crane facilities, and large areas between shop and ship, both of which features facilitated pre-assembly; and

(3) A far greater use of welding, which fitted in well with pre-assembly.

The ship-repair yards of the country at times were taxed to their utmost capacity in the repair and reconditioning of damaged vessels. These yards were called upon not only to perform repairs on commercial vessels, for the Maritime commission, private account and vessels for other nations under lend-lease appropriations, but also for the repair and reconditioning of large numbers of naval vessels. This volume of vital, special work was being handled in some cases in the yards also producing new ships. Many ships so seriously damaged as to be reported lost were quickly made seaworthy through the peculiar genius of the men engaged in ship-repair work.

As the naval and commercial building program developed, a large number of the smaller shipbuilding and ship-repairing yards of the United States on the seaboard, Great Lakes and great rivers were called into service for the building of government vessels of smaller sizes, and their expanding output has been of sub-ntial aid to the defense program.

Approximately one-half of the construction cost of a ship was pended for the purchase of materials and equipment used by shipyard in its assembly, thus making the dependence of pbuilding on allied marine industries of the country of partic- r significance. (*See* also SHIPPING, MERCHANT MARINE.)

(H. G. S.)

British Empire.—Owing to the destruction of merchant ships d the shortage of tonnage for commercial work, shipbuilding in 42 occupied a particularly prominent position throughout the rld, but in most countries close secrecy was maintained. Nec- ary for military purposes, its disadvantages were great, partic- rly in causing disquietude and unrest. In Great Britain little inite data were published although the Admiralty announced May that the yards, with 50% fewer hands than during the last r, were turning out 90% more tonnage. Secrecy was main- hed with regard to prices, although private owners who had lered ships stated that the price was 50% above 1939.

This secrecy also encouraged considerable criticism against Ad- alty control, largely political in character and in many in- nces completely disproved by investigation. When the min- y of production was established in February the Admiralty s left with the responsibility of naval and mercantile ship con- uction, repair and equipment.

The redundant yards closed down by the National Shipyard urity, Ltd. during the slump were a constant target for critics; July a prominent trades union official declared that no ship- d which was closed during the depression of the '30s had been pened, whereupon, having constantly refused to answer ques- ns, the Admiralty announced in August that 23 such establish- nts had been reopened, some for repair work only but 12 for building of ships up to 10,000 tons dead weight, and a 13th being prepared. The first of these yards was ready for re- ning in Dec. 1939, but labour could not be found for it until 1. Some of the yards concerned could not be reopened as the s were used for other essential war industries.

The Admiralty's policy was also criticized for rejecting assem- -line shipbuilding, the Tutin system which proposed to utilize nal being the one generally advocated.

Although practically all European yards were unsuited for total ding and prefabrication to the extent possible in the newly nned U.S. yards, prefabrication was growing steadily and er sections were being built on the ground away from the slip- . Certain yards were also used for fabricating ship parts t by constructional engineers, especially on the north-east st; and where practicable, U.S. welding methods were adapted British conditions.

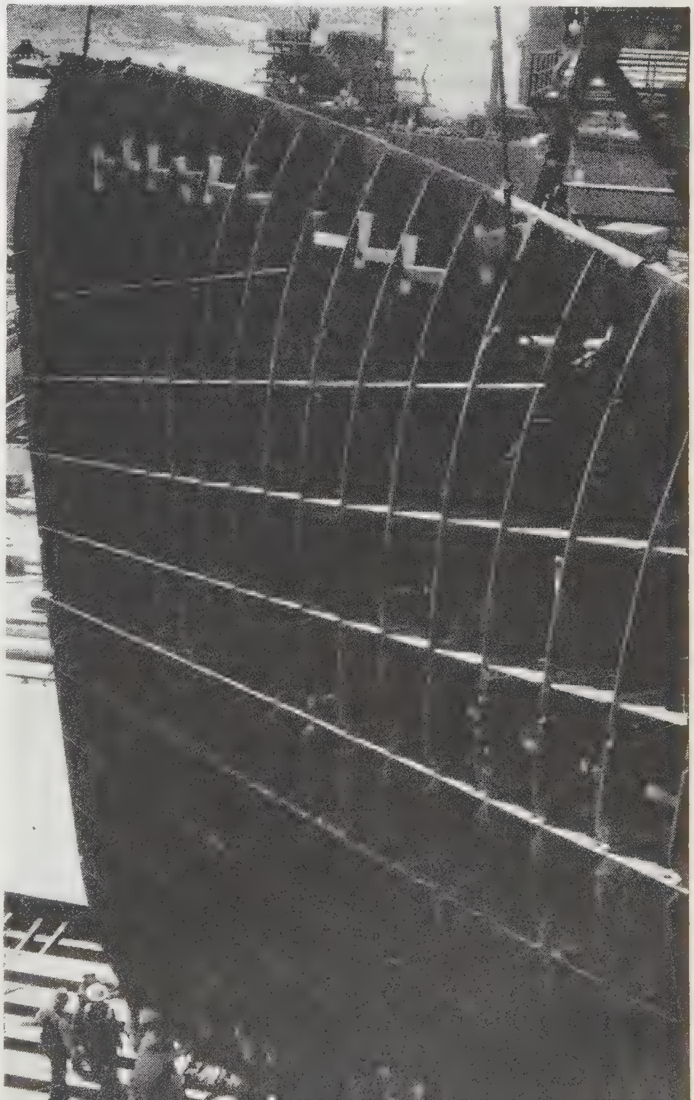
s time and material were saved by repairing a damaged ship ead of building a new one, great attention was paid to the air side, which still employed 50% of British shipbuilding our even after all possible jobs had been diverted to overseas ds. During 1941 numerous ships were kept waiting for repairs, by the beginning of 1942 the facilities had been excellently anized and the waiting list was being rapidly reduced. By May as announced that no ships were waiting, although naturally cedence was given to the ships which could be completed most dly. Several ships which had been cut in two and only part ed had new sections built on remarkably quickly. The repair k to be done tended to increase steadily for various reasons; instance, slower ships compelled to force their engines in order maintain their positions in convoy in bad weather often de- nded engine room repairs and, in the faster ships particularly, r misses by bombs deranged the machinery. The cost of re- rs rose rapidly and steadily, demanding the rearrangement of ernment rates of hire.

The supply of skilled labour caused great anxiety. The previous appeal to ex-shipbuilders to return had disappointing results; many were on other work of national importance from which they could not be spared and others were no longer capable of good work, especially at a height. The transfer of skilled labour to areas where there was a shortage often caused strong feeling which, however, decreased as the organization improved. The shortage of skilled supervisors in particular caused considerable waste, especially in isolated jobs like ship repairs afloat. As conscription was intensified there was shortage of unskilled labour also and cases were reported of ships being delayed through the lack of men to remove the staging and carry out similar work. Transfers from other industries were checked by the Essential Works Orders.

The unions co-operated loyally in arranging for the dilution of labour and the removal of the demarcation rules which had repeatedly checked output. It was the unions themselves, starting with those on the Clyde, which took up this point and contrived a great improvement. Government training centres were established but many were replaced by the shipyards' individual schemes which functioned excellently.

The employment of women in shipyards became a major question, for the shipbuilding industry had not employed women to nearly the same extent as other branches of engineering. Certain yards already employed a number with striking success but others were slower and early in the year the authorities pressed them

PREFABRICATED SHIPS were advocated by Henry J. Kaiser in 1942 to offset the mounting losses of the United Nations at sea. Here is shown a prefabricated double bottom at one of the Kaiser shipyards



WORKERS PERCHED ON SCANTLINGS of the Bethlehem-Fairfield shipyard at Baltimore, Md., to watch the launching of two Liberty ships on Maritime day, May 22, 1942. Nineteen other merchant vessels were launched at other U.S. shipyards the same day

to take full advantage of the new registration of women for wa work. The unions assisted and their minimum wage scale wa adopted by the government—under 21 years of age 19*s*. to 47s a week (on the same scale as boys and youths); 53*s*. 6*d*. fo unskilled, and 62*s*. 9*d*. for skilled workers over 21. The problem of finding jobs for women within their physical capacity wa solved by careful organization; on new construction they prove particularly satisfactory in many sections, and after short instruction did excellent work. On the repair side there was far les scope for women but that was being overcome.

Efforts were made to reduce hours as much as was reasonabl and in June, after experience with new construction, it was officially suggested that the repair works should drastically reduc Sunday labour. The men opposed this and maintained that ther was no evidence that their health had suffered. Absenteeism especially among boys and apprentices, reached serious proportions and the unions became active in checking it. Essentia Works Orders in August assisted them and prosecutions increased There was a regrettable increase in discontent and in unofficia strikes over minor matters, *e.g.*, the alleged unfair treatment o one man, or official delay in considering a grievance. The union strongly condemned these hasty unofficial strikes on trifling grounds, without any effort having been made to use the conciliatory machinery established. The co-operation of the union in securing increased output was most effective, but it laid them open to criticism in some quarters. The shop stewards assumed an entirely new place in British shipbuilding. They formed a important part of the yard committees set up to deal with such questions as could be settled on the spot, and their functions were clearly defined; they were expressly not to interfere with the normal negotiations between the unions and the employers. But in January they started a new policy. A deputation to the house of commons contended that certain difficulties which they could overcome were handicapping production. They were invited t put forward their views and proposals, but their actions in starting a new wages agitation, and in protesting against income tax being charged on overtime, caused very bitter feeling in the unions who accused them of encouraging strikes, while the shop stewards maintained that they had prevented strikes spreading and that the unions had got out of touch with the men. Their motives were not generally discredited but many felt that it was dangerous to permit unofficial interference with the accepted national machinery.

The dominions loyally backed the efforts of the mother country, although at the beginning of the war dominion shipbuilding was almost entirely confined to repairs. Canada made remarkable efforts, on both coasts and on the Great Lakes, and built a large number of warships from big destroyers downwards. Merchant shipbuilding was also revived for standardized ships in two main classes, of 10,000 tons and between 4,750 and 5,000 tons dead weight. Adopting U.S. methods where possible except for using far more riveting and less welding, Canadian yards made rapid progress. On Jan. 1 only one of the 10,000-ton ships had been delivered and five more launched, but by July, 25 ships mostly 10,000 tonners, had been delivered and progress was being accelerated so rapidly that there was every prospect of 1,000,00 tons being delivered during the year. The clever organization which prevented any interruption of production during the ic season was noteworthy; work was arranged so that there was plenty to be done on the slips and in the fitting-out berths until the ice cleared.

In Australia commercial shipbuilding was slower, but the yard were gradually turned over from naval small craft to standardized cargo ships. In Jan., six were under construction out of a program of 60 and soon afterwards the government started a new pro-

m. The general type was a single screw cargo vessel of 9,000 ns dead weight and up to 75% of the workmen were unskilled. few key men were sent out from Britain and a number of for- r shipwrights were found among pre-war immigrants. During year new construction was somewhat checked by urgent re- irs to a large number of vessels which had been damaged by Japanese. For obvious reasons New Zealand was the least ive of the dominions but she had made a start with naval small ft for her own service. In India new construction was prac- ally limited to minor naval types, for which she was able to ld the propelling and most of the auxiliary machinery but had import boilers, electric generators, solid drawn tubes and other ings. South Africa also limited herself to repair work but in autumn it was announced that Henry Kaiser, the American pbuilder, was investigating the possibilities of building near pe Town.

Axis Countries.—All the axis countries strained their ship- lding resources to the utmost. In Germany constructional work peared to have been limited to submarines and the smaller al types, but the industry was regarded as so important that vas made independent of the iron and steel construction group the nazi organization. The necessity of maintaining sea com- nications brought in such an immense amount of repairs that y mercantile construction seemed to have been entirely post- ed until after the war, although there were constant discus- ns over standardization. The authorities desired it to be com- e, for hulls and engines, but the firms fought hard for the t to install the most suitable machinery. Labour was very rt and in the late summer a wireless appeal was made for uits for shipbuilding with preference offered to invalided serv- men. Every effort was made to utilize the resources of the upied countries and Berlin announced that the repair and vicing of U-boats had been transferred entirely to western nce, but otherwise the results were disappointing. Italy made bitious shipbuilding plans, but had difficulty in finding the steel urgent repair and naval work, without undertaking the long- mised reconstruction of the merchant service. Japan also was d with a serious shortage of tonnage and the wooden ship- ding facilities of the occupied territories were carefully inves- ted. A 15,000,000-ton mercantile shipbuilding program was ched with a flourish in May but its difficulties were great.

leutral Countries.—Sweden was the busiest neutral country he continent of Europe, 90% of the orders being for Swedish ers. In July it was announced that 75% of the war losses been replaced, the great majority by new construction, but gress was slow owing to the very poor delivery of steel prom- by Germany. This held up the construction of Swedish ships of the 20,000 gross tons per annum which they undertook to d for Germany. Owing to the shortage of neutral tonnage n Spain and Portugal, where the shipbuilding industries had backward after the introduction of iron hulls, were under- ng the construction of new ships with government assistance.

(F. C. Bo.)

pping, Merchant Marine.

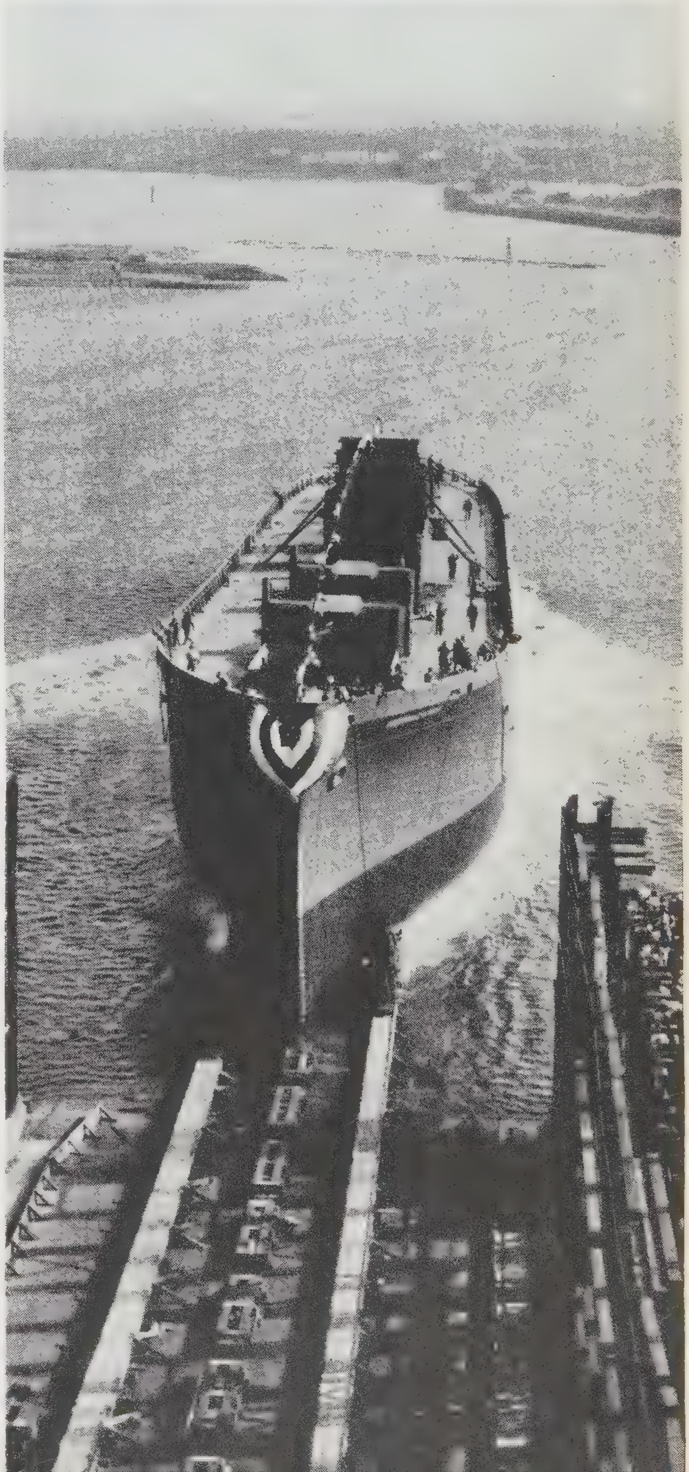
The end of 1942 found the shipbuilding and ship- industries of the United States at grips with problems as prehensive as the war itself. Since the United States was not the principal arsenal of the United Nations but a major ce of fighting manpower, adequate ocean transportation to y continent became an essential ingredient of victory for the d cause.

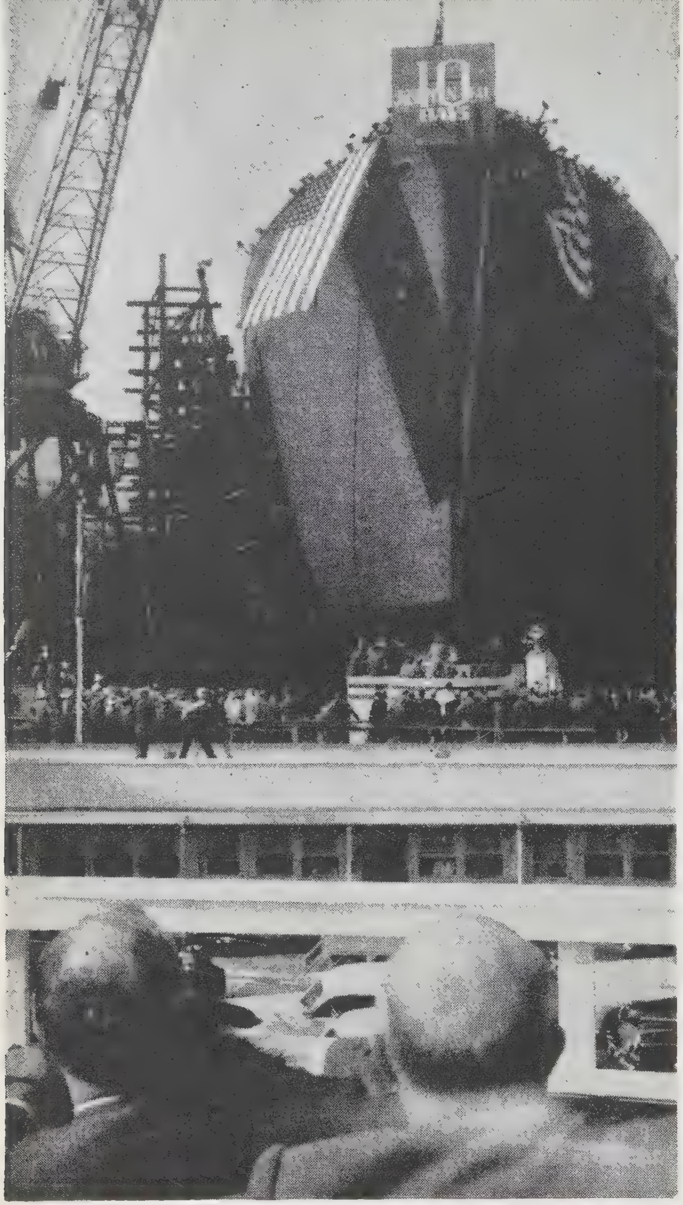
his situation demanded maximum use of every vessel avail- to the United Nations, regardless of ownership or control, construction of additional shipping in unprecedented volume at a production speed far exceeding anything achieved before.

Four main tasks for sea-borne transportation appeared when the United States became involved as a belligerent: (1) moving expeditionary forces to military bases all over the world and keeping them supplied, (2) maintaining the flow of war materials and lend-lease goods to the allies, (3) importing strategic raw materials required by the rapidly expanding U.S. war production, and (4) aiding other nations, particularly the Latin-American countries, in the face of acute economic distress resulting from the dislocation of export and import trade.

To meet this demand the United Nations had available for service an estimated 45,000,000 dead-weight tons of shipping after the United States was drawn into the war. This was greater

TWENTY-ONE MERCHANT SHIPS were launched at U.S. shipyards on Maritime day, May 22, 1942. The picture shows one of the 21, the "Mormacwren," sliding down the ways into Los Angeles harbour





THE LAUNCHING of the Liberty ship "Joseph N. Teal" was witnessed by President Roosevelt (left) Sept. 23, 1942, during his secret U.S. tour. Beside the president is Henry J. Kaiser, owner of the shipyard at Portland, Ore., which built the ship in ten days. Kaiser's firm later lowered the record for launching a new ship to three days

than the tonnage available to the Allies during 1914–18, but in that war supply lines were much shorter and enemy attack by submarine and aircraft was less severe. The transportation load was not nearly so great.

Outstanding among United States accomplishments in the war year 1942 was the construction and delivery of 746 oceangoing merchant ships of about 8,090,000 dead-weight tons, including a number of vessels built for the armed forces. In addition, more than 800 smaller craft of various types were delivered. The shipbuilding industry was faced with a production schedule expanded by presidential directive to at least 16,000,000 tons for 1943. Late in 1941 the directive had been for only 12,000,000 tons in the two years. The tremendous scope of this job is evident when it is realized that American shipyards, under pressure of the defense program, built only 1,160,000 dead-weight tons of merchant shipping in 1941. This demand forced a doubling and several redoublings of the long-range plan of the maritime commission begun in 1937. Under the original peacetime program over-age merchant ships were to have been gradually replaced throughout a 10-year period by fast C-type cargo vessels and high-speed tankers to form a steadily expanding, modern and competitively superior merchant fleet. Since adequate facilities to manufacture sufficient geared-turbine propulsion machinery needed for C-type vessels and tankers were lacking, the EC-2 emergency cargo vessel, commonly known as the Liberty Ship, was adopted as the backbone of the American emergency wartime merchant fleet.

The comparatively simplified Liberty Ship design, thoroughly standardized, encouraged use of mass production methods adapted from the American automobile industry, such as prefabrication, assembly lines, and welding in place of riveting. It also permitted rapid training and absorption of thousands of workers who had no previous shipbuilding experience. The new vessel was powered by triple-expansion reciprocating steam engines, which could be built by many plants throughout the country with proper foundry and machine equipment. There remained the requirement for construction of additional shipyards with sufficient ways to produce these vessels, and this was accomplished under the direction of and financing by the maritime commission.

Under the stimulus of the war, and with this simplified ship design for quantity production, the construction of cargo vessels gathered increasing momentum. In January, 16 vessels, totalling 197,628 dead-weight tons, were delivered. By May this monthly rate was more than tripled in vessel units and in tonnage. In September a new peak was reached with more than 1,000,000 dead-weight tons delivered at a rate of three vessels a day. In December, production rose to four ships a day. The output of 1942 indicated that the 16,000,000 or more tons in 1943 would be well within the capacity of American shipyards, the only limitation being the availability of steel and other critical materials to the shipbuilding "front."

Reduction of building time was an outstanding feature of these production records. Scheduled building time for Liberty Ships, from keel-laying to delivery, originally set at 210 days, was cut 105 days. The shipyards progressively reduced this to an average of 55 days by Dec. 1942. Moreover, tankers were turned out in half the time required a year before, and the construction time for the C-type and other vessels in the program was correspondingly reduced.

An important factor contributing to the speed-up in ship production was the spread of work along the three coasts and Great Lakes as well as among inland factories, in order to tap every source of plant facilities, labour and materials. Thus, more than 70 shipyards and more than 1,200 industrial plants in 40 states employing far in excess of 1,000,000 workers were producing the parts and assembling the vessels that constitute the Victory Fleet.

The details of operating the greatly expanded American merchant marine and of correlating its use with the shipping of Great Britain and of other United Nations were restricted military information. The problem was complicated by the infinite variety of needs of the United Nations, by the tremendous distances involved, by the lack of trained seamen, and by the constant danger of attack from enemy submarine and aircraft. These situations, however, were being met through the comprehensive controls provided through the War Shipping administration in co-operation with the navy.

By executive order No. 9054, Feb. 7, 1942, and amended by executive order No. 9244, Sept. 16, 1942, the War Shipping administration was established and assumed control of operation, repair and manning of the American merchant marine including "all ocean vessels under the flag or control of the United States, except (1) combatant vessels of the army, navy and coast guard; fleet auxiliaries of the navy; transports owned by the army and the navy; and (2) vessels engaged in coastwise, intercoastal and inland transportation under the control of the director of the Office of Defense Transportation."

The War Shipping administration was also directed to "represent the United States government in dealing with the British nistry of war transport and with similar shipping agencies of ions allied with the United States in the prosecution of the r, in matters related to the use of shipping."

The correlation and integration of the activities of the two rine agencies was arranged by appointing a single head for h the maritime commission and the War Shipping administra- n and by utilizing "the services of available and appropriate sonnel of the maritime commission, the war and navy depart- nts and other government departments and agencies which engaged in activities related to the operation of shipping."

btaining required manpower for the expanded American mer- nt fleet was the objective of a program of recruitment and nning which called back to the sea qualified officers and experi- ed merchant seamen who had been working ashore. Registra- n and placement of personnel were based on constant surveys equirements of all American and United Nations vessels. With roximately 125,000 additional officers and seamen needed by end of 1943, the WSA rapidly expanded its program for the ning of young men as merchant marine officers. The U.S. rchant Marine academy at Kings Point, Long Island, two pre- inary training schools at Pass Christian, Miss., and San Mateo, if., as well as five state maritime academies operated with eral aid were engaged in this work. Training of seamen, radio rators, cooks and bakers was carried on at seven U.S. mari- e service training stations operated by the War Shipping ad- istration. It also operated schools where experienced seamen ht study to become officers.

epair and reconditioning of merchant ships likewise became great importance. In addition to the regular overhauling re- red in the operation of the expanding American merchant ma- and that of the United Nations, the repair shipyards were ting many new and severe wartime tasks. Among these were rebuilding of salvaged, torpedoed and otherwise damaged s, the reconditioning and adapting of vessels transferred from cetime service to war operation, and the rehabilitating of laid- merchant vessels of World War I.

See also SHIPBUILDING; WATER-BORNE COMMERCE OF THE TED STATES.) (E. S. L.)

reat Britain.—The merchant shipping of all countries was urally ruled throughout 1942 by national demands and the igerents' attacks on the commerce of one another. The essen- shipping needs of the United Nations were more obvious, but axis powers needed a large amount of sea transport for the secution of their plans, if not for their actual existence. Com- ce destruction by the Allies was not a main purpose of the as it was with the enemy, who engaged in it to check the am of munitions to Britain and Russia, to starve Britain into nission and to prevent the establishment of a second front in ope through lack of tonnage.

ith the intensification of this corsair warfare during the year, hing its peak in early summer, all methods of protecting mer- nt shipping were developed. Despite the policy of secrecy some rmation was released by the censor in order to make the con- ing public realize the great importance of reducing unessen- demands on shipping space. The "catafighters," merchant s fitted with a catapult and fighter planes, were introduced great secrecy in 1941 and developed rapidly in 1942. In e of the expenditure of machines, for a large proportion had e abandoned in the sea, they practically put an end to the ct menace of the big Focke-Wulf machines which had attacked voys far out in the Atlantic, although Focke-Wulfs still sup- d submarines with their information. The defensive arma- t of merchant ships was also steadily improved, both in ngth and efficiency, and the public was informed about the of the maritime regiment of the royal artillery embarked in Allied ships for defensive gunnery duties.

Protective methods did not prevent losses, and the year showed a great development in the life-saving services of the Allies. Few entirely new measures were introduced but a number passed the experimental stage and many which shipowners were only advised to adopt while material was short were made obligatory. The improved equipment of ships' lifeboats, measures to make them conspicuous to rescuing ships, the carrying of at least one motor lifeboat by every ship and the provision of better-planned boats' rations to check thirst, were all contrived during the year. Many ideas, both chemical and mechanical, for making salt water fresh enough to drink were thoroughly tested, but although progress was made the majority of devices proved too heavy; if the weight could be spared it would be better devoted to extra water casks. The ideal is something which is not exhaustible; so far all the devices either demanded fuel or lost their virtue after sweetening a certain quantity of water.

Life-rafts were also greatly improved and the primitive types which were considered suitable in 1939 were quite obsolete. Rectangular rafts were still approved but more were being built to rough boat shape, capable of being towed, rowed or sailed, with far better stability and more protection for their people. The means of calling assistance were also strengthened; in February the British admiralty ordered all foreign-going ships of under 1,600 tons, which had formerly been only bound to carry radio receiving gear, to carry transmission apparatus with a range of at least 75 sea miles.

The British merchant navy shipping pool, which had been adapted to the needs of the other Allied countries, worked smoothly and fulfilled its purpose, although it proved susceptible to fraud. The legal power of the Allied nations to discipline their own nationals in Britain gave the desired results. In all the Allied merchant services the number of volunteers was more than sufficient to replace casualties and to man new ships, although the need for discipline was not always realized. The number of convoys which were betrayed to the enemy by their smoke caused the establishment of better training facilities for ships' firemen and an immediate improvement was noticed.

Both officially and unofficially careful attention was given to the welfare and health of seamen, and the year was conspicuous for the large number of sailors' homes, hostels, recreation rooms and convalescent establishments opened. Special care was devoted to the numerous Asiatic seamen serving in Allied ships; the old type of boarding house was being rapidly replaced by modern hostels, with excellent results, although there was a good deal of trouble with both Indian and Chinese seamen during the year, generally caused by professional agitators spreading rumours of better conditions and better pay in other ships. In their work, and their behaviour in face of the enemy and under great hardship, the Asiatic seamen earned every praise.

From the business side, the greatest shipping event in 1942 was the proposal for the replacement of war losses announced in April. A number of standardized cargo ships were transferred to the Allies and the ministry of war transport put forward a plan for British owners, by which those whose ships had been sunk could register for permission to purchase ships of similar design six months after the end of the war at cost price less depreciation, such ships to be allotted to them for management in the meantime.

The shipping of the enemy-occupied countries, and of Fighting France, continued to do invaluable work in the Allied service on the lines previously established. The Norwegian tankers in particular were singled out for praise.

Axis Shipping.—The comparatively small volume of shipping of other countries which fell into German hands as a result of invasion was employed to the full in the enemy attempt to relieve the strain on the railways, and it was noticed that it was getting the most dangerous tasks while German shipping was being preserved as much as possible. In the North sea, the Mediterranean and the Pacific the toll of axis merchant tonnage engaged on military supply service was very heavy.

Neutral Shipping.—The shipping under most neutral flags was under a control nearly as strict as that of the belligerents and profits were limited, although in many cases the price charged for services was very high. Neutral shipping had not been safe from attacks by axis submarines and aircraft; some "regrettable incidents" destroyed even Spanish shipping on which the axis was relying for so many services. (F. C. Bo.)

Shipyard Conjunctivitis: *see* EYE, DISEASES OF.
Shock Treatment: *see* NERVOUS SYSTEM; PSYCHIATRY.

Shoe Industry.

Shoe production in 1942 was reduced approximately 10% from the all-time high production figures of 1941. In the five years ending 1940, the annual production of shoes averaged 409,246,000 pairs. Production in 1941 went 18% beyond that mean level. The rate of production continued in the first half of 1942 on the same scale of gain but then the serious realization that war would play a decisive role, produced a tapering-off of production—so that the final figures were an estimated 440,000,000 pairs (excluding shoes for military purposes) against 1941's grand total of 483,097,000 (excluding shoes for military purposes).

Projecting into 1943, based on estimates of supply, some 12,000,000 to 13,000,000 sides of sole leather were expected to be available, equal, roughly, to some 310,000,000 pairs of shoes. Reclaimed rubber soles, composition soles and wooden soles would probably total 50,000,000 pairs in 1943—unless drastic concentrations and controls were issued from Washington.

The restraining Order M-217, issued in Sept. 1942, cut off all style development and restricted footwear to black, white, blue and three shades of brown. The flow of raw materials into the United States was limited to the shipping situation.

Military requirements for shoes, leather and leather goods, increased tremendously. More than 40,000,000 pairs of shoes were made in 1942 for the armed forces. Large quantities of shoes and extra large quantities of leather were produced and shipped for Lend-Lease. A further drain on the American leather supply was anticipated in the North African and economic warfare projects.

Consumers' purchasing power continued strong through 1942 and civilian consumption exceeded production. A decline in store and factory inventories of 100,000,000 pairs was expected in 1943. The problem of how to curb consumer wants and thereby lead to a decline in production was being met by restrictions and restraints.

Comparative Statistics of U.S. Shoemaking, 1940, 1941 and 1942

Year	Women's	Men's	Misses' and Children's	Youths' and Boys'	Infants'	All Other	Total
Production of Shoes by Major Types (000's omitted)							
1940	167,504	102,700	40,750	15,276	21,750	56,171	404,151
1941	184,915	120,519	47,912	19,159	28,175	82,417	483,097†
1942*. . . .	180,800	102,500	41,000	17,200	25,500	73,000	440,000†
Estimated Consumption of Shoes by Major Types (000's omitted)							
1940	176,202	102,820	42,109	16,013	22,919	55,556	415,619
1941	181,387	107,343	45,566	17,525	24,097	82,216	438,134†
1942*. . . .	186,300	105,000	45,500	17,700	26,300	72,200	453,000†
Per Capita Production of Shoes by Major Types (Pairs per capita)							
1940	3.40	2.08	3.21	1.17	2.63	0.43	3.06
1941	3.89	2.42	3.71	1.46	3.15	0.82	3.64†
1942*. . . .	3.58	2.03	3.39	1.35	2.81	0.56	3.30†
Estimated per Capita Consumption of Shoes by Major Types (Pairs per capita)							
1940	3.58	2.08	3.32	1.23	2.68	0.42	3.15
1941	3.66	2.15	3.63	1.35	2.87	0.47	3.30†
1942*. . . .	3.69	2.07	3.54	1.33	2.92	0.52	3.38†

*Preliminary.
†Excludes shoes for military purposes.

The world-wide status of shoes and leather was critical. No nation on the face of the globe was able to supply the footwear needs of its people, much less their wants. Military leather and military shoes were imperative. Civilians had to use what remained—even to the scraps and offal. Continental Europe was reduced to the minimum in footwear; repair—with scraps and patches; and in most lands, with wooden soling.

Rubber Footwear.—Crude rubber shortage affected the rubber footwear industry. A pound of real crude rubber was mixed with many pounds of reclaimed rubber and black compounding material so that mass adhesion was possible—from which soles were cut from the pressed sheets.

The decline in automobile use in all lands meant more walking and more wear and tear of shoes. Increased replacing or repairing was necessary. The outlook was not favourable. It was hoped that wild rubber from South America and synthetic rubber would fill part of the footwear needs in the final months of 1943 but there was little prospect of better conditions for civilians for soling or for stormy wet weather wear.

The American factory system and store system experienced no severe shocks or disarrangement in 1942, although quality declined because of government withdrawals of prime ingredients. The financial structure of the industry was at its peak in profits in 1942. (*See* also LEATHER.) (A. D. AN.)

Shows.

Dogs.—In 1941 man's best friend, the dog, fared well even under war conditions. One hundred and three field trials and 220 championship (bench) shows were held, not greatly under the number of 1940. In registrations, the merry little cocker spaniel continued to lead, followed in order by beagle, pointer, Boston, English setter, Scottish terrier, wire-haired fox terrier, dachshund and Pekingese.

The annual market in canned dog food amounting to $60,000,000 evaporated almost overnight with war priorities on tin. Dry or biscuit dog food sought to take advantage of this market.

The outstanding event was the use of dogs officially as part of the armed services. The army had three training camps—Front Royal, Va., Fort Robertson, Neb., and San Mateo, Calif., having trained by the end of 1942 approximately 8,000 dogs. Requirements were one to five years of age and at least 18 in. high at the shoulder.

The most common breeds used were shepherd, Doberman, boxer, great Dane, retriever, Dalmatian, airedale and collie. The marine corps used Dobermans only; training camp, Towson, Md. The coast guard used shepherds only; training camp, Elkins Park, Pa.

The national retriever field champion of 1942 was the black Labrador Shed of Arden. The two outstanding bird dog winners were pointers: (1) Luminary, capturing two national meets; and (2) Titan, capturing both the pheasant and prairie chicken championships. (W. Ju.)

Horses.—The usual annual exhibitions were cancelled in 1942 by the three largest horse and livestock shows—the National Horse show, New York city; the International Livestock Exhibition and Horse show, Chicago, Ill., and the American Livestock and Horse show, Kansas City, Mo. Instead of its picturesque show which had been given for 58 years, usually at Madison Square Garden in New York city, the National Horse show had a one-day show which was chiefly for juniors. It was held Nov. 7 in the 66th st. Riding club, New York city.

There was no large reduction during 1942 in the number of estock and horse shows held annually in connection with the merous county and state fairs. The Kentucky state fair, how- er, was cancelled. In its stead the Lexington Junior League ve a horse show, which, like the National Horse show's one- y exhibition, drew a large attendance. The Dallas, Tex., Charity orse show also drew large audiences Nov. 6 to 8.

At the annual meeting of the International Association of irs and Expositions, and its affiliate organization, the Associa- n of County and District Fairs, Dec. 5, 1942, in Chicago, the quest of the director of transportation relative to cancelling ows was discussed, but no decision was reported. Wayne Dins- re, secretary of the Horse and Mule Association of America, dressed the meeting and recommended that no horse shows be d if horses had to be transported by rail or motor. (S. O. R.)

Livestock.—Conditions brought on by World War II seriously rupted the schedule of livestock shows and agricultural fairs a world-wide basis in 1942. Many of the major events of s type which formerly occurred annually in the United States d Canada were forced to cancel or curtail their 1942 shows, her by reason of the armed forces having taken over the arters in which they were held or, in the United States, by son of the Office of Defense Transportation's request, early 1942, that shows and fairs not add a burden to transportation ilities above the increased load placed upon them in the trans- rt of men and materials directly associated with the war effort.

The National Western Stock show in Denver, Colo., annually ens the calendar year of U.S. livestock shows. This exposition ok place Jan. 10 to 17, 1942. This show, famous for its large mpetitions featuring range-bred feeder cattle and purebred lls of the beef breeds, is an important source of supply for lls required for range service as well as top grade beef calves Corn Belt feedlots each year.

The oldest livestock show of importance in the United States, Southwestern Exposition and Fat Stock show, celebrated its h anniversary in Ft. Worth, Texas March 13 to 22, 1942.

A number of the most important of the U.S. state fairs were ncelled in 1942 because of the loss of their grounds to the army. ese included the Illinois, Iowa, Ohio and Indiana state fairs. nong the important fairs that were able to continue in 1942 s the Wisconsin state fair at Milwaukee, which maintained its ennial position as a major showing of the dairy breeds. With cancellation of the National Dairy show in 1942, the Wiscon- state fair was one of the year's two foremost expositions of dairy breeds.

The other important showing of this phase of the livestock lustry was staged at Waterloo, Ia., from Sept. 7 to 13, when Dairy Cattle congress and National Belgian Horse show ought out full entries in all divisions.

The 1942 Minnesota state fair, combined with the National rcheron Draft Horse show, was held in St. Paul Aug. 29 to pt. 7. Other important midwest state fairs that took place in 42 were those of Missouri, Nebraska, Kansas, Oklahoma and uth Dakota.

The cancellation of the leading U.S. show, the International vestock exposition at Chicago, scheduled for the first week of cember, was announced in May 1942, following the meeting of board of directors. Their decision to cancel was based on the quest of the Office of Defense Transportation.

Shortly thereafter, a substitute fat stock show was announced the same week the International had been scheduled, to ac- mmodate feeders of livestock who already had animals far ng toward preparation for the regular exposition.

The show was called the Chicago Market Fat Stock and Carlot mpetition and was sponsored by the Union Stock Yard and Transit company, operators of the Chicago market. Since the prize lists featured steers, wether lambs and market hogs only—all animals that would ultimately move to market anyway—no burden to transportation was added in holding the show.

With the army occupying the International amphitheatre, it was necessary to stage the show in buildings and pens of the Chicago market. Even on this limited basis, an entry of 6,349 head of cattle, sheep and swine was made by stockmen from 15 states and two Canadian provinces, which although no more than half the size of the full exposition of preceding years, made it nonetheless the ranking livestock show of 1942 in number of entries.

A similar showing, though of lesser size, was held at the American Royal, Kansas City, normally one of the foremost livestock and horse shows in the U.S.

The oldest livestock show in the world is the Highland Agricultural show of Scotland. After 108 years of continuous progress, it had not been held since 1939 because of World War II. The Royal Agricultural show of England, after 98 years, was discontinued the same year for the same reason.

The only show of importance in Great Britain that survived the war was the annual Perth show and sale in Scotland, featuring Shorthorn and Aberdeen-Angus cattle. Beginning Feb. 10, the 1942 Perth show and sale continued for six days, three days each apportioned to the judging and sale of each of the two breeds.

The Calgary Stampede, combining a livestock show with rodeo features, was the major Canadian show of 1942. It took place in July.

The leading South American agricultural show, the Palermo, was renewed in Buenos Aires on Aug. 17, 1942. A ten-day show, the first four days were occupied with judging, from which the general public was excluded; and the remaining six days the public was admitted to view the prize winners on exhibition.

The Palermo is the world's largest annual showing of Shorthorn cattle and is also noted as an exhibition of Aberdeen-Angus and Hereford cattle, as well as sheep. Lesser emphasis is placed on the exhibits of Holstein-Friesians and Guernseys, the principal dairy breeds of Argentina. (W. E. O.)

Siam: *see* THAILAND.

Sickert, Walter Richard (1860–1942), British painter and etcher, was born May 31 in Munich, Germany. His works, mostly of the impressionist school, hang in the British museum, Tate gallery, the Johannesburg Art galleries and the Royal Gallery of Modern Art at Rome. In 1935 Sickert resigned from the Royal academy in protest against the removal of Jacob Epstein's statues from the British Medical Association building. He died at Bathampton, Somerset, Jan. 23. (See *Encyclopædia Britannica.*)

Sidi Ahmed II: *see* AHMED II, SIDI.
Sierra Leone: *see* BRITISH WEST AFRICA.

Silk. In 1942, records of silk production and use were largely limited to reports of new sources of raw silk supply in South America, Bulgaria, southern United States and Central America. No records were available as to Japanese or Chinese operations, although in the latter case before the closing of the Burma road early in 1942, there were reports that silk would be taken out for export to the United States on trucks returning from the transportation of war matériel to the Chinese.

Meagre Japanese reports were to the effect that the mulberry plantings, formerly treasured as food for the hard-working silkworms of Nippon, were being replaced by plantings of food for humans and that boots were being made of silk by a newly invented process which developed a fabric more durable than difficult-to-obtain leather.

In Brazil, it was expected that by Oct. 1942 619 reeling basins would be in operation for the reeling of native grown silkworm cocoons. In 1940 there were only 273 reeling basins. The Brazilian industry, started early in the 19th century by Italian immigrants, since 1936 had shown a rapid decline due to low world silk prices but when the Japanese international situation developed in 1941, silk users in other parts of the western hemisphere became interested in the Brazilian possibilities, centred at São Paulo. The official testing and grading laboratory for the American silk industry, the United States Testing company, established a branch office in São Paulo in 1942, for checking the grading of the reeled silk so as to meet the high commercial standards required in the United States. Both white and yellow silk were produced with a yield of 1 lb. of silk from 10 lb. of cocoons. The 1942–43 crop was estimated as 1,000,000 km., as compared with 300,000 km. for the 1941–42 crop.

India, long a silk producing country, achieved a new status with the closing of the Japanese market. The industry centred in Madras, Mysore and Bengal where at the close of 1942 it was said that with government aid the 1942–43 silk parachute program for the British army would be adequately handled through modernization of reeling, weaving and sewing facilities. All parts of the parachute would be made: fabric, shroud lines and thread. To enable the former home industry to become a modern factory system, it was reported that Rs.18,500 were being loaned. In Madras, the entire venture was government controlled; in Mysore, partly government and partly private ownership; in Bengal, private owners with some government loans.

Lebanon as another source of silk assumed new interest with the North African military developments, for the United Nations. For many years, natives in that area have raised silkworms and with encouragement, one English silk expert said in 1942, the application of modern methods of cultivation and reeling should bring excellent returns.

Another South American venture was reported from Venezuela where producers of cocoons made plans to ship them, unreeled, to the United States for use in manufacturing silk noils, or yarns needed for the production of powder bags, for shroud lines attached to silk parachutes, insulation for electric wires, etc. It was expected that the supply of cocoons would be of great value to the war effort.

Bulgaria was cited by axis sources in 1942 as a promising source of silk supply, even to the extent that its output was surpassed only by Italy in European silk production. The total amount of silkworm eggs produced was 52,000 oz. in 1942, as compared with 39,645 oz. in 1941. The agricultural ministry announced that for 1943 about 80,000 oz. of eggs would be bred. Due to unfavourable climatic conditions, as well as unfavourable prices, cocoon production in 1942 was approximately half of 1941; or 1,500,000 kg. in 1942, compared with 2,364,303 kg. in 1941. The domestic weaving industry in Bulgaria, comprising 12 weaving mills with 600 looms, used the product of 50,000 oz. of silkworm eggs, leaving approximately 30,000 oz. available for export.

But, as far as actual effect on regular silk supplies was concerned, it was estimated late in 1942, that the world's cocoon production for 1941–42 would not exceed 99,000,000 to 110,000,000 lb., as compared with the 1941 world production of 950,000,000 lb. The campaign inaugurated by the War Production board of the United States government to urge the donation of used silk stockings to the government's stockpile indicated that military men did not anticipate any substantial supply of new cocoons to meet the demands for the only product still requiring silk at the end of 1942—the silk cloth for powder bags used to ignite the charges of powder in every big gun. Even there, treated cotton and wool as well as rayon were being developed by the end of the year to give the same no-ash results when burned as silk had long preserved as its exclusive characteristic. (*See also* RAYON; TEXTILE INDUSTRY.) (I. L. BL.)

Silver.

World production of silver decreased by 4% in 1941, to a total estimated at 265,000,000 oz. The recent trend of output is shown in the accompanying table.

World Production of Silver
(In millions of fine ounces)

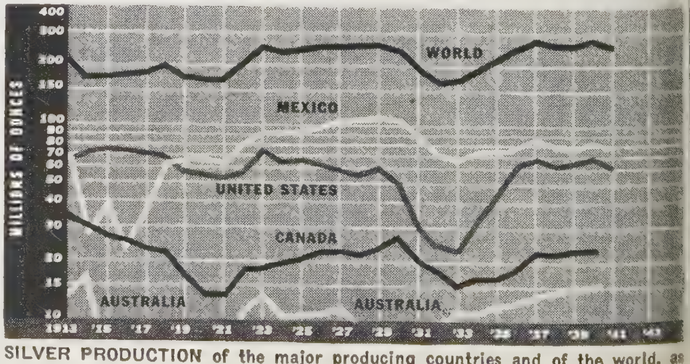
	1937	1938	1939	1940	1941
Canada	23.0	22.2	23.2	23.8	21.8
United States . . .	71.3	61.7	63.9	68.3	65.8
Mexico	84.7	81.0	75.9	82.6	78.4
Other N. America .	4.8	5.0	6.0	6.0	6.1
Peru	17.5	20.6	18.8	19.9	17.5
Bolivia	9.5	6.4	7.2	5.6	7.4
Other S. America .	4.2	4.3	4.7	5.3	5.6
Germany	6.8	7.0	7.0	22.0	?
U.S.S.R.	7.2	8.0	7.0		
Other Europe . . .	7.2	8.5	9.2		
Japan	12.6	13.0	14?	13?	?
Burma	6.2	5.9	6.2	7.0	?
Other Asia . . .	1.9	2.4	1.7	3.4	?
Africa	5.2	5.7	4.7	4.6	?
Oceania	14.8	15.1	15.5	15.6	?
Total	277.7	267.7	265.1	277.0	265?

Reports on current output were delayed from all sources. United States production declined by 8% in 1941, to 65,800,000 oz., and a further 4% in the first eight months of 1942, to a total of 39,141,000 oz. In Canada production through July 1942 was 11,362,600 oz., 5% less than in the same period of 1941, and a slight improvement over the decline of 8% in 1941. During the first quarter of 1942 the Mexican output rose 12% over the average rate for 1941, to 21,900,000 oz. for the quarter, against a decline of 5% in 1941. In Peru the total for the first four months of 1942 was 14,400,000 oz., a decline of 18% from the average rate of 1941, as compared with a drop of only 12% in 1941.

World totals were available only for the first quarter of 1942, with 63,386,000 oz., which continued the 4% falling rate that prevailed for the average of 1941.

Effective Aug. 31, 1942 the official ceiling price for foreign silver was raised to 45 cents per ounce, and the New York quotation was raised from 35.125 cents to 44.75 cents. The price for newly mined domestic silver remained unchanged at 71.11 cents. The London market stood at 23½*d.* throughout the year.

A small amount of silver was offered for sale by the U.S. treasury, to be used in war production, and something like 40,000 short tons of treasury silver that had not been monetized were loaned to war plants for uses from which it could later be recovered, and an additional 7,000 tons were available for such use. Strenuous



SILVER PRODUCTION of the major producing countries and of the world, as compiled by *The Mineral Industry* efforts were made to secure action that would permit the same sort of use for the remaining 66,500 tons of monetized silver, but this was prevented by the senate silver bloc. (*See* also MINERAL AND METAL PRICES AND PRODUCTION.) (G. A. Ro.)

Sinclair, Sir Archibald (1890–), British politician, was born Oct. 22 in London. Educated at Eton and Sandhurst, he joined the army in 1910, but later resigned to enter politics. In 1922 he was elected to Commons as a Liberal party member for Caithness and Sutherland. He was chief Liberal whip, 1930–31, and served as secretary of state for Scotland, 1931–32. After the party split over the issue of joining the Baldwin government, Sir Archibald became head of the Independent Liberals. Blunt and forthright, he thundered against Britain's hesitant stand on the Ethiopian issue nd lashed Chamberlain's appeasement policy. When Churchill became premier in May 1940 he made Sir Archibald secretary of state for air. A year later, when the R.A.F. intensified its raids over Germany, he warned the reich that it would be bombed "night after night until the German people, shattered and disillusioned, decide for the second time that war is not worth while." In the summer of 1942 he pledged more 1,000-plane raids over Germany, but later that year warned that the axis power was not yet broken, and that the "road is still rough and long."

Singapore. Capital of the Straits Settlements (*q.v.*) and the main port of southeastern Asia, located at the intersection of the trade routes to Australia and to India and Europe, Singapore is on an island of the same name, 27 mi. long and 14 mi. broad, off the southern tip of the Malay peninsula. The estimated population of Singapore island (June 30, 940) was 750,805, including 13,962 Europeans, 584,085 Chinese, 5,259 Malays and 59,838 Indians. In normal times Singapore was a port of call for some 7,000 vessels every year; it was one of the principal stops on the shipping lines from Europe to the Orient and an important centre for the transshipment of tin, rubber and other products of British Malaya. Singapore was one of the principal objectives of the Japanese southward drive that coincided with the attack on Pearl Harbor. It was the site of a huge naval base, constructed over a period of 12 years and including a drydock capable of lifting a 50,000 ton battleship, a 200 ft. quay and four square miles of land for barracks. Singapore fell into the hands of the Japanese on Feb. 15, 1942, after a campaign of a little over two months, General A. E. Percival surrendering to the Japanese General Yamashita. The name of the city is derived from the Malay Singhapurra (city of the lion); the Japanese altered it to Shonan (light of the south). (*See* also JAPAN; WORLD WAR II.) (W. H. CH.)

Sin Kiang (CHINESE TURKESTAN). A Chinese province, bounded N. and W. by the soviet union, N. by Mongolia, S. by India and Tibet, E. by China. The name means New Dominion, and Sin Kiang is not an integral part of China, which acquired the territory by conquest in the 18th century. Area, 705,769 sq.mi.; pop. (estimate of Chinese ministry of the interior, 1936), 4,360,020. Other estimates are lower. Capital, Urumchi (Tihwa) (50,000), in the northern part of the country. The two other largest towns, Kashgar (80,000) and Yarkand (75,000) are in the south. Religions: Confucianism, Taoism, Mohammedanism. Governor in 1942 (since 1933) General Sheng Shih-tsai. The Chinese comprise about 10% of the population, and there are 14 other ethnic groups in Sin Kiang, mostly Turki tribes. Sin Kiang is an arid country and the small proportion of land under cultivation is mostly located in oases and river valleys. Its trade gravitated toward the soviet union, after the construc-

THE HUGE U.S. STORES OF SILVER were used for the first time in 1942, to replace copper in electrical products. The picture shows the interior of the vault at West Point, N.Y., as 1,000-oz. bars of silver were being removed for shipment to industrial plants

WOUNDED INDIAN SOLDIERS awaiting admittance to a hospital in Singapore shortly before the fall of the British far eastern stronghold Feb. 15, 1942

tion of the Turkestan-Siberia railway in 1930. Among the principal exports are wool, cotton, furs, skins, sheep, cattle and horses. Among the imports from the U.S.S.R. are machinery and manufactured goods. There were 1,556 schools of all types in Sin Kiang in 1940, with more than 150,000 students. A daily newspaper, the Sin Kiang *Daily News,* began to appear in Urumchi in 1939. Some 4,000 km. of motor roads were built during the decade 1932–42, although there were still no railways in 1942. Industries, which are on a small scale, include spinning, weaving, matches, flour and foodstuff processing. The natural resources of Sin Kiang, undeveloped because of lack of capital and technical knowledge, include gold, iron, copper, oil, coal, gypsum, nitrates and salt, none of them adequately surveyed. The air route from Chungking to Moscow crosses Sin Kiang, with stops at Hami, on its eastern frontier, and Urumchi. An old caravan route was made passable for trucks and furnished a route, through Urumchi, Hami and Lanchow, in Kansu province of China, for Soviet supplies to the Chinese nationalists. (W. H. CH.)

Sino-Japanese War: *see* FOREIGN MISSIONS; WORLD WAR II.
Sister Kenny Treatment: *see* INFANTILE PARALYSIS.
Skating: *see* ICE SKATING.

Skiing.

America's recreational skiing enthusiasm, having climbed steadily for ten years, reached its zenith and started coasting downhill with the advent of 1942 wartime restrictions. Cancellations of numerous "snow trains" because of the armed forces' transportation needs was the chief reason for the lagging ski interest. Poor snow conditions, both in the east and middle west, also added to the lack of recreational skiing as a part of America's winter sports program during 1942.

Competitively, skiing went along much as before. Jumping featured three standouts—Ola Aangesen, Torger Tokle and Arthur Devlin. Aangesen, a member of the royal Norwegian air force based at Toronto, dethroned Tokle as national champion in the U.S. title tests at Fond du Lac, Wis. Relying mainly upon form, Aangesen scored 230.2 points with jumps of 191 and 180 ft., while Devlin placed second with 228.15 points. Tokle leaped 194 and 181 ft., longest of the nationals, but his lack of perfect form brought his total only to 227.9 for third place. The Brooklyn Norwegian, however, led the all-season competition by breaking seven records, including the American distance mark. Tokle reset the U.S. distance record with a leap of 289 ft. at Iron Mountain, Mich.

The jumping fraternity also figured prominently in other skiing ventures, although not in their specialty. Alf Engen, former highflyer from Salt Lake City, won the national open downhill-slalom combined championship, although he captured neither the downhill nor the slalom. Martin Fopp, formerly of Switzerland, won the national open downhill, while Barney McLean of Denver and Sig Engl of Sun Valley were tied in the slalom. McLean, a jumper of note, also swept the downhill, slalom and downhill-slalom for amateurs. The third jumper to score in other phases of skiing was Merrill Barber of Norwich university, who captured the intercollegiate four-event championship and the national "all-around."

Shirley McDonald and Mrs. Gretchen Fraser, two young ladies from Sun Valley who learned their skiing at Mount Rainier in the Pacific Northwest, completely dominated the women's nationals at Yosemite. Miss McDonald annexed the amateur downhill, open downhill, combined amateur, and open downhill-slalom titles. Mrs. Fraser won the open and amateur slalom championships. (M. P. W.)

Skin Diseases: *see* DERMATOLOGY.

Skinner, Otis

(1858–1942), U.S. actor, was born June 28 in Cambridge, Mass., the son of a clergyman. At 18 he decided on a stage career, and a year later he played 120 roles with a stock company. From 1884 to 1888, he appeared with the Augustin Daly theatre group in New York, London, Paris and Berlin. Later he joined John Drew and Ada Rehan in another continental tour and then starred with Edwin Booth and Helena Modjeska on the New York stage. In 1894, Skinner organized his own company. His repertoire was wide and varied, and he was soon recognized as one of America's leading actors. His role as Hajj, the beggar in *Kismet,* which opened in New York in 1911, stood out as one of his greatest triumphs. He last appeared before the footlights in 1935. Among his works are his memoirs, *Footlights and Spotlights* (1924); *Mad Folk of the Theatre* (1928); *One Man in His Time,* written in collaboration with his wife, Maud Durbin (1938); and *The Last Tragedian* (1939). He died in New York city, Jan. 4.

Slate.

The production of slate in the United States showed a marked increase in 1941, dimension material rising 17% to 180,990 short tons, while ground material increased 37% to 437,670 tons, a total of 618,660 tons, valued at $7,515,634. Roofing slate makes up 72% of the dimension stone value, and 42% of the total value. (G. A. Ro.)

Slovakia.

A nominally independent republic in Central Europe, formerly a part of Czechoslovakia. Area 14,848 sq.mi.; pop. 2,800,000, of whom the great majority are Slovaks, a Slav people closely akin racially and linguistically to e Czechs. The majority are Roman Catholics, but there is a nsiderable Protestant minority. Capital, Bratislava; chief cities: atislava (123,852); Trnava (24,000); Nitra (21,250). Presi nt (1942): Msgr. Joseph Tiso; premier, Dr. Bela Tuka.

Slovakia came into existence in March 1939 through German lp. In a treaty of March 18, 1939, Germany promised to pro t Slovakia for 25 years, and Slovakia agreed to conduct her reign and military policy according to German wishes. Ger any received the right to occupy Slovakia at any time mili rily. On Nov. 24, 1940, Slovakia adhered to the Rome-Berlin kyo military alliance, and in 1941 declared war against the viet union and against the United States.

During 1942 the nazification of Slovakia made rapid progress. Oct. 22 the totalitarian character of the state was officially oclaimed. The Hlinka party was to be recognized as the only rty and its leader was to receive the title *vodca,* the Slovak rd for *fuehrer.* The Hlinka party, or the Slovak People's party, mprised an armed militia, the Hlinka guards, and a youth or nization, the Hlinka youth. Slovaks living abroad were to be ganized as members in the same way as the German national cialists had built up their foreign organizations.

Many Slovaks protested against the German vassalage and the ti-Slav policy of the Slovak government and were working for reestablishment of the Czechoslovak republic. Leading Slo ks participated in the Czechoslovak government established in gland under Dr. Eduard Beneš.

Among Slovakian exports, timber and wood ranked first, fol lved by matches, iron and paper. The war produced a great de nd for these goods and thus created a relatively favourable onomic situation. Only in 1942 did difficulties begin to make emselves more and more felt, and the government appointed . Karvas, governor of the Slovak National bank, as an economic tator, to regulate consumption and production. A great num of Slovak workers went to Germany. The predominantly arian character and the absence of great cities produced a food uation better than in many neighbouring countries. (*See* also HEMIA AND MORAVIA; CZECHOSLOVAKIA.) (H. Ko.)

nith, Albert William (1856–1942), U.S. engineer and educator, was born Aug. 30 in estmoreland, N.Y. He taught engineering and machine design Cornell, Wisconsin and Stanford universities. He directed bley college, Cornell university, from 1904 to 1915 and was dean the college, 1915–21. He was acting president of Cornell in 20. He was the author of a biography, *Ezra Cornell* (1934), d also wrote *Materials of Machines* (1902), *Poems* (1934), *cing Life* and *A Spring Odyssey on the Shores of the Southern as* (1939). He died in Ithaca, N.Y., Aug. 16.

nith, Sir George Adam (1856–1942), Scottish Biblical scholar, was born Oct. 19 in lcutta. An authority on the Bible and the Holy Land, Sir orge had visited the United States on several occasions, lec ing at Johns Hopkins and the University of Chicago. He was o a representative in the U.S. of the department of public in mation of the British foreign office in 1918. Sir George died his home in Scotland, March 3. (See *Encyclopædia Britan a.*)

nith College. A college for women located in Northampton, Mass. Enrolment for the academic year 42–43 indicated continued interest in the humanities, history, s and languages, but there was an increased registration in thematics and the sciences. A new department of theatre in ded work in acting, designing and radio. War minor courses (in addition to the regular majors) were planned in response to the needs of the army, navy, government and industry. During 1942 there was much extracurricular activity in first aid, home nursing, nutrition, etc. The United States navy was training the first women naval officers, the WAVES, on the campus. For statistics of enrolment, faculty, endowment, library volumes, etc., *see* UNIVERSITIES AND COLLEGES. (H. F. D.)

Smithsonian Institution. The institution was founded in 1846 through the bequest of James Smithson, an English scientist, "for the increase and diffusion of knowledge among men." The governing body is the board of regents; the executive officer, the secretary, Dr. Charles Greeley Abbot. The institution administers six government bureaus that grew directly out of its early activities, and also the Freer Gallery of Art; the National Gallery of Art is a bureau of the institution but is administered by a separate board of trustees.

After Pearl Harbor, the institution placed all its activities on a war footing; the secretary appointed a war committee to co-ordinate this work. Engaged in a number of research projects for the army and navy, either at the institution or through transfer of personnel, the scientific staff responded to hundreds of requests for technical information from war agencies; took an active part in setting up the Ethnogeographic board, a clearing house for confidential information to the army and navy on geographical, anthropological and related subjects; initiated several large projects in the field of Latin-American co-operation; began publication of a new series of informative publications on peoples and areas involved in the war; opened its buildings all day Sunday for the benefit of service men; and engaged in numerous other wartime projects.

Special knowledge of the scientific staff of the National Museum was utilized continually in 1942 by war agencies; all types of specimens and irreplaceable material were packed and evacuated to safe places. The museum added 284,582 specimens to its collection, issued 44 scientific publications and held 15 special exhibits.

The National Gallery of Art, in its first full year of operation, had 2,005,328 visitors, a daily average of more than 5,500. Gifts of art works were accepted from eight donors, and seven special exhibitions were held. The National Collection of Fine Arts held eight special exhibitions. The Freer Gallery of Art added many valuable oriental art works to its collection.

A considerable proportion of the 2,523,300 visitors to the National Zoological park in 1942 were men in the armed forces, many of them seeing a large zoo for the first time. Animals in the collection numbered 2,411 in 1942, representing 722 different species.

The staff of the Astrophysical observatory at Washington and the instrument shop devoted full time to several research projects submitted to it by the army and navy. The work of the three solar observing stations in Chile, California and New Mexico was continued, and volume 6 of the *Annals* of the observatory, covering operations from 1920 to 1939, was published. (C. G. A.)

Snook, Homer Clyde (1878–1942), U.S. electrophysicist, was born March 25 in Antwerp, Ohio. After graduating from Ohio Wesleyan university, he taught chemistry and physics and later became electrical engineer for various companies. He was president of the Roentgen Manufacturing company, Philadelphia, and electrical engineer with Western Electric company and the Bell Telephone laboratories. He invented the X-ray transformer and demonstrated an electrical stethoscope in 1926. He won the Edward Longstreth medal of the Franklin institute, 1919, the gold medal of the

Radiological Society of North America, 1923, and the gold medal of the American College of Radiology in 1928. He died in Summit, N.J., Sept. 22.

Soap, Perfumery and Cosmetics.

While the outbreak of war with Japan in Dec. 1941 undoubtedly marked the end of an era in many industries, yet its immediate effect on these three was negligible compared to the steady accumulation of changes wrought after the beginning of war in Sept. 1939. Both 1940 and 1941 witnessed the development of shortages of critical materials, the curtailment of exports, and other profound changes. Again, the elimination of the so-called "excise" tax in late 1941 was the direct consequence of the cumulative pressure on government for increased revenue.

No single thing wrought so profound a change in these industries after the excise tax became law, more than a decade before. For the law had been so interpreted as to create a situation in which it became advantageous for perfume and cosmetics manufacturers to "take in each other's washing" so to speak. Manufacturer A, for example, by doing—not all, but a part of—B's manufacturing could save money for B and make money for himself. B, in turn, could do likewise for A.

One result of this anomalous situation was the mushroom appearance of great numbers of new manufacturies engaged in the "arm's length" production of private-brand or unbranded goods. Elimination of the excise tax in late 1941, among other results, swept most of these enterprises into oblivion.

Government limitation of sales to the level of 1941 also had a far-reaching effect on these industries. It obviously limited competition to those already established in business in 1941. It needed only to be pointed out that the census turnover in a normal year was about five-eighths of the total number of firms engaged in the industry, to make the significance of such limitation apparent.

As an instance of the vagaries of such rulings there was the case of a manufacturer who after long and careful experimentation was preparing to launch a new product, only to be faced with the realization that if he put it out in 1942 his sales would be limited to nine dollars for the year—the sum of his sales on the item in 1941.

By 1942, the necessities of fat conservation did not result in any serious restrictions on the consumption of soaps, even though the soap industry, of course, lost the greater part of its supply sources for vegetable fats. Alcohol became increasingly critical, and as 1942 came to a close, nonalcoholic, solid-based perfumes were beginning to appear in the markets. It was contrastingly interesting to note that in World War I these did not make their appearance until the war was in fact over.

It is patently impossible to make any just or practical assessment of the world position of these industries in 1942. As to their position in continental Europe almost nothing was known. During the year Great Britain discontinued the exportation of nonessential luxuries, previously permitted in the interest of sterling balances abroad.

As the war continued, the limiting of all industrial activity to military and essential civilian production was bound to have further restrictive influences on all three industries. (H. T.)

Soapstone: *see* TALC.

Soccer.

The Galatin, Pa., Football club emerged from a 79-team field as national open cup champion of the United States. The Galatins defeated Pawtucket, R.I., in the two-game final, 2 to 1 and 4 to 2. Pawtucket was the defending champion. The national amateur championship went to Fall River, Mass., survivor of competition involving 90 teams. The Kensington Recreation Center of Philadelphia defeated the Mercerville Boys' club of Mercerville, N.J., for the national junior championship.

The Philadelphia Americans finally broke the five-year supremacy of the Scots-Americans of Kearny, N.J., to gain the championship of the American Professional league. The Swedish Football club won the National league title, while the Spartas of Chicago captured the International league championship.

(M. P. W.)

Socialism.

Socialism as an organized force made little progress in the year 1942. War conditions led everywhere to an increase and intensification of collectivism. Advocates of democratic socialism argued that the hope of security and the conquest of poverty depend upon social planning and the social ownership and control of basic natural resources and the great monopolies or semimonopolies. They insisted that this does not require dictatorship or acceptance of the god-state. They were also concerned with working out concrete plans for democratic socialism.

This emphasis on democratic socialism was a dominant note at the biennial convention of the Socialist party in Milwaukee in May 1942, and of the party's political campaign in the congressional elections.

On the question of what they should say officially concerning the war, the delegates to the Milwaukee convention were almost evenly divided. Only a small group believed that it was desirable or possible immediately to advocate peace negotiations which, as matters then stood, would have recognized an enormous fascist victory. All delegates were thoroughly anti-fascist; about half of them advocated something they designated as "political nonsupport of the war"; the other half urged what might be called "critical support."

The convention, while failing to pass a clear-cut declaration on this point, adopted, with few dissenting votes, a statement analyzing the causes of war and fascism, and dedicating the party to a struggle for democratic socialism as against fascism and totalitarianism of every type. A program of action was unanimously adopted dealing with various issues pertinent to the war and the peace. Professor Maynard Krueger of the University of Chicago was elected national chairman of the party, Norman Thomas, the previous chairman, having declined renomination.

MAYNARD C. KRUEGER (right) was elected national chairman of the U.S. Socialist party at the party's convention in Milwaukee, Wis., June 1, 1942, after Norman Thomas (left) had declined re-nomination to the office

The comparative weakness of the Socialist party organization-ly, and the growing difficulty of putting minority parties on ie ballot, confined active political campaigning to a few states. either the National party nor the Connecticut party, under the adership of Mayor Jasper McLevy of Bridgeport, Connecticut -run independently of the National party—elected any candi-ite to congress or to important state office.

Socialist sympathy with the labour party idea continued. In ew York state, however, the party put up its own state ticket, hile the American Labor party nominated independent candi-tes for governor, attorney-general and some judicial and other fices. The majority of its nominees were coalition candidates hiefly with the Democrats). The Wisconsin Socialist party n a state ticket independent of the Progressive party with hich it formerly co-operated.

American Socialists who were interventionists before Pearl arbor continued to function in the Social Democratic federa-n which, however, nominated no candidate for office. Many them functioned in the Union for Democratic Action and pported the American Labor party in New York, and, else-here, pro-Roosevelt Democrats. In various states the Socialist bor party nominated candidates on a platform of marxism as erpreted by Daniel De Leon without reference to problems the war except as they would be removed by the establishment their type of socialism, ultimately to be achieved by one big ion of true believers.

In Europe Socialist parties were able to function openly and h comparative freedom only in Great Britain, Sweden and itzerland.

Great Britain.—The British Labour party continued to be rep-ented in the national cabinet. It likewise continued its agree-nt with the other major parties, for the duration of the war, t to run Labour candidates in by-elections in districts which, the last prewar election, had been captured by the Conserva-e or Liberal parliamentary candidates. This policy, however, s nearly defeated at the 41st annual conference of the British bour party in May.

At this London conference and in various committee reports, party during the year made several pronouncements on what uld constitute a Socialist peace and Socialist reconstruction. e conference delegates urged, following the war, "the socializa-n of basic industries and services of the country." In respect India, they called upon "the British government and the ples of India to make a further effort to reach a rapid and isfactory settlement." The Independent Labour party and the rity group within the B.L.P. criticized labour leaders for eged vagueness in postwar aims and for failure to criticize re vigorously Churchill's Indian policy. Sir Stafford Cripps, ocialist, expelled a few years before from the British Labour ty, was replaced, in Nov. 1942, in the war cabinet by rbert Morrison, Labourite, home secretary and minister of ne security. Cripps was thereupon appointed minister of air-ft production. Ernest Bevin and C. R. Attlee of the Labour ty continued in the war cabinet. The Independent Labour ty unsuccessfully ran its secretary, Fenner Brockway, for liament in Wales.

witzerland.—The Social-Democratic party, the second larg- in the nation, continued without representation in the federal ncil, Switzerland's important agency of government, because, Jan. 25, 1942, the party failed to carry a referendum which had vigorously supported providing that the council should elected by the people instead of by parliament. The party d during 1942 about one-fourth of the seats in the national ncil, the lower house of parliament.

weden.—In this country, alone in Europe, were nationwide elections held. But the elections were not for parliament but for city and county councils. Although the total Social-Democratic vote increased over that in the parliamentary elections of 1940 by 120,000, the percentage of popular votes cast for Social-Democratic candidates declined from 53.8 to 50.7. The Social-Democrats remained the dominant force in the councils, with 54% of the membership against 17.4% for the Conservatives and 2.8% for the Communists, both of whom made small gains. In sympathy, Swedish socialism was entirely anti-nazi.

Finland.—Socialists retained representation in the coalition government of Finland, and the Social Democratic party fought as best it could against nazi trends. Its former secretary, K. Wiik, and some other Socialists were arrested for agitating against certain of General Mannerheim's military policies.

Elsewhere on the European continent socialist activities had to be carried on underground. Socialists were represented in some of the governments in exile. In France, prior to its complete occupation by the nazis, the outlawed party managed to maintain enough co-operation between local action committees or councils to draw up a widely circulated manifesto reaffirming its faith in social democracy and calling for a new constituent assembly. In behalf of socialists it offered co-operation with all groups resisting the nazis. Léon Blum's brilliant defense of his party and his government at the Riom trials caused the Vichy government to halt further hearings lest popular sympathy for the defendants should threaten its control and hinder its plans for wider collaboration with the nazis.

It was reported that Blum was removed to Germany after the complete German occupation of all France.

New Zealand.—In late June the Labour government, headed by Peter Frazer, formed a national war administration representing all parties. In the fall after the government took over the chief coal mines for the duration, with workers' representation in the control bodies, the National party asked all opposition members of the war administration to resign. Two did so, the other four did not and the government later won in parliament, 47 to 17, a vote of confidence. A leading New Zealand Socialist, Walter Nash, minister to the United States, attracted attention by proposing a world and regional council for postwar rebuilding.

Canada.—The Co-operative Commonwealth federation (the Socialist party of Canada) gained prestige by electing its candidate, Joseph Noseworthy, president of the Ontario Federation of Teachers, in a parliamentary by-election over Arthur Meighen, former Conservative prime minister.

Chile.—In most Latin American countries, socialism was either not organized or else, as in Argentina, in complete opposition. In Chile the Socialist party officially shared in the election of Juan Antonio Ríos of the Radical party to the presidency after having withdrawn its own candidate, Oscar Schnake, at the end of 1941. At its eighth annual convention the party decided to accept ministerial responsibility under Ríos. It held seats in his first cabinet, and in the second cabinet, formed Oct. 21, socialists headed the ministries of health, justice, land and public works and communications. The party favoured economic co-operation with other Latin American countries, and the defense of South America against any sort of foreign domination. It favoured a break with the axis and co-operation with the United States if the United States would help Chile arm and develop industrially.

(*See* also COMMUNISM; LABOUR PARTY.)

(H. W. L.; N. T.)

Socialist Soviet Republics: *see* UNION OF SOVIET SOCIALIST REPUBLICS.

Socialized Medicine: *see* MEDICINE.

Social Security. Only one important amendment of the national social security system was made during 1942, viz., the freezing of the contribution of 1% of wages required of employers and of workers for old age and survivors insurance. Previously, this contribution was to be increased to 2% on each in 1943. No action was taken by congress on the recommendations for extension and improvement of the social security program made by President Roosevelt in his budget message on Jan. 7, 1942.

The status of the various social security systems at the end of 1942 were as follows:

National System of Old Age and Survivors Insurance.—This system had in effect a total of 613,743 awards valued at $11,158,801 on Aug. 1, 1942. Of the total, 543,873 awards, valued at $9,818,274, were to be paid currently, while the balance of 69,870 were subject to deductions of amounts equal to or exceeding the grants for either the current month only or an indefinite period. Suspension of benefits during any month results from the earning of $15 or more in employment covered by the program. The rate of suspension of benefits due to employment had been increasing steadily for more than a year, reaching a total of approximately 10% of all the awards in effect for aged retired persons and for young widows.

During July 1942, $10,369,354 were certified for monthly payments to 551,237 beneficiaries. The greatest proportion of the beneficiaries, 44.8%, were retired insured workers who had attained the age of 65. These 246,841 aged workers were receiving average "primary" benefits of $22.91 at the end of the month. Primary benefits are calculated at 40% of the first $50 of monthly wages (averaged over the period between the end of 1936 and the time of retirement or the attainment of age 65) and 10% more on the balance of the average monthly wage, up to the maximum of $250. To the total thus obtained is added 1% thereof for each year in which the required minimum annual wages have been earned.

In addition to the primary benefits, the system provided 81,895 supplementary beneficiaries with $1,019,096 during July. This group consisted of 71,703 primary beneficiaries' wives, who must be at least 65 years of age to receive benefits of 50% of the primary benefit, and of 10,192 dependent children of primary beneficiaries, who receive the same rates as wives until they reach the age of 16, or 18 if attending school. At the end of July, the average monthly allowance of a wife was $12.22 while that of dependent children was $12.20.

The third group protected by this program comprised 222,501 survivors, who represented 40.4% of all beneficiaries. Of these, 142,840 were dependent children of deceased insured workers, who receive the same benefits, up to the same ages, as children of retired beneficiaries. The 54,282 mothers of these children aided during July are provided with grants equal to 75% of the deceased husband's primary benefits. The same percentage is also paid to widows of insured workers after they have reached age 65, of whom there were 22,787 on the list of certified beneficiaries in July. Only 2,592 parents of deceased beneficiaries were on that list. In order to receive benefits of 50% of the primary benefit, parents must be at least 65 years of age and have been wholly dependent on the deceased worker. At the end of July, the average benefit of the aged widows on the "current-payment status" list was $20.17; that of younger widows with children was $19.54, while benefits to parents averaged $12.98.

If there are no survivors eligible for monthly benefits, a lump sum of six times the primary benefit is provided to meet funeral expenses. In July 1942, $1,186,247 were certified in such payments on behalf of 8,504 deceased workers.

By the end of Aug. 1942, the old age and survivors insurance program had expended $231,763,000 in benefits. Taxes from employers and workers totalled $3,691,034,000 by that date, when the assets of the system amounted to $3,461,811,000. At the end of June 1942, it was estimated that 59,400,000 persons over 14 years of age held account numbers under the system.

Railroad Retirement Program.—In addition to the general retirement system, the federal government operated a special program for railroad workers. At the end of Oct. 1942, there were 158,283 benefits valued at $10,130,794 in force under this plan. Of the total, 127,936 were for railroad employees who retired after the program became effective and 26,540 were for workers previously pensioned by the railroads who were taken over by the Railroad Retirement board. There were also 3,187 survivor annuities and 620 death-benefit annuities in force at the end of October. Employee annuities averaged $65.98 on that date, pensions averaged $58.94 and survivor annuities averaged $32.17. A total of $599,997,300 had been disbursed in benefits by Nov. 1, 1942. At the end of August, $865,783,000 had been received under this program while the available assets on that date amounted to $298,102,000.

Railroad Unemployment Insurance.—The Railroad Retirement board also had charge of the national unemployment insurance plan for railroad workers. Under this plan, 8,642 benefits amounting to $187,823 were certified during Oct. 1942. By the end of that month, the program had accumulated receipts of $337,300,700, accumulated benefit payments totalled $42,158,400 while the balance on hand amounted to $295,142,200.

General Unemployment Insurance.—Under the federal-state system of unemployment insurance for the general population, the 51 state and territorial plans paid out during 1941 a total of $345,707,730 in benefits, as compared with $519,945,914 in 1940 and $429,935,144 in 1939. In 49 of the jurisdictions, 3,311,386 workers received first payments during the year, making an average annual payment of $101.74. The 1941 average was $1.59 above that of 1940 and $17.50 above that of 1939. For one week of total unemployment, the average national payment rose from $10.57 in 1940 to $11.06 in 1941. This average weekly payment fell below $10 in 24 jurisdictions and below $8 in 10 others. Fully 46.7% of the beneficiaries of 47 jurisdictions exhausted their benefits before they were again employed, these exhaustion rates ranging from 19.7 in Michigan to 95.0 in Wyoming. The duration of the benefit payments ranged from 6.3 weeks (Oregon) to 13.1 weeks (Montana) in the 27 jurisdictions for which such data were available. While the benefit payments of 1940 represented 60.7% of the contributions collected that year and the 1939 benefits represented 54.6%, only 34.2% of the year's collections were used in benefits during 1941.

In Aug. 1942 approximately 739,300 different individuals received unemployment insurance benefits amounting to $28,252,116. During the first eight months of 1942, the benefit disbursements amounted to about $283,000,000, 12% more than during the same period of 1941. This increase was due primarily to higher wages and the higher benefits provided by some states. By the end of Aug. 1942, the state unemployment insurance systems had collected approximately $4,943,100,000 in taxes and expended $1,970,600,000 in benefits. As of Aug. 31, the funds available for benefits amounted to $3,099,739,000.

National Employment Service.—Operations of the employment service, which was nationalized in Dec. 1941, showed a total of 5,680,275 placements during the first eight months of 1942, or 31.1% more than in the same period of 1941 and 94% more than in 1940. On July 17, 1942 the active file of the employment service contained 3,254,240 names of persons seeking work.

Public Assistance.—Public assistance payments, provided for persons in need, were made during Aug. 1942, to 2,250,892 aged

,956 blind persons and 930,227 children in 387,176 families. ring that month, the aged received $50,102,706, or an average $22.26 per person; the blind received $2,071,648, or $26.24 person, while the dependent children received $13,364,498, or average of $34.52 per family. In the same month, 550,000 es were provided with $13,310,000 in general relief, an aver- of $24.19 per case. As heretofore, there was great variation the August state averages for the special types of public as- tance and for general relief: old-age-assistance averages ranged m $8.60 in Arkansas to $37.06 in Colorado; aid-to-the-blind erages varied from $9.92 in Arkansas to $46.87 in California; -to-dependent-children averages ranged from approximately per family in Kentucky to $58.90 in Connecticut, while the eral-relief averages ranged from $4.79 per case in Mississippi $38.07 in New York. (*See* also LAW; RELIEF; UNEMPLOY- NT.) (A. BM.)

Great Britain.—There was little change during 1942, owing the impending publication of Sir William Beveridge's report on reconstruction of the social services. (*See* also BEVERIDGE, . WILLIAM HENRY.)

The unemployment insurance fund for the year 1941 showed: eipts £76,600,969; excess over payments £63,858,181; balance ,534,577. Corresponding figures for the agricultural scheme e: £1,513,906; £1,036,158; and £3,858,294. Of expenditure m the general fund, £38,587,007 was applied to redemption of t. The total number of persons registered as wholly unem- yed in Sept. 1942 was 98,662 compared with 230,621 in Sept. 1. The assistance board paid some £4,500,000 from exchequer ds by way of unemployment assistance to unemployed per- s whose needs were not met by unemployment insurance, and persons in distress as a result of the war. The number of such wances in payment in Sept. 1942 was 33,464. The National alth Insurance fund for the year 1941 showed: receipts £45,- ,000; excess over payments £5,723,000; balance £153,920,000. Expenditure on old age pensions was stated to be at the rate of: ,000,000 a year on noncontributory pensions (granted at age subject to a means test); £83,000,000 on contributory pen- s (payable at age 60 women, 65 men) of which £25,000,000 e from contributions. The number of beneficiaries was approx- tely 3,750,000. The assistance board paid supplementary pen- s to some 1,250,000 of these pensioners on proof of need, at ost of £30,000,000 a year up to Aug. 1942 when increased efits raised the cost to £41,000,000. It remained the duty of l authorities under the Poor law to supplement sickness ben- in case of need, and to relieve persons not covered by any e scheme.

THE BEVERIDGE REPORT

Dec. 1942 Sir William Beveridge published his report. It proposed an grated scheme of social insurance based on flat-rate contributions from whole population aged 16 or more without upper income limit; from loyers; and from the state. The plan assumes: allowances for children to age 15, or 16 if in full-time education; comprehensive health and re- ilitation services for prevention and cure of disease and restoration of king capacity, available to all; maintenance of employment, *i.e.* measures the state to avoid mass unemployment or protracted unemployment of viduals.

he report proposes the creation of a ministry of social security to take the administration of health, unemployment and pensions insurance, the k of the assistance board and the duties of local authorities under the r law. One weekly stamp on one insurance document would cover all al insurance. The population would be divided into:

Employees, who would receive unemployment and disability benefit, re- ment pension, medical treatment and funeral grant.

I. Others gainfully occupied, including employers, traders and independen- workers, who would receive pension, medical treatment and funeral t but not unemployment benefit or disability benefit during the first 13 ks of disability. They would, however, receive training benefit to help n find new livelihoods.

I. Married women of working age, insured on marriage through a house- 's policy. All would be entitled to marriage grant and maternity grant all would acquire title to provision for widowhood, separation and re- ment through their husbands' contributions. Those not earning would receive a share of their husbands' unemployment and disablement benefit. Earning wives would draw these benefits on a reduced scale in their own right and be entitled to maternity benefit.

IV. Others of working age not gainfully occupied, *e.g.* students, persons of private means and unmarried women engaged on unpaid domestic duties, who would receive pensions, medical treatment, funeral grant and training benefit.

V. Persons below working age would pay no contributions and would be covered by children's allowances.

VI. Persons retired above working age would be insured for pensions, disability benefit, medical treatment and funeral grant by contributions paid in working years.

Unemployment and disability benefit would, subject to certain conditions as to contributions, be without means test and of unlimited duration, subject, however, in the one case to attendance at a training centre if unemployment were prolonged, and in the other to reasonable steps being taken to effect recovery.

The report proposed benefits calculated upon a subsistence standard as follows. Unemployment, disability and training benefit: 24*s.* for a single person, 40*s.* for man and wife. Retirement pensions: (payable only on relinquishment of work) 14*s.* (25*s.* man and wife) increasing biennially to reach in 20 years, 24*s.* for a single person, man with earning wife or woman with husband under pensionable age, and 40*s.* for man and wife. Persons postponing retirement until after pensionable age: extra 1*s.* (2*s.* for man and wife) for every year of postponement. Widow's benefit: 36*s.* for 13 weeks followed by guardian benefit of 24*s.* in respect of care of children, or training benefit if required. Maternity benefit: 36*s.* for 13 weeks payable to earning housewives in addition to maternity grant of £4. Dependant allowance: 16*s.* for dependants, other than children, of persons receiving any benefit. Children's allowances: 8*s.* for each child when responsible parent is in receipt of benefit or pension, otherwise for each child after the first. Industrial pension: (a) for total disability: two-thirds of weekly earnings, but not more than £3 a week or not less than appropriate disability benefit and dependant allowance; (b) for partial disability: proportionate to loss of earning power. Marriage grant: £1 for each 40 contributions paid by the woman prior to marriage, with a maximum of £10. Maternity grant: £4. Funeral grant: from £6 for children under three years of age to £20 for adults. Industrial grant: payable to dependants of persons dying prior to minimum retirement age as a result of industrial accident or disease. Cases of industrial accident and disease: normal rate of disability benefit for the first 13 weeks followed by industrial pension as above.

The proposed weekly contributions were from 2*s.*6*d.* to 4*s.*3*d.* for class I males according to age, and 2*s.*6*d.* to 3*s.*3*d.* for their employers, the corresponding figures for females being 2*s.* to 3*s.*6*d.* and 2*s.* to 2*s.*6*d.* For class II, 2*s.* to 4*s.*3*d.* males, and 2*s.* to 3*s.*9*d.* females; class IV, 1*s.*6*d.* to 3*s.*9*d.* males and 1*s.*6*d.* to 3*s.* females.

A national assistance scheme subject to a means test would cover all cases where needs were not met by insurance. Approved societies would cease to be organs of national insurance, but a place would be kept for friendly societies and trade unions providing their own benefits to continue as agents for cash state payments of disability benefit. The report recommended that the business of industrial assurance should be converted into a public utility company under an industrial assurance board.

Children's allowances and national assistance would be paid out of taxation; other cash benefits out of a social security fund which would also contribute to the cost of the health and rehabilitation services. A part of the cost of disability arising from industrial accident and disease would be levied on the dangerous industries in accordance with their individual risks. The total cost of the proposals was estimated at £697,000,000 in 1945, rising to £858,000,000 in 1965. The cost in 1945 of existing schemes was estimated at £432,000,000. Of the proposed additional expenditure of £265,000,000 it was estimated that £125,000,000 would fall on insured persons, £54,000,000 on employers and £86,000,000 on the exchequer. The exchequer contribution would rise by a further £161,000,000 per annum by 1965 when retirement pensions reached their full amount. (D. I.)

Social Service. The work of all social agencies, public or private, in 1942 was influenced by the war. This meant not only the creation of a new series of public wartime social services under the Office of Defense Health and Welfare Services, the Office of Civilian Defense and the expansion of private agencies like the Red Cross and the United Service Organizations, but the work of every agency was affected directly or indirectly. First, there was a great change in the general relief situation. Very large funds had gone to public relief every year and in every part of the country for the previous 12 years. The new conditions of employment created by the war brought regular wages into many homes that had been maintained for a long period of time by public relief funds. By Sept. 1942 relief expenditures had declined in 44 states. These expenditures had declined more than 50% in 15 states over corresponding expenditures in Sept. 1940. As compared with Sept. 1941, the declines were still very marked and included such spectacular decreases as 69.3% for Louisiana and 50.6% for Pennsylvania. Over the two-year period, the number of persons receiving relief decreased by more than 50% in 24 states, and only two states—South Carolina (6%) and West Virginia (1%)—showed even a slight increase in the number of relief recipients and in Sept. 1942 total general relief payments had gone down approximately one-third in the U.S. as a whole compared with the same period for 1941, and the number of persons receiving relief had gone down in every state except Alabama (+2.2%), Arkansas (+19.1%) and Nevada (+1.9%). The end of the special federal depression agencies, WPA and CCC, was announced and demobilization was under way. One important change was that the old problem of "transients," or "migratory workers," changed, since they were now welcomed in most areas because of the growing labour shortages. Public opinion was also influenced by an important decision of the U.S. supreme court, *Edwards* vs. *California,* 314 U.S. 160 (1942), which declared unconstitutional a California law making it unlawful to bring into the state a nonresident known to be indigent.

The permanent social agencies, public and private, had serious staff turnovers, with workers leaving for the new war agencies and the calling of men on the staff to the services, and vacancies were increasingly difficult to fill. Registration in schools of social work declined so that fewer new trained workers were available. Volunteers were recruited in large numbers and brief training courses for these new aides were organized. Only a small number of state legislatures were in session in 1942, and there were no major changes in the state welfare organizations. In some parts of the U.S. social workers faced serious problems in connection with the Japanese evacuation, especially with regard to the care of children; but some social services were made available by the War Relocation authority. There were some serious local problems because of the rapid expansion of defense areas, with resulting new social needs regarding care of children, recreation, delinquency, housing, medical services and schools, which the local areas were not able to meet.

In various public and private agencies there was a new emphasis on children's work, on day care for the children of working mothers, concern over reported increases in juvenile delinquency, a new understanding of migratory labour, new problems with immigrants who have sought naturalization in increasing numbers. There was some concern and uncertainty, in spite of the large funds raised for voluntary war social services, about the funds available for regular social services of private agencies. But the funds available for community chests were well maintained throughout the year. (*See* also CHILD WELFARE; RELIEF; SOCIAL SECURITY.) (E. AB.)

Societies and Associations: *see* under specific name.

Sociology.

The science of social relations and structures, "the grammar of the social sciences," made only modest advances in 1942. At the close of 1941 hopes were high that the type of "systematic-quantitative sociology" promulgated by G. A. Lundberg and S. C. Dodd would lead to consolidation of the attested results of previous but presumably less "scientific" researches. These hopes seemed to have been misplaced, for with the publication of S. C. Dodd's grandiose *Dimensions of Society* early in 1942, it became apparent to many sociologists that a mountain had been in labour. Scathing critiques came from the mathematician E. T. Bell and the sociologist Talcott Parsons, but these were relatively brief; the most thoroughly destructive analysis was an article by Ethel Shanas in the September issue of the *American Journal of Sociology.*

Similarly disconcerting was the reception accorded the first two volumes of W. Lloyd Warner's *Yankeetown* series. Sociologists found it analytically inadequate because of Warner's apparent lack of familiarity with the earlier literature in the class-status field, while anthropologists objected to the extreme formalism apparent, in particular, in the volume entitled *The Status System of a Modern Community.* At the same time, it must be said that had it not been for the excessively optimistic advance advertising that Warner's work received, it is likely that criticism would not have been so severe; discrepancies between promise and performance are always harshly judged. Moreover, this advance advertising revived among American sociologists their interest in problems of social stratification, and this revived interest resulted in what virtually amounted to a special "stratification issue" of the *American Sociological Review* in June 1942. The consequent contrast between Warner's loose concepts and more refined types of analysis could not fail to evoke further disapproval of his methods, exemplified in the trenchant article by Oliver C. Cox, "The Modern Caste School of Race Relations," *Social Forces* (Dec. 1942).

Hopes were high that the stimulus to scientific investigation provided by the Fiftieth Anniversary celebration of the University of Chicago (1940–41) would later produce notable results. Here and there progress was made and some reports appeared, but publication in 1942 of the collected papers of sociological import, *Levels of Integration in Biological and Social Systems,* provided only a restatement of the hackneyed and dangerous organismic analogy. Many of the individual papers in the volume are of great value in themselves, but the framework into which they were forced detracts from their merit. Social scientists in general seemed to have profited little by the disastrous record of analogical thinking.

These setbacks fortunately are not the whole story of sociology in 1942. Witness the great improvement in general sociological analysis registered by R. M. MacIver's treatise, *Social Causation.* In this work the author points the way to more circumspect and more fruitful sociological research. Sometimes considered a foe of quantitative method, it seems fair to say that MacIver opposes only statistical dogmatism of the Dodd-Lundbergian type.

From the standpoint of the social psychologist and sociologist, Gordon W. Allport in his *The Use of Personal Documents in Psychological Science* unduly disparages typological analysis because of his interest in the individual personality as developing in a unique time-series. Such an interest in the unique leads away from science and toward Gamaliel Bradford's psychography. It may therefore be said that although Allport makes many shrewd criticisms of opposing schools of thought, he does not fully succeed in establishing his own position. The advocates of life-history and case-study methods in studying the inter-relations of individual and society will have to find a more whole-hearted and methodologically informed representative if their eminently justifiable approach is to get a proper hearing. A step in the right direction was taken by the social anthropologist Morris Opler in his *An Apache Life-Way.* He tried, with measurable success, to avoid mere psychography; his is a social-psychological presentation of sociological rather than psychological derivation.

Of course, the guide-lines for such studies were laid down long before by C. H. Cooley and G. H. Mead. Interest in Cooley was revived by E. C. Jandy's *Charles Horton Cooley: His Life and His Social Theory.* In spite of this, it is still safe to say that American social psychology seemed to be shifting more and more toward the Mead emphasis on the rise of the self in and through a role-taking process using significant symbols, especially those of language.

The year yielded no such crop of sociologically relevant work on language as did 1941, but the 1942 census of current research, published in the August issue of the *American Sociological Review,* plus other sources of information, showed that steady progress along this and other lines was being made. In social psychology, there were such studies as critical evaluation of Mead's concepts of the "I" and "me," social roles of university students, linguistics of assimilation and minority status; in techniques of research, sociometric scales, factorial analysis in radio, various o census sampling innovations, typology of negro personali- s; in population and social biology, internal migration (spon- ed by the Tolan committee), optimum farm population, stim- tion of population growth; in rural sociology, national minority ups in rural Michigan, types of families residing on marginal sub-marginal land; in marriage and the family, class differ- es in parent-child relations, the Japanese-American family in war, campus codes with regard to mate selection; in crim- logy, influence of educational treatment of parolees, prediction juvenile delinquency, criminal careers of former delinquents; sociology of religion, interrelations of "the church" and e world," leadership in the Oxford group; in race relations, extensive Myrdal study, by the close of 1942, almost com- ed.

ut, if one were to take seriously A. G. Keller's *Net Impres- s,* one would have to conclude that little of social-psycho- cal or sociological importance in any field had occurred since death of W. G. Sumner. The biases of the Sumner-Keller ool are fortunately well known; little discouragement will lt from Keller's charmingly written and reminiscent on- ght. Interestingly enough, one of the most striking develop- ts running directly counter to the ultra-conservative Sumner- ler ideology occurred in Great Britain. An International rary of Sociology and Social Reconstruction, under the editor- of the German émigré Karl Mannheim, was announced the publishers of the famous International Library of losophy and Psychology.

ewly emerging fields of investigation made modest but none less definite advances during the year. Sociology of knowl- e was represented by Oscar Cargill's *Intellectual America: s on the March,* the Beards' *The American Spirit: A Study the Idea of Civilization in the United States,* and Logan son's *The Academic Man.* The volume last named, more ctly sociological than the others, develops in detail one aspect Florian Znaniecki's epochal *The Social Role of the Man of owledge* (1940), a pioneer study in substantive sociology of wledge. Sociology of law was represented by the first num- of the new *Journal of Legal and Political Sociology,* appear- under the editorship of Georges Gurvitch. Sociology of gion found a distinguished exponent in Salo W. Baron, whose e-volume treatise *The Jewish Community* is a welcome plement of Max Weber's studies. Sociology of economics is oriously hard to define, and some students would include h work on labour relations in the field. However this may it seems fair to say that F. J. Roethlisberger's *Management Morale* is a valued addition to this area of investigation.

he traditionally accepted varieties of sociological research e not neglected. Race relations had as outstanding contri- ions Graeber and Britt's *Jews in a Gentile World: The Prob- of Anti-Semitism* (with a striking chapter by "Anonymous"), Donald Pierson's *Negroes in Brazil.* So-called "social pathol- " and "human ecology" were given a definitive synthesis in research zone in Shaw and McKay's *Juvenile Delinquency Urban Areas.* Nothing substantially new is provided, but of the research on the interrelations of deviate social conduct ong juvenile and locality patterns is neatly co-ordinated. A ilar synthesis of closely related type is Ernest R. Mowrer's *organization: Personal and Social.* Of textbook rather than monograph character is Donald R. Taft's *Criminology;* its nificance lies primarily in its unabashed espousal of a com- ely deterministic view of criminal conduct. The criminal is t he is, according to Taft, because he can't help it.

ther textbooks of importance published during 1942 were L. and J. P. Gillin's *An Introduction to Sociology,* Kimball ng's *Sociology: A Study of Society and Culture,* L. L. Bernard's *Introduction to Sociology,* John M. Gillette and James M. Reinhardt's *Problems of a Changing Social Order,* Harry Elmer Barnes' *Social Institutions in an Era of World Upheaval,* Howard Becker and Reuben Hill's *Marriage and the Family,* and George A. Lundberg's *Social Research* (rev. ed.). A text called *Principles of Anthropology,* but actually a curious amalgam of ideas gleaned from the social interactionists, both of social-psychological and sociological persuasion, was launched by E. D. Chapple and Carleton Coon; it called forth charges of "academic kleptomania."

Sociology, whether academic or not, underwent many shifts in personnel in 1942. The armed forces absorbed many younger men; wartime agencies in Washington and elsewhere accounted for many more. Social psychologists were being utilized in relation to morale, propaganda and counter-propaganda, aptitude testing and estimating, personnel and guidance work, etc. Specialized anthropological and sociological knowledge of foreign countries and peoples often led to placement in the Office of Strategic Services, the Bureau of Economic Warfare, and the like. Specialists in race relations, particularly when they had unusual linguistic training, occupied many important niches. Social statisticians were widely and indiscriminately used. All in all, the shift from strictly academic to total-war pursuits more than kept pace with the dwindling of college and university enrolment.

Because of transportation difficulties, the American Sociological society did not hold its annual meeting, which for 1942 was to have been at Cleveland. In 1941 a constitutional change had been made which led to balloting by mail, so that elections ran their due course and George A. Lundberg of Bennington college was chosen president. The Sociological Research association, an honorary body much smaller than the American Sociological society, elected to membership Raymond V. Bowers, Kingsley Davis, S. C. Dodd, John Dollard, R. K. Merton, Lowry Nelson, Calvin Schmid, Clifford Shaw, Conrad Taeuber, Clark Tibbits, and W. Lloyd Warner. (H. Bec.)

Sodium Carbonate. Production of natural sodium carbonates in the United States in 1941 increased by 13% over 1940, to 146,677 short tons, all from California. This was only a little over 4% of the amount of sodium carbonate produced by chemical methods from other products. (G. A. Ro.)

Sodium Sulphate. An extended strike in the plant of one of the leading producers cut the output of natural sodium sulphate in the United States in 1941 to 157,524 short tons, a reduction of 16%. During 1942 production capacity was increased by one new plant and by enlargement of another, to offset heavy reductions in imports from Europe. (G. A. Ro.)

Softball. The Deep Rock Oilers of Tulsa, Okla., captured the national men's championship, defeating the Briggs Bombers of Detroit in the final, 2 to 0. New Orleans won the women's championship with a 4 to 1 victory over the Chicago entry. The finals were held in Detroit following a series of elimination tournaments in various parts of the country. (M. P. W.)

Soil Erosion and Soil Conservation.

Drastic changes in agricultural practices throughout the world naturally involved danger to soil resources, but generally, according to information available, the needed shifts in production methods and goals were made with due consideration for the security of the soil. Many agricultural leaders looked upon the wartime upheaval of agricultural practices in the British Isles, the dominions, and the colonies, as an opportunity to end exploitation of the land and to introduce better farming methods.

During the previous 20 years much land had been lost to agriculture in England. The war, however, made necessary the restoration of much derelict land and the improvement of the land under cultivation. As a result, at the beginning of 1942, agricultural leaders in Scotland found little evidence that the fertility of their land had been impaired by the demands of war.

In New South Wales, Australia, agriculturalists believed a change to soil-conserving practices could be made in the wheat-producing areas. In South Africa, the expansion of wheat acreage by high price-concessions, with no restrictions on methods of production for protection of the soil, met with criticism from those interested in conservation.

In the United States many changes were necessary to meet wartime farm production goals. The tremendous increases required in the acreages of soybeans, peanuts, corn, dry peas and beans, flax, sugar beets, and potatoes forced cultivation farther up steep slopes, put under intensive cultivation land that had been in crops requiring little cultivation, and resulted in the plowing up of considerable areas of meadow and pasture.

Efforts were made, however, to minimize erosion hazards. Studies of improved methods of cultivating soybeans and peanuts were under way during 1942. Attention was given to selection of land best suited to the several crops, and farmers were given guidance in working out methods of cultivation that would be least destructive of soil. Extensive efforts were made by farmers and agricultural workers to increase the acreage of cover crops such as the vetches, ryegrass, winter peas, the clovers, lupines and others. The 1942 production of some cover crop seed increased enormously over that of 1941. This was not true, however, of many forage crop seeds.

Another means of meeting the immediate threat to the soil was the program of the department of agriculture to extend to a far greater number of farms the use of such productive conservation measures as cover crops, soil-building rotations, contour tillage, crop residue mulches and proper grazing practices.

Germany's "back to the land" policy employed in settling the occupied eastern territories with Germans in order to hold territorial gains for the future, was coupled with governmental action to minimize soil depletion. Shortages of phosphates intensified the need for continuing during the war all programs for improvement of land under German control.

During 1941 and 1942 legislation affecting soil conservation and land use was introduced in or passed by legislative bodies in New Zealand, Victoria, New South Wales, Queensland, Palestine, the Union of South Africa, East Africa, Rhodesia, Mexico, Colombia, Argentina, Scotland, Northern Ireland and Eire.

In Palestine, Rhodesia and Argentina the adopted legislation permitted or required co-operation in carrying out erosion control works.

From many parts of the world came reports of preliminary steps in erosion control—surveys of soil and land use, research on soil erosion, non-governmental organizations sponsoring better land use, and publications advocating erosion control. These evidences that attention to conservation of soil had not been sidetracked by war came during the year from Turkmen and Uzbek (U.S.S.R.), British Guiana, the British West Indies, Venezuela, Ecuador, Canada, England, Brazil and Java. Notable among these was the Scott Report on Land Utilization in Rural Areas, from England, already accepted as an historical document.

Widespread interest in soil conservation in the Americas was indicated by the resolution on soil conservation and technology adopted at the Second Inter-American Conference on Agricultur in Mexico City in July 1942.

Students from Mexico, Central America and South Americ later came to the United States to study soil and water conservation methods and objectives under direction of the Soil Conservation service.

Plowing up Grassland.—For more than a decade, plowing u grassland to increase wartime production had been in disrepute i the United States. But war again brought the plowing up of som grass in different parts of the world, and in some cases governments were subsidizing it. The Italian government announced campaign for plowing 1,000,000 ac. of grassland, the state assuming 38% of the cost. Scotland extended to March 31, 1942, th subsidy paid for plowing up land that has been under grass for a least seven years.

In the Irish Free State under the Emergency Powers order, th minister of agriculture moved to take possession of land holding where progress was not being satisfactorily made in the require cultivation of one-fourth of the land. Farmers who could no practice a rotational system of tillage were finding the tillag order a serious problem. In Northern Ireland the percentage o land to be plowed was even greater. In England, most of th grassland that was to be put in cultivation had been plowed u by the end of the year. The acreage reached into the millions.

In the United States, several million acres of meadows and pastures were plowed to meet wartime farm production goals. In th United States this was looked upon only as an expedient, no without hazard to the soil.

In England, the situation was different. Land utilization surveys in that country revealed the possibility of drastic revisions i land use, and a permissible increase in arable areas as great a 30%. Furthermore, English farmers were plowing up their grassland as a part of a crop rotation system. They took "the plow 'round the farm." Short-term grass-seedings in rotation with cultivated crops provided some grass and kept the land in shape fo cultivation.

In the United States, although some progress was being made crop rotations in which grass was used were not so commonl followed. A great deal of the increase in the acreage of soybean and corn, where rotations were established, was made by plowing up meadows and pastures at a time when they might not hav been plowed in the regular rotation, had the war not impose extraordinary farm production problems. In the corn belt, plowin up several million acres and planting them to row crops greatl reduced the percentage of land in soil-conserving crops. Rotations for large acreages of these row crops had not been full worked out.

Land Improvement and Reclamation.—In the British Isles where there is less land to fall back on than there is in America drainage for reclamation was a war-time necessity. In England Scotland and Ireland, drainage schemes sponsored or financed b the government were well under way. At the beginning of 194 2,000,000 ac. or more of agricultural land in England had bee improved by drainage. In Northern Ireland grazing lands coul be drained as a part of the Land Improvement scheme, and t bring into production land damaged by flood, a Drainage commission was set up in 1941. In Scotland, lands made unproductive by liability to flood were being protected by arterial drainage works under the Land Drainage act of 1941.

The County War Agricultural committees in Great Britain wer bringing bracken land, heath and moorland into productive use Experiments were under way in improving the grazing areas i the New Forest by removing trees and woody plants, cultivatin and reseeding.

The use of much of the marginal land in Scotland, incidentall ended on adequate liming. Under the Lime Subsidy scheme, government encouraged liming and expanded the production limestone by grants for erecting new plants and improving old s. In Wales, the use of hill land at lower elevations is under erimental study, and grants for clearing have been recomnded.

n the United States, drainage work of the Soil Conservation vice was cut sharply in 1942; the men and materials required the work were needed elsewhere.

he Finnish government guaranteed a premium to every farmer nging waste land into cultivation for his own farm, during a iod of five years beginning in 1941. The Waste Land commisn of the German reich had been studying devastation of land erosion and the use of vegetation as a means of control. In 1 a sum equivalent to approximately $5,000,000 was made ilable for a drainage project in the Morawa valley, in Yugoia.

weden was preparing to reclaim about 1,200 hectares of peat d and 200 hectares of mineral soil to be developed in small dings. Increases in the Danish Land Reclamation fund were le in both 1941 and 1942 for drainage and enclosure of land in dykes. In India, effective means of reclaiming peat soils e being achieved through investigations by the Bengal departnt of agriculture.

n Canada and the United States, reclamation or improvement and in progress was chiefly that continued as a part of prewar grams. Canada's long battle against instability of farm protion in the Prairie provinces, begun with passage of the Prairie m Rehabilitation act, continues. Under this act, the provinces led to grass several million acres of deserted grain farms. Exsive irrigation projects, completed or anticipated, promised to olutionize farming methods in this one-time wheat country.

eeding wheatland to grass was successful in a comparable area he United States, the great plains. Of 47,000 ac. seeded from 5 to 1941, 66% were established, and nearly 90% of the age seeded in 1941 was established.

lanting tree seedlings, to reclaim eroded and abandoned land been completed on more than 100,000 acres by the Tennessee ey authority during the years of its operation.

oil Conservation Districts, U.S.A.—Demonstration projects demonstration farms played no small part in spreading conation in the United States, and some work of this kind coned, but the soil conservation districts were in 1942 the medium ugh which most of the technical assistance given by the states the federal government reached the farmers.

he soil conservation districts, which at the close of 1942 bered 826 in 42 states, were local farmer co-operatives for trol of erosion and conservation of soil and moisture resources. mer-members could receive guidance and assistance from fed, state, and county agencies, and local organizations. In the states which in 1941 adopted legislation authorizing organizaof districts, 22 districts were organized during the first 11 ths of 1942, and the number of districts in other states insed 26.5% during the year. Acreage in districts increased , from 382,629,000 to 479,129,000 acres.

he specific projects which soil conservation districts might ertake are as diverse as the types of farming and the erosion blems within their boundaries. The program of a district was d on soil and land use surveys of the area involved, economic siderations, and the knowledge and experience of local farm ers. Of the area in districts, by the middle of 1942 almost 00,000 ac. had been covered by physical land surveys made he Soil Conservation service. These surveys were sufficiently iled for use in individual farm planning.

n especially valuable part of these surveys in the conservation program was the mapping of cropland in three classes according to the type of cultivation necessary to its continuous use. These land surveys, which served as guides in formulation of district programs, were used by technicians of the Soil Conservation service who gave assistance to the districts and their members in making individual farm plans. The district programs proved to be flexible enough to permit their utilization in the effort to increase production, but the plan of the United States department of agriculture for the widest possible extension of conservation practices both inside and outside soil conservation districts necessitated some temporary reduction in the assistance district co-operators receive on their land from the technicians of the Soil Conservation service. It was planned to extend to as many farms as possible, all yield-increasing conservation practices that could be applied with the least technical assistance and the least expenditure of extra farm labour.

Mexico.—Establishment of a department of soil conservation as a subsidiary of the National Irrigation commission was authorized. The department planned to study soil erosion and formulate plans for erosion control and for the maintenance of soil fertility, on both irrigated and unirrigated areas.

South America.—To carry on research in soils and erosion control a division of soils was established in the newly created Northern Agricultural Institute in Brazil. The division was to classify and analyze soils of the Amazon valley and provide a soil-analysis laboratory for the region. In Chile, establishment of a soil and water conservation research centre was authorized. A law passed in Colombia provided for the creation of a Soil Conservation service in the Ministry of National Economy.

Argentina in 1941 set up a National Land board to promote settlement of agricultural lands, and a soil conservation law was introduced which authorized the ministry of agriculture to determine the utilization of land requisite to colonization. This bill made it obligatory upon landowners or tenants in designated areas to carry out required erosion control measures and even to give notice of the existence of erosion in their own or their neighbours' fields.

The United States Soil Conservation Mission to Venezuela, in co-operation with the Venezuelan ministry of agriculture, made a land-use reconnaissance survey of the agricultural areas of Venezuela. Demonstrations of terracing, strip-cropping, contour cultivation, contour furrows, check dams and farm cropping plans were given.

British West Indies.—In Jamaica neglect of the soil was evidenced by eroded and barren hillsides, which formed the greater part of the cultivated area of the island. One of the main objectives of the agricultural policy of Jamaica was to conserve the soil by reforestation of steep slopes, protection of forest reserves, and anti-erosion practices.

In Trinidad the Lands Advisory committee submitted to the government a report on erosion and erosion control. The depression in the cacao industry and renting out of steep hillsides to the peasants was reported to be increasing erosion, flooding and landslides. A forest policy formally accepted by the government included co-operation with the conservator of forests in all projects for soil conservation and prevention of erosion.

The Philippine Islands.—Cultivation is hazardous in the Philippines because slopes are steep, rainfall is heavy and soils are highly erodible. The short rivers, with steep gradients, carry heavy loads of material eroded from intensively cultivated slopes. On Negros and Luzon, cultivation of sugarcane had been rapidly depleting the soils. In the interior of Cebu, soils had been eroded beyond reclamation.

But cultivation could be carried on in the islands under proper management. In Davao, abaca was cultivated on thousands of acres protected against erosion, and on one rubber plantation in Mindanao, soil conservation methods have been practised for a decade. It was reported that Japan was planning to devote 1,000,000 ac. of land in the Philippines to cotton.

Australia.—In Victoria, erosion control is closely related to flood control. Out of the need to control rivers came the demand for control of land use in catchment areas, where erosion is widespread. Safe disposal of storm water was a problem in more than half of the state. At Dookie college, methods of controlling water erosion were given a trial under various conditions prevailing in Victoria.

The Agricultural Holdings act of New South Wales, proclaimed in 1942, supplanted all previous legislation of a similar character. It recognized that uncertain tenancy is often responsible for inefficiency. It gave a considerable degree of security of tenure, compensation for disturbance of tenure, and, at termination of tenancy, compensation for the unexhausted value of fertilizers and green manure crops and for pastures sown by the tenant. The act was to be administered by the department of agriculture. In the southern tablelands, erosion was serious in many centres, and overstock was great, so that pastures could not be restored without sharp reduction in numbers of livestock. Serious erosion in the wheat-growing areas necessitated diversification. Shelterbelt planting was among the measures advocated to control wind erosion in Western Australia. In Tasmania, sheet erosion was general on developed land, soil creep and land slipping occurred in the higher rainfall areas, and lateral stream erosion was prevalent on many rivers and streams. On these eroding areas, as on areas endangered by wind erosion, little or nothing was done to control erosion. Marram grass was planted to control coastal sand drifts.

China.—On invitation of the Chinese government, Dr. W. C. Lowdermilk, of the United States Soil Conservation service, left for China in the latter part of 1942 to assist that nation in establishing a soil and water conservation service.

The Union of South Africa.—Under the 1941 Forest and Veld Conservation act several forest reserves were established and 80,000 morgen, forming a part of the catchment of Lake Arthur, were proclaimed a conservation area to protect a dam used to irrigate 12,000 morgen of land. Under the act, any severely eroded land might be proclaimed a conservation area, and the state might expropriate farms most severely affected and could ensure that all conservation measures needed on remaining farms be accomplished.

Severe erosion over extensive areas in Natal progressed so far that reclamation will require moving the population.

East Africa.—In Central province, Tanganyika Territory, where sheet and gully erosion are rife, burning of stubble was prohibited by Native Authority rules in some reserves. The stubble is laid on contour banks or in contour rows. Trained instructors were giving assistance in laying out terrace banks on the contour. Planting hedges was recommended to protect crops from wind erosion and to control regeneration of bush.

The belief, held by some in East Africa, that land infested with tsetse flies is free from erosion and that clearing land of the flies introduces the hazard of erosion, was shown to be untenable. Grazing land cleared of bush and put under good grass cover eroded less than it did when covered with bush. Efforts were being made to have grass recognized as a crop and management of grazing introduced. In Teso district, Uganda, where cultivation of cotton led to soil destruction, anti-erosion measures actively adopted included resettlement schemes, strip-cropping, construction of dams, large-scale construction of narrow-base dykes for retarding water-flow, and setting aside of steep hills for reforestation.

Rhodesia.—Experiments with gully control, heretofore seldo undertaken, were successfully carried out on the major soil type of Rhodesia. Erosion and depletion of natural cover brough about a reduction of the water supply in streams and spring Some pasture areas were so severely eroded they must be close for a few years.

Under the Natural Resources act of 1941, soil conservatio work on the native reserves was made compulsory for all, if th majority voted for it. Plans to complete contour ridging in 194 on a 30,000-ac. block of land in one of the native reserves wer forward under the authority granted by the act.

Palestine.—The Flooding and Soil Erosion (Prevention) o dinance, 1941, gives the high commissioner authority to declar any land to be a "special area." In such areas the pasture an passage of all domestic animals, the cutting, burning or remova of any vegetation may be prohibited or regulated. (*See* als AQUEDUCTS; DAMS; DROUGHT; IRRIGATION.)

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Solar System: *see* ASTRONOMY.
Soldiers' Bonus: *see* VETERANS ADMINISTRATION.
Solomon Islands: *see* PACIFIC ISLANDS, BRITISH; PACIFI ISLANDS, MANDATED; JAPAN; WORLD WAR II.
Somaliland, British: *see* BRITISH EAST AFRICA.
Somaliland, French: *see* FRENCH COLONIAL EMPIRE.
Somaliland, Italian: *see* ITALIAN COLONIAL EMPIRE.

Somervell, Brehon Burke (1892–). U.S. army off cer, was born May 9 in Littl Rock, Ark., and was graduated from West Point in 1914. H studied at the Army Engineers school, Washington, 1916–17, a the Command and General Staff school, Ft. Leavenworth, 1922 23, and at the Army War college, 1925–26. During World War he was a divisional chief of staff of personnel and operations o the western front, 1918–19, and was assistant chief of staff supplies of the American occupation force in Germany, 1919–2 During the postwar years, he supervised a number of civilia engineering and construction projects in the United States an in Europe and was WPA administrator for New York city, 1936 40. He was made assistant chief of staff in charge of the arm supply division on Nov. 25, 1941, and supervised the shipmen of supplies to U.S. armed forces all over the world. On May 2 1942, he headed a military mission that went to England to stud supply problems. When President Roosevelt reorganized the arm and air force on a "streamlined" basis March 2, 1942, Lt. Gen Somervell was made commander of the army supply service He was named to the production executive committee, create late in 1942.

Soong, T. V. (1894–), Chinese statesman, was born Shanghai, the eldest son of Charles Jones Soon wealthy Bible publisher, and the brother of Mme. Chiang Ka shek. He attended Vanderbilt university, Harvard and Columbi where he specialized in economics, and later he worked in Ne York banking houses. On returning to China in 1917, he worke as adviser to a large coal company in Shanghai; six years later, ame director of the department of commerce with the Nation- government established in Canton. When Soong became nce minister in 1928, he established many economic reforms introduced a budget system, central banking and unified cur- y. He quit this post in 1933 and organized a brokerage firm ugh which he hoped to check Japan's economic exploitation hina. He founded the Bank of China in 1936, later becoming ident. On Dec. 23, 1941, Chiang Kai-shek appointed Soong ign minister while he was in Washington as special envoy rep- nting his country on the Pacific War council. He signed a -lease agreement with Secretary of State Hull in June 1942 returned to Chungking late in October, when he formally office as foreign minister.

ng Mei-ling: *see* Chiang Kai-shek, Madame.

ghum: *see* Syrup, Sorgo and Cane.

uth Africa, British: *see* British South African Pro- torates.

uth Africa, The Union of.

A self-governing dominion of the British com- wealth of nations. The four provinces of which it consists, Cape of Good Hope, Natal, the Transvaal and the Orange State, extend from the southernmost point of the African inent to the Limpopo in the north. The former German ny of South-West Africa (pop.: European 33,600; Bantu and ured 287,731) is administered under mandate as an integral of the union, but this territory has not been incorporated as a ince. Area 472,550 sq.mi. (incl. Walvis bay, 430 sq.mi.); pop. June 30, 1941), 10,521,700 (Europeans, 2,188,200; Bantu, 0,700; Coloured, 844,400; Asiatic 238,400). Chief towns . census 1936): Cape Town (seat of legislature; 344,223); nnesburg (519,384); Durban (259,606); Pretoria (seat of rnment; 128,621); Port Elizabeth (109,841). Governor gen- (1942): Rt. Hon. Sir Patrick Duncan; languages: English, kaans; religion: European population: Christian (Dutch Re- ed Churches 55%; Anglican, 19%; Methodists, 6%; Presby- ns, 5%).

istory.—During 1942 the union began to feel the weight of war for the first time. Its troops suffered loss during the first cisive British advance into Libya, and shipping was sunk in h African waters. Union troops helped to occupy Vichy- rolled Madagascar (May-Nov. 1942). (*See* World War II.) prime minister, Field Marshal Smuts, called for 7,000 men to he gap, and soon had 10,000 from a small European com- ity of about 2,200,000, which, in spite of the fact that one- l was opposed to the war policy, had already raised a volun- army of 150,000, besides 73,000 women for the army and iary services, and great numbers of Cape Coloured folk, Bantu ives) and Indians for service as a rule in a noncombatant city. Smuts met Winston Churchill in Egypt (Aug.) and ned home to urge that North Africa be made the base for ffensive in 1943 against Hitler's Europe. He then went to lon to join the war cabinet and (an unprecedented honour) ess both houses of parliament.

nuts's absence from home had been made possible by a work- majority of 20 in the house of assembly and the steady swing to his side of Afrikaner opinion. Ministerialists had won nine of 12 by-elections with a majority of 35,000 to 20,000, in of the capital made by the opposition of the premier's prom- o arm the Bantu in the event of a Japanese invasion. The sition was bitterly divided against itself. Nicolaas Havenga's l neutrality Afrikaner party usually stood aside; but Dr. el Malan's Nationalists were at feud with Oswald Pirow's ied New Order party, which had won the surprising support of ex-premier James Hertzog, and, outside parliament, with the Nazi-minded *Ossewabrandwag* which had the open support of Dr. Goebbels. The chief bonds between these factions were a hatred of the prime minister and all things British, and a fond belief that the expected German victory would be followed by the recognition of an exclusively Afrikaner republic. Meanwhile the government checked sabotage and bomb-throwing by the imposition of the death penalty.

Japan's participation in the war, coinciding with a poor harvest, led to the appointment of a food controller and the beginning of rationing, no easy matter in a mixed community with differing standards of living. The budget for 1942–43 anticipated an expenditure of £140,000,000, of which £88,000,000 was to be raised by taxes including a 20% income tax surcharge, levies on speculative land sales and trading profits in addition to the now familiar excess profits duty, and the increase from 16% to 20% of the gold mines' special contribution. No difficulty was foreseen in raising the remainder by borrowing, for trade was vigorous. The United States was taking Great Britain's place as chief supplier, and the gold output had reached a record of £120,000,000. Fears for the future of gold were aroused by the wholesale extension of lend-lease after the United States became a belligerent, and doubts of the advisability of maintaining at full pressure an industry which absorbed 44,000 Europeans and 350,000 others besides much precious steel and explosive. In view of postwar possibilities it was well that the union's secondary industries were developing so rapidly.

Parliament gave these industries encouragement, besides passing much useful legislation on unemployment, rents, wages, hire-purchase, insurance, banking and war pensions. The government also set up a social and economic planning council, inspired doubtless by the premier's bold statement that the policy of segregating the Bantu had failed and that South Africa must do far more for the health, education and general well-being of the non-European majority of her population. Something had already been done with the approval of those many Europeans who were impressed by valiant Russia's handling of her racial problems and the difficulty of squaring the union's colour bar policy with the Atlantic Charter. In view of the union's growing influence in Africa, these tendencies were of the first importance for the future of the continent. (E. A. Wr.)

Education.—In 1939: State and state-aided primary and secondary: European schools, 4,014; scholars, 391,056; non-European

PREMIER JAN CHRISTIAAN SMUTS of South Africa addressing parliament during his visit to Britain in Oct. 1942. At his immediate left is Winston Churchill schools, 5,131; scholars, 620,384; universities, average number of students, 10,505.

Banking and Finance.—Revenue, ordinary (1941–42) £76,600,000; expenditure, ordinary (1941–42) £76,300,000; public debt (Feb. 28, 1942), £381,000,000; notes in circulation (June 19, 1942) £30,600,000; gold reserve (June 19, 1942) £56,200,000; exchange rate (average 1942) £1 SA = $3.98.

Trade and Communication.—External trade (1940) (exclusive of goods in transit and of gold bullion and specie): imports (total) £105,099,234; exports (domestic) £28,562,207; re-exports £5,528,430. Communication and transport: roads fit for motor traffic (1938–39) 87,495 mi.; railways, including South-West Africa (March 31, 1940) 13,645; airways, including South-West Africa (1939) passengers carried, 35,578; freight and mails carried, 2,640,984 lb.; mileage flown 1,751,453; shipping (1940) entered, 6,598; net tonnage 25,504,068; cleared, 6,554; net tonnage 25,315,168. Motor vehicles licensed (Dec. 31, 1940): cars and taxis, 317,958; vans and trucks, 51,215; tractors 1,044; cycles 21,725; wireless receiving set licences (1940) 283,119; telephones, instruments in use (1940) 202,753.

Agriculture, Manufacturing, Mineral Production.—Production (1940–41) (in metric tons): gold fine (1940) 436,895 kg.; diamonds (1939) 1,269,828 metric carats; maize 2,159,100; coal (1940) 17,493,000; sheep, number (Aug. 31, 1939) 38,289,430; cattle, number (Aug. 31, 1939) 11,852,736; wool (1940) 125,000; wheat, European cultivation 466,800; cane sugar, refined 467,800; iron ore (metal content) (1940) 396,000; pig iron and ferro-alloys (1940) 304,000; steel (1939) 314,000; silver (1940) 40.2; manganese ore (metal content) (1940) 174,500; chrome ore (chromic oxide content) (1940) 73,300; asbestos (1938) 21,900; wine (1938–39) 1,555,000 hectolitres; tobacco (European cultivation) 13,800; potatoes (1938–39) (European cultivation) 196,800; oats (European cultivation) (1939–40) 80,700; barley (European cultivation) (1938–39) 20,500; mohair (1940), export, 1,900; copper (smelter production) (1940) 13,600; ground-nuts (1938–39) (European cultivation) 13,500; benzol (1939) 1,700; superphosphates of lime (1937) 164,000. Industry and labour: (census 1939) establishments 9,837; employees, European, 117,056; others, 189,087; value of gross output £172,764,000; value added to materials used £85,108,000. Employment index (average 1929 = 100) average 1941, 164; Feb. 1942, 172.

South America: *see* ARGENTINA; BOLIVIA; PERU; ETC.

South Australia. A state of the Australian commonwealth 380,070 sq.mi. in area, bounded by longitudes 129° E. and 141° E., and by latitude 26° S. and the southern coast of the continent. Population (est. Dec. 31, 1941) 605,689. Chief city and capital (pop. Dec. 31, 1940), Adelaide (330,000). Governor (1942): Sir Charles Malcolm Barclay-Harvey.

History.—The Country party government under the premiership of Thomas Playford continued in office throughout 1942. Its policy was to give the utmost possible support and assistance to the federal administration in its prosecution of the war. Some of the largest munitions works in the commonwealth were located in South Australia, and the state-owned railway workshops provided a steady output of tools and lathes which formed the nucleus on which many of Australia's most important war industries were built. One of the measures introduced by the state government to relieve the acute manpower shortage was a complete ban on racing.

The state budget showed a surplus of £A1,287,000 for 1941–42.

Education.—In 1939: state primary schools 1,004; teachers 2,556; average daily attendance 55,672.

Finance.—In 1941–42 revenue £A15,002,000; expenditure £A13,715,000; debt outstanding (June 30, 1941) £A109,780,000.

Communication.—Roads (March 31, 1940), 23,848 mi. fit for motor traffic; railways (1941), government 2,558 mi. Motor vehicles licensed (March 31, 1942): cars 52,592; trucks 23,894; cycles 6,165. Wireless set licences (March, 1942) 137,141.

Agriculture and Manufacturing.—Wheat (1941–42), 31,500,000 bu.; barley (1940–41), 5,350,000 bu.; grapes (1938–39), 150,608 tons; currants (1939–40), 208,930 cwt.; wool (1940–41), 107,000,000 lb.; butter (1940–41), 21,379,639 lb. Industry, 1941: factories 2,230; employees 50,844; gross value of output £A43,600,329; unemployment (March 31, 1942) 1.0%. (W. D. MA.)

South Carolina. A south-Atlantic state of the United States, and eighth of the original 13 to ratify the constitution, 1788; popularly known as the "Palmetto state." Area, 31,055 sq.mi., including 461 of inland waters; pop. (1940) 1,899,804; white 1,084,308; Negro 814,164; others 1,332; 75·5% rural; 24·5% urban; 0·3% foreign-born. Capital, Columbia (62,396). Other cities include Charleston (71,275); Greenville (34,734); Spartanburg (32,249).

History.—J. E. Harley, who became governor Nov. 4, 1941, on B. R. Maybank's resigning to enter the U.S. senate, died Feb. 27, 1942; he was succeeded for the rest of 1942 by senate president R. M. Jefferies. The 1941 law enacting prohibition if the 1942 legislature provided taxes fully replacing liquor revenues lapsed because of no such action. Other defiances of heavy referendums for prohibition were manifested by the legislature and by the state Democratic convention's refusal to endorse them, though Gov.-elect Olin D. Johnston (elected Nov. 3, 1942) strongly supported prohibition. Extension of the parole system, slum clearance, low-cost housing (especially for war workers) and, in two counties, old age teachers' pensions, were enacted. Farmers of South Carolina voted 91% for continued cotton acreage control. The $57,000,000 federally financed Santee-Cooper navigation and power plant began operations Jan. 31, 1942 and by December was producing 2,000,000 kw.hr. a day, exceeding its planned annual 700,000,000 kw.hr.

OLIN D. JOHNSTON, Democrat, elected Nov. 3, 1942, as governor of South Carolina

Education.—Enrolment in white elementary schools for the year ending June 30, 1942, was 188,300; Negro 191,553; high schools, white 74,280; Negro 21,077. White elementary teachers 6,432; high school 3,324; Negro teachers 1,755 and 1,329 respectively; expenditures $16,253,912 for whites, $3,233,856 for Negroes.

Public Welfare, Charities, Correction.—State and federal funds of $3,249,000 were allocated for needy persons during the year ending June 30, 1942; $3,544,000 for the following year. There were on June 30, 1942, 16,009 persons on the list certified to WPA. Unemployment payments during June 1942 were $140,649, 22% more than in June, 1941, war production curtailment being mainly responsible for the increase. On June 30

, patients in the state hospital (for mentally diseased) bered 1,278; on parole, etc., 782; feeble minded school 829; tentiary 1,216; boys' reformatory 274; girls' 77.

ommunication.—Paved highways on June 30, 1942, com- ed 7,156 mi.; earthen state highways 4,445 mi.; railroads 3 mi. Long distance air routes with commodious airports ersed the state.

nking and Finance.—On June 30, 1942, 22 national banks s 19 branches) and 87 state banks (plus 4 branches) and cash depositories had deposits and resources as follows: onal banks $155,688,000 and $167,964,000; state banks and ositories $71,710,424 and $81,146,491. Resources of federal ling and loan associations totalled $25,330,215; state asso- ons $12,162,527. The state treasury received for the year ng June 30, 1942, $40,273,124, of which $16,043,393 was the gasoline tax. The state debt was $71,700,000 ($64,- 565 for highways). Gov. Jefferies favoured applying the lus of $5,700,000 to the state debt. Federal internal revenues lled $47,928,257. Imports (1941) were $6,074,303 and exports 08,753.

griculture.—The value of crops in 1942 was $193,482,000, ested from 4,897,350 ac. ($7,808,000 being from vegetables 81,350 ac.). Forests under organized protection totalled 0,846 ac.; fires burned 143,450 ac. Some 10,300,000 seedlings planted.

ole I.—*Leading Agricultural Products of South Carolina, 1942 and 1941*

Crop	1942 (est.)	1941
n, bu.	21,330,000	22,316,000
eat, bu.	3,377,000	3,146,000
s, bu.	13,461,000	12,100,000
, tons	550,000	478,000
potatoes, bu.	3,108,000	2,548,000
et potatoes, bu.	5,890,000	4,400,000
acco, lb.	96,750,000	66,000,000
on, bales	705,000	406,000
on seed, tons	314,000	180,000
hes, bu.	3,500,000	3,471,000

anufacturing.—The total value of manufacturing for the ending June 30, 1942, was $855,676,252; employees num- d 167,331; wages were $166,306,969.

Table II.—*Principal Industries of South Carolina, 1942 and 1941*

Industry	Value, 1942	Value, 1941
iles	$623,870,751	$382,753,951
ber and products (boxes, paper pulp, etc.)	61,116,950	43,068,270
tricity	23,080,314	19,061,100
hing	15,341,032	10,343,604

ineral Production.—The value of mineral products in 1942, ly stone and clay, aggregated $4,573,627. (D. D. W.)

th Dakota. A north-central state, admitted to the union Nov. 2, 1889; popularly called the "Coyote ." Area, 77,615 sq.mi. (land area, 76,536 sq.mi.); pop. 0), 642,961; urban population, 158,087; rural population, 374; average number of inhabitants per sq.mi., 8.4. Capital, e (pronounced "Peer" by South Dakotans) (4,322). Largest Sioux Falls (40,832). Ten cities had a population above 0 in 1940.

istory.—In addition to retaining complete control of the state inistration in the election of Nov. 3, 1942, Republicans won sole congressional seat held by Democrats. In a listless cam- n, incumbent Governor Harlan J. Bushfield was elected to the ed States senate over former Democratic Governor Tom y, who had defeated Senator W. J. Bulow in the primary ion. Congressmen Francis Case and Karl Mundt won re- ion handily. Nominated in convention after a four-man con- in the primary had failed to produce a Republican guber- rial nominee, M. Q. Sharpe, former attorney general, carried the whole state ticket to victory in the November election. Republicans won 100 of 110 seats in the 1943 state legislature.

M. Q. SHARPE, elected governor of South Dakota Nov. 3, 1942, on the Republican ticket

Education.—The school census for 1942 was 176,959; the average actual attendance was 133,446.

Communication.—On Jan. 1, 1939 there were 5,851 mi. of rural state highways, of which 4,932 mi. were surfaced. In 1939 there were 4,127 mi. of steam railways in the state.

Finance.—Total receipts for the fiscal year 1941–42 were $43,731,732; expenditures were $49,535,705; the balance in the state treasury on June 30, 1942 was $12,706,384. The state debt on that date was $32,056,000.

Agriculture.—In 1942 South Dakota had one of its most successful crop seasons. High production and increasing prices brought the value of crops to $224,000,000, an increase of more than 70% over the value for 1941. South Dakota ranked ninth among the states in corn, eighth in all wheat, second in durum wheat, third in other spring wheat, second in barley and rye, third in flax and second in wild hay.

Principal Agricultural Products of South Dakota, 1942 and 1941

Crop	1942 (est.)	1941	Crop	1942 (est.)	1941
Corn, bu	100,706,000	50,006,000	Wheat, bu.	46,403,000	35,130,000
Oats, bu.	89,360,000	54,912,000	Hay, tons	2,963,000	2,090,000
Barley, bu	62,559,000	38,610,000			

Manufacturing.—Manufacturing in 1942 continued to gain on a small scale, as did the production of dairy products. Farm-to-town migration ceased almost entirely, but the state suffered a severe loss in population through the movement of workers to out-of-state defense areas.

Mineral Production.—Production of minerals was drastically curtailed because of the federal order closing the gold mines. About 95% of the state's value of mineral production ordinarily comes from gold; other products are stone, sand and gravel, and raw clay. (L. K. F.)

Southern California, University of. An institution of higher education at Los Angeles, Calif., founded in 1880 by the Methodist church. With the coming of war the university offered its facilities to the government. The scientific-research cruiser "Valero III," formerly owned by Allan Hancock, was taken over. A strong N.R.O.T.C. was established, with Captain Reed M. Fawell, U.S.N. (Ret.) in charge. An accelerated collegiate program was inaugurated in 1942, and activities were geared to the war effort. A comprehensive physical fitness program was under direction of William Ralph La Porte.

Certain major divisions (engineering, medicine, dentistry, chemistry, physics) were filled to overflowing—others suffered decimation. Among innovations were occupational therapy, hospital training, many aviation courses, food technology, industrial hygiene and plant sanitation. More than 3,000 persons attend night and daytime courses in engineering. The commission on postwar reconstruction, headed by J. Eugene Harley, did notable work.

The president of the university is Rufus B. von KleinSmid. For statistics of faculty, student enrolment, etc., *see* UNIVERSITIES AND COLLEGES. (R. D. HU.)

Southern Rhodesia: *see* RHODESIA.
South Polar Regions: *see* EXPLORATION AND DISCOVERY.
South-West Africa: *see* MANDATES; SOUTH AFRICA, THE UNION OF.
Sovereigns, Presidents and Rulers: *see* PRESIDENTS, SOVEREIGNS AND RULERS.
Soviet-German Pact: *see* MOLOTOV, VYACHESLAV MIKHAILOVICH.
Soviet Republics: *see* UNION OF SOVIET SOCIALIST REPUBLICS.
Soviet Union: *see* UNION OF SOVIET SOCIALIST REPUBLICS.

Soybeans.

One of the crops taking a major role in the 1942 U.S. wartime food effort was soybeans, which were known chiefly as a minor forage crop a decade previous and were so unimportant as a source of vegetable oil during World War I that gathering of production data was not warranted. The important use of soybean oil in 1942, however, resulted in the year's crop being almost double that of 1941 and about six times the ten-year (1930–39) average production. The U.S. 1942 crop was estimated Nov. 1 as 209,953,000 bu. compared to 106,712,000 bu. in 1941 and a ten-year average of 35,506,000 bu. Owing to the widespread use of soybean oil as a cooking fat and in butter substitutes, and also as a source of glycerin for munitions manufacture, the department of agriculture in Sept. 1941, asked that the acreage planted to soybeans in 1942 be increased to 7,000,000 ac. Following the attack on Pearl Harbor this goal was raised to 9,000,000 ac. The acreage harvested for beans in 1941 was 5,855,000 ac. About 77 per cent of the crop was crushed for oil, yielding approximately 736,000,000 lb. of oil. In Sept. 1942, the Commodity Credit Corporation announced a program to aid in the processing of vegetable oils, assuring, with allowances for types, grades, location and season, that the price to farmers would be about $1.55 per bu. This price was based on an assurance of $1.60 per bu. for high oil-content varieties. While for the preceding six or seven years the use of soybean oil in cooking fats and butter substitutes had increased enormously in the United States, the war gave extra impetus to further use in 1942, since the large shipments of coconut oil and copra from the Philippines and other tropical countries were no longer available. The record 1942 crop exceeded the crusher capacity, and the government urged that mills which ordinarily crushed copra, flaxseed and cottonseed be utilized to crush soybeans. It was estimated that about 1,125,000,000 lb. of oil would be crushed from the 1942 crop. (*See* also CHEMURGY.)

U.S. Soybean Production by Leading States, 1942 and 1941

	1942 bu.	1941 bu.		1942 bu.	1941 bu.
Illinois	73,487,000	54,112,000	Ohio	27,761,000	12,800,000
Iowa	40,340,000	17,501,000	Missouri	8,100,000	1,824,000
Indiana	31,605,000	15,436,000	North Carolina	3,848,000	2,185,000

(S.O.R.)

Spaatz, Carl A.

(1891–), U.S. army air officer, was born June 28 in Boyertown, Pa. He was graduated from West Point in 1914, studied at the aviation school in San Diego in 1915 and participated in the Mexican campaign a year later. During World War I, he commanded a pursuit squadron in the St. Mihiel offensive in 1918 and was decorated for shooting down two enemy planes. After the war he was stationed at various U.S. flying fields, and in 1929 he piloted th army plane that established a record of 150 hr. and 40 min. i an endurance flight over Los Angeles. Advancing rapidly in th air corps, he was chief of staff to Gen. Henry H. Arnold in 1941 and soon after Pearl Harbor he took over the air force comba command, replacing Gen. Delos C. Emmons. In July 1942 h was named U.S. air commander in Europe. On Dec. 5 it wa announced in London that Maj. Gen. Spaatz had been assigne to reorganize Allied air power in Africa.

Spain.

A totalitarian state of southwestern Europe, occupying 84% of the Iberian peninsula. Area (including th Balearic and Canary Is.): 194,200 sq.mi. Pop. (1940): 25,878,000; in 1930 it was 23,563,687. Capital city: Madrid (1,194,756). Other leading cities: (pop. est. 1940): Barcelona (1,398,900); Válencia (403,100); Sevilla (253,200); Malaga (232,130) Language: Spanish. State religion: Roman Catholic. Chief o state, or caudillo in 1942 (since 1939): Gen. Francisco Franc

History.—Spain during 1942 still managed to maintain a precarious balance on the tight-rope of neutrality. The historica background of her civil war included a heavy indebtedness t Germany and Italy by the Franco administration, also an enmit to the U.S.S.R. The ideology of the dominant party, the Falang Española, was fascist. The location of the axis powers als made it impossible for Spain to disregard their military strength Most of the public statements of Gen. Franco throughout th year were pro-axis, a trend likewise exemplified by such items a a severance of relations with Poland in January, an announcement that repayment was starting on the Italian debt ($260,000,000 at old rates of exchange), and the incorporation of th volunteer "Blue Legion" fighting with the Germans in Russi into the regular Spanish army. Spain could not disregard th allies, however, being vulnerable to attack in the northwes and southwest, and in addition being dependent upon the good will of the United States and Great Britain for some types o vital supplies. Most important of all was the fact that Spai had not yet recovered from the devastating effects of the civi war (1936–39); thus it was neither politic nor desirable for th country to enter World War II on either side. The invasio of North Africa by the allies in November intensified her problem, for Germany took over unoccupied France and massed a army along the Pyrenees while the allies threatened a possibl invasion of the continent by way of Spain. In the emergenc the government announced that it would resist an invasion o Spanish soil by any power, partially mobilized the army, increased defense appropriations, and prepared to ride out th storm if possible as a non-belligerent.

Relations between the United States and Spain remained officially friendly through the year. In June a new American ambassador, the Catholic historian Carlton J. Hayes, took up his dutie in Madrid. Pres. Roosevelt in September proposed the raising o a fund in the Americas for the restoration of historic and ar treasures damaged in Spain during the civil war, and while thi was in part designed to combat propaganda in Hispanic America it also indicated a willingness toward friendship with Spain itsel The United States continued to purchase mercury, wolfram an olives, and to supply Spain with foodstuffs and a limited quantit of gasoline and fuel oils.

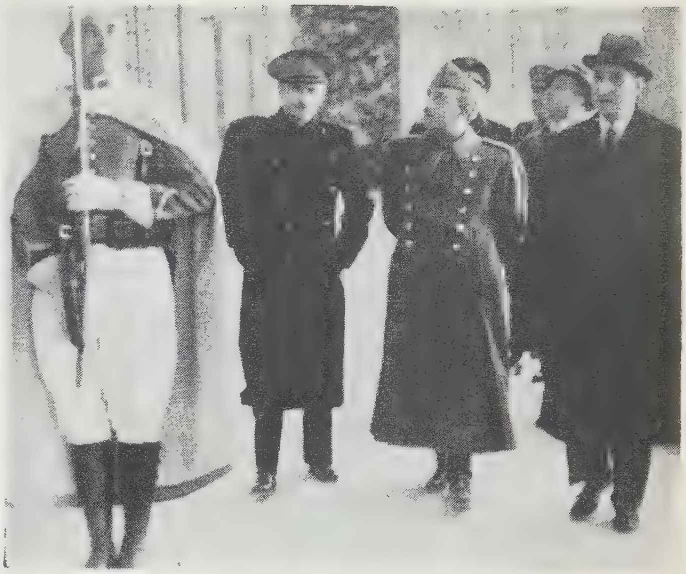
The inauguration of a new type of Cortes or parliament wa announced in July. Its membership, partly nominated and partl elected, represented various corporative bodies, including th Falange, the national council of provincial mayors, the arm and presidents of academies. A more widely discussed eve in Spanish internal politics, however, was the cabinet shakeu of Sept. 3, in which Ramón Serrano Suñer, brother-in-law ranco and generally considered second to him in the adminis- ation, was removed both as foreign minister and as president f the Falange. Several other changes were made; Gen. Franco imself took over the presidency of the Falange, and Gen. rancisco Gómez Jordana, lukewarm to the axis and a monarchist, ecame foreign minister. Apparently the change was due in part a dispute between the Falange and Spanish army leaders, ually monarchists. Suñer had been making appointments of rty men to military posts, and resentment had also been oused when in August party terrorists threw hand grenades to a religious festival being addressed by army officers includ- g Gen. José Enrique Varela, minister of war. Some observers edicted a change in policy since Suñer had been an ardent axis pporter, but this did not follow; in Spain itself the move as called a mere "changing of the guard." Suñer was reap- inted to the Falange council in November. The Spanish onarchist movement, in spite of some reports of activity, seems have marked time through 1942, probably because of the oubled world situation. In November it was stated that the ermans had arrested in southern France and turned over to anish authorities Francisco Largo Caballero and Santiago sares Quiroga, noted former Republican leaders, but news ms in December asserted that these men had been seen in vitzerland.

In the economic field, Spain was still suffering from the devas- ion of the civil war and was devoting all efforts toward construction. A million Loyalists were still in concentration mps or labour battalions, and four-fifths of the Spanish popu- ion suffered from malnutrition in varying degree. Transporta- n was still inadequate. Railway rolling stock was below the 36 level, and was reported to be in very bad repair. Electrifica- n of all rail lines was proposed because of a coal shortage. ck of motor fuels prevented great development of highway nsportation, and as a result distribution of what food supplies re available was inefficient. The problem was further com- cated by hoarding and speculation, and a black market de- loped, the fines on which alone amounted to more than 00,000 pesetas by summer. Bad weather in many sections ther reduced the food supply for 1942. Efforts were made by government to improve transportation by an extensive ship- ilding program, and the Instituto Naciónal de Industrias was en control of all shipyards and construction. Forced labour ttalions were also used to develop both irrigation and housing ojects, and much encouragement was given to plans for chemical d mineral production to supply needs.

Education.—The system in 1942 was nominally compulsory d free; religious education was handled as in the days of the narchy.

Defense.—In the partial mobilization ordered in Nov. 1942 Spanish army was estimated to number 750,000; approxi- tely 100,000 were in Spanish Morocco. The navy in 1942 s made up of 1 heavy cruiser, 5 light cruisers, 18 destroyers, orpedo boats, 9 submarines, all fairly modern. In the 1942 dget approximately 1,970,048,600 pesetas was alloted to de- se; later it was increased by credits of 324,362,053 pesetas h a naval building program in view.

Finance.—The official monetary unit is the peso (value in 42: 9.13 cents U.S.). The currency in 1942 was artificially ntrolled, with no metallic reserves for paper. The budget nounced for 1942 was 7,880,194,669 pesetas, an increase of % over that of 1941. Estimates were higher for all services ept public debt, foreign affairs and public works. The mora- ium on commercial and other types of indebtedness was to lifted Jan. 1, 1943, according to official announcement. In rch the government formally repudiated all republican debts.



A PORTUGUESE-SPANISH CONFERENCE was staged at Seville Feb. 12, 1942. Left to right are Ramón Serrano Suñer, then Spanish foreign minister, Francisco Franco and Oliveira Salazar, premier of Portugal

Trade and Communication.—Late Spanish trade figures were not available in 1942 (for 1940 exports were valued at $128,839,000; imports: $202,745,000). Total shipment of green olives to the U.S. for Jan.-Oct. 1942 was 4,255,581 gal. (1941: 4,700,764 gal.); total export of sweet oranges for the 1942–43 season was estimated at 500,000 metric tons (60% to Germany). A Spanish goods-exchange agreement with Switzerland was signed in June, and one with Germany in December; an agreement with Denmark for exchange of Spanish cork and fruits for Danish manufactures was extended six months from August, at a 50% increase. Shipping to the Canary Islands was reported as disrupted; trade taxes there were doubled.

Communication systems in Spain continued in bad shape. In railway rolling stock, there were 325 fewer locomotives (9%) and 1,500 fewer passenger cars (30%) than in 1936; the number of freight cars was almost back to the 1936 level (98,570 cars). Quality and repair of equipment were reported poor. One new electrified line was reported for the Bilbao district. All possible freight was carried by water; the merchant fleet was estimated at 1,056,875 tons, with ships under construction valued unofficially at $46,745,000. Five hundred small vessels were said to be nearing completion at Valencia for the Mediterranean trade. Automobile driving was limited by lack of fuel; private cars could not operate in Spanish Morocco, and only for limited periods in Spain and in the islands.

Agriculture.—Crops were in general reduced in 1942 because of bad weather, lack of fertilizer, etc. The green olive crop suitable for export was: 240,000 gal. queen olives (total crop est. 640,000 gal.), 800,000 gal. manzanilla olives (total crop est. 2,400,000 gal.) (1941 crop suitable for export: 11,200,000 gal. queen and 8,000,000 gal. manzanilla). Estimates for other crops were as follows: edible olive oil, 1942–43 season, 275,000 metric tons (320,000 m. tons in 1941–42); dried broad beans: 705,300 metric quintals (703,840 quin. in 1941); sweet oranges, 1942–43 season: 500,000 m. tons (the crop in 1939 was 900,000 m. tons); cotton: 4,000,000 kilograms; potatoes: 62,000,000 metric quintals; paprika, 1942–43 season 3,000,000 to 3,500,000 kgms. (at least 1,000,000 less than for 1941–42); cereals 1,962,000 metric quintals; sugar beets, 1942–43 season: 2,300,000 tons. The almond and filbert crops were prohibited from export, except for bitter almonds; they amounted to: almonds 25,000 tons shelled; filberts 9,000 tons shelled.

Mineral Production.—No figures for 1942 were available. Estimates on some items, for the first 8 months of 1941, were as follows (in metric tons): lead 18,991; zinc 48,527; copper 242,555; manganese 6,305; iron 1,080,000. Mercury was being produced at that time at the rate of 7,000 flasks per month, tungsten, 50 tons per month, potash, 100 tons daily. (*See* also WORLD WAR II.)

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(D. RD.)

Spangler, Harrison E. (1879–), U.S. lawyer and politician, was born June 10 in Guthrie county, Iowa. He was graduated from Iowa university law college and was admitted to the bar in 1905. Active in Republican party activities since his youth, Spangler worked his way up to state leadership and in 1931 became a member of the Republican national committee. He directed Alfred Landon's presidential campaign for the midwest area in 1936. After the retirement of Joseph W. Martin as chairman of the Republican national committee in 1942, Spangler was listed as a nominee for the post, along with Werner Schroeder and Frederick Baker at the G.O.P. convention in St. Louis, Dec. 7. After two ballots revealed a deadlock between Schroeder and Baker, the Republican committeemen came to a compromise and selected Spangler.

Spanish-American Literature. The novels published in Spanish America in 1942 were numerous and in some cases very good. The ever interesting and vital group of young Ecuadorian writers contributed two notable works: one, the novel *Nuestro pan* (translated into English under the title *Our Bread*), by Enrique Gil Gilbert, is a social drama centred around rice; the other, *Sanagüin*, by G. Humberto Mata, describes the daily life of the Cuenca province Indians. Porfirio Díaz Machicao of Bolivia was author of a first novel, *Vocero*, published in Buenos Aires, describing the tragic life of a newspaperman in the corrupt political setup of his homeland.

In Mexico, the distinguished writer Ermilo Abreu Gómez in *Héroes mayas* strove towards pure creation and away from simply objective narrative, although at the same time he did not lose contact with the native earth. Agustín Yañez, in his *Flor de juegos antiguos*, described the childhood and adolescence of a provincial boy in a provincial town. Other Mexican novels of the year were *Ciudad* by José María Benítez, the 1941 Lanz Duret prize of El Universal, but generally considered a second-rate novel; *Los embozados* by Eduardo Luquin; *Los bragados* by J. Guadalupe de Anda; and *Una vez fuí rico* by Rubén Romero, the famous author of *Mi caballo, mi perro y mi rifle*.

Of the regionalist type of writing, we find in 1942 novels such as *El tigre* by the Guatemalan Flavio Herrera, in a quick, nervous style; *Uno de los de Venancio* by the Venezuelan Alejandro García Maldonado, based on the life of a 19th century "caudillo"; *Renacimiento* by Haim López-Penha, first prize of the 1940 unpublished Dominican novel contest.

Chile, besides its usual crop of "costumbrista" novels such as Waldo Urzúa's *Un hombre y un río*, Raúl González Labbé's *Chépica* and Juan Modesto Castro's *Froilán Urrutia*, saw printed in 1942 some interesting psychological works such as *Daniel* by Benjamín Subercaseaux, *Noche* by Eugenio González, the novel of an introspective small town professor, and *Las cenizas* by Mari Yan.

In Argentina, although published late in 1941 *Todo verdor perecerá* by Eduardo Mallea may be considered a 1942 book, important in the development of the style of one of the most interesting writers of the River Plate; the same may be said of his book of essays *El sayal y la púrpura* for the development of his wavering ideology. Silverio Boj's *Áspero intermedio*, Sergio D. Provenzano's *El color de la tierra*, and Andrés Requena's *Los enemigos de la tierra* are appreciable works. In a book devoted in part to a novel *Banco inglés* and in part to short stories, we become acquainted with a new and capable Argentinean writer, Isidoro Sagüés.

Besides Sagüés' sea stories, most of the short-story books of Spanish America in 1942 were devoted to the rural or folklore tale: *Tierra embrujada*, by the Colombian José Antonio León Rey, full of traditional and legendary material from Cundinamarca; *Rastrojos*, by Samuel Barreto Peña, on Venezuelan customs; *Kayou*, stories from Haiti by the Colombian José Enrique Gaviria; *Estampas de Rapel* by Rafael Fernández Rodríguez, with stories from Colchagua, Chile. Another Chilean, Luis Merino Reyes, published *Los egoistas*, six city stories linked by the fundamental egotism of the main characters of the different tales. Januario Espinosa, also from Chile, published *La ciudad encantada* and Teófilo Cid in his *Boulroud* represents Chilean surrealism in the short-story.

In the field of the essay, Alfonso Reyes published a delightful piece *Los siete sobre Deva* (*Sueño de una tarde de Agosto*). Reyes also published *La antigua retórica*, an example of his classical erudition. In Argentina, Victoria Ocampo wrote a second series of *Testimonios* (most of them previously published in her review *Sur*). Ricardo Rojas published *Archipiélago*, an epic of the Tierra del Fuego. Helvio I. Botana's *Los pervertidores* and Dardo Cúneo's *Esquemas americanos* should be mentioned. A Cuban, Virgilio Ferrer Gutiérrez, in an excellent book *Caribe*, projected his Cuban spirit outside his native island and over the neighbouring countries; another Cuban, Rómulo Lachatañeré, in his *Manual de Santería* studied different aspects of the Afro-Cuban lore. The Mexican Justino Fernández published a study of the painter *José Clemente Orozco, Formas e idea.*

Of both literary and historical interest are the following works published in 1942: *Fray Bartolomé de las Casas, el conquistador conquistado*, by the Mexican Agustín Yañez; *Ventura de Pedro de Valdivia* by the Chilean Jaime Eyzaguirre; a *Simón Bolívar* by an Argentinean, Telmo Manacorda; a *Vida de don Gabriel García Moreno*, the "strong man" of 19th century Ecuador, by the Argentinean novelist Manuel Gálvez; a considerable number of Martiniana by Cuban writers, Felix Lizaso's *Martí y la utopia de América*, Carlos Márquez's *Martí, maestro y apóstol*, Juan Marinello's *Españolidad literaria de José Martí.* On other Cuban glories, José E. Perdomo's *Máximo Gómez*, and Mañach, Marinello and Barreras' *Recordación de Alfonso Hernández Catá.* The Colombian Luis de Greiff published *Semblanzas y comentarios;* the Ecuadorian Father Reginaldo María Arizaga, *Valores ecuatorianos* (*escritores y poetas*); the Peruvian Luis Alberto Sánchez, a romanced biography of Gauguin's Franco-Peruvian grandmother, *Una mujer sola contra el mundo.* The same irrepressible Sánchez published in 1942 a volume of *Historia de América* and a third book *El pueblo en la revolución americana.*

Spanish-American poetry was enriched in 1942 by the publication of *Bajo el signo mortal* by the great Mexican poet *Enrique González Martínez.* The Uruguayan poetess Juana de Ibarbourou had an anthology of her work published under the title *Poemas.* Two young new Mexican poets appeared in print in 1942: Manuel Calívillo, with his *Estancia en la voz*, and Bernardo Casanueva Mazo with his *En la cuarta vigilia.* A Guatemalan, Raúl Leiva, also had a first book printed—*Angustia.* Alfredo Mosquera of Colombia had a book of verse printed under the title *Disparatorios.*

The Mexican theatre was favoured by two good works, *Linda*

Miguel N. Lira, a folk tragedy in prose, verse and music on e Federico García Lorca pattern; and *La mujer legítima*, an ex- llent piece by the poet Xavier Villaurrutia. (L. Mo.)

anish Colonial Empire.

Total area (approx.) 128,100 sq.mi.; total population ex- uding Spain (est. Dec. 31, 1939) 1,005,000. The table below ts the African colonies, protectorates, etc., of Spain (*q.v.*) with rtain essential statistics appropriate to each of them.

Spanish Colonial Empire

Colony and Area sq.mi. (approx.)	Population Estimated Dec. 31, 1939 (000's omitted)	Capital, Status, etc.	Principal Products (in metric tons)	Imports and Exports (in thousand pesetas)	Road, Rail and Shipping	Revenue and Expenditure (in thousand pesetas)
euta and Melilla, 77	115	Madrid, administered as part of Spain	exports (1934) raw materials 899,553, manufactures 12,892	(1934) imp. 47,546 exp. 14,500		
orocco, Spanish, 8,080	750	Tetuan, protectorate *High Commissioner:* General Carlos Asensio	(1938) iron ore (metal content) 805,000; (1938) antimony ore (metal content) 81	(1938) imp. 123,146 exp. 71,143	rds. *c.* 500 mi. rly. 80 mi.	(1938) rev. and exp. 111,785
panish Guinea, including Fernando Po, Rio Muni and four small islands, 10,380	120	Santa Isabel, colony	cocoa (1937–38) 13,400	(1930) imp. 17,625 exp. 21,970		(1932) rev. and exp. 11,020
estern Sahara, including Ifni, Rio de Oro and Spanish Sahara, 109,600 . .	20	Villa Cisneros, colonies	fish and dates			(1929) rev. and exp. 6,947

anish Guinea: *see* SPANISH COLONIAL EMPIRE.

anish Literature.

Though Spain's foremost writers produced little in 1942 (Baroja, with ee novels, and Azorín, with *Sintiendo a España*, were notable eptions), publication in all fields was brisker than in any year ce 1935. The St. John of the Cross quatercentenary evoked le but articles and lectures but P. Crisógono's *Vida*, and *Anto- ía* by J. Domínguez Berrueta and an *ensayo literario* (*San Juan la Cruz*) by M. Herrero García merit notice. Another cente- y is commemorated in N. Alonso Cortés' *Espronceda*. A. Val- ena Prat's *Calderón* is the work of a first-rank younger critic. ong the veterans, R. Menéndez Pidal published *La Lengua de stóbal Colón y otros estudios sobre el siglo XVI;* M. Asín acios collected several long critical studies in *Huellas del Islam;* l the octogenarian F. Rodríguez Marín completed a new collec- n of *refranes* and also issued a selection of his poems extending r 70 years in *A la Real de España*.

Biographies included L. Astrana Marín's *Vida inmortal de Wil- n Shakespeare;* Manuel Prados López's *Salvador Rueda;* and egorio Marañón's *Luis Vives: un español fuera de España.* story and biography mingle in J. M. March's *Niñez y juventud Felipe II* and in the Conde de Romanones' *Un Drama político: bel II y Olózaga*. Poetry was represented by G. Diego's *Alondra verdad* and *Primera Antología de sus versos* and Eduardo Mar- na's *Los Tres Libros de España;* it also figured largely in the *Cuadernos de literatura contemporánea* being published by Instituto Antonio de Nebrija.

Lopean criticism was stimulated by the projected Centro de udios Lope de Vega, which was to issue a Lopean review and tinue the publication of the *Obras completas*. The Spanish demy published Ricardo del Arco's *La sociedad española en obras dramáticas de Lope de Vega*. A. G. de Amezúa continued his *Epistolario de Lope de Vega*. J. de Entrambasaguas published some of Lope's little-known poems (*Flor nueva del "Fenix"*) and also *Los Embustes de Celauro*. A *Romancero espiritual*, edited by Luis Guarner, was an outstanding addition to Lopean bibliography.

Reprints of all kinds abounded. Five volumes of the new Menéndez Pelayo had now appeared and three volumes of F. C. Sainz de Robles' edition of Pérez Galdós. As to early texts, Dámaso Alonso published a three-volume edition of Gil Vicente's *Tragicomedia de Don Duardos*. Fernández de Oviedo's *Natural Historia de las Indias* was edited by E. Álvarez López. Two minor 19th-century texts reissued by A. González Palencia were Trueba y Cossío's *España romántica* and Hurtado's *Madrid dramático*.

An authoritative topographical work of the year was Antonio Gallego y Burín's *Granada: Alhambra y Generalife*. (E. A. P.)

Spanish Morocco: *see* SPANISH COLONIAL EMPIRE.
Spanish West Africa: *see* SPANISH COLONIAL EMPIRE.

Special Libraries Association.

Founded in 1909 to further the purpose of special libraries in business and industrial organizations, and to promote the collection, organization and dissemination of information in specialized fields; to develop usefulness and efficiency of special libraries and other research organizations; and to encourage the professional welfare of its members. As of Dec. 31, 1942, the association had 2,800 members in the United States, Canada and overseas. These members represent banking, advertising, insurance, finance, publishers, manufacturers, museums, specialized departments of colleges and universities, business branches of public libraries and technical libraries. The official journal, *Special Libraries,* is published monthly September to April, with bimonthly issues May to August. The association has 18 chapters in the United States and two in Canada. An annual convention is held each year in June The association carries on a publications program which is professional in character and is taking an active part in the war effort. *Special Library Resources,* vol. 1, was published in 1941 with three additional volumes planned for early 1943 publication.

The 1942–43 officers were: president, Eleanor S. Cavanaugh, Standard and Poor's corporation, New York city; first vice-president, Madge J. Collar, Sixth Service Command Library, U.S.

Army, Chicago; second vice-president, Walter Hausdorfer, School of Business, Columbia university, New York city; treasurer, Jean Norcross, Dun & Bradstreet, Inc., New York city; secretary and advertising manager, Kathleen B. Stebbins, 31 E. 10th St., New York city. Directors: Ford M. Pettit, the *Detroit News*, Detroit, Mich. (term expiring 1943); Herman H. Henkle, The Library of Congress, Washington, D.C. (term expiring 1944); Betty Joy Cole, Calco Chemical Division, American Cyanamid company, Bound Brook, N.J. (term expiring 1945); Laura A. Woodward, Maryland Casualty company, Baltimore, Md. (term expiring 1943). (K. B. S.)

Spelman Fund of New York was chartered in 1928. The fund, during 1942, continued its program directed at the improvement of the methods and techniques in the field of public administration. The Chairman of the Board of Trustees in 1942 was Charles E. Merriam. (C. Mh.)

Spender, John Alfred (1862–1942), British journalist and liberal, was born in Bath, England. He was editor of the *Westminster Gazette*, 1896–1922, and was a prolific writer of biography and history. Spender was made a Companion of Honour in 1937. His books include: *The Public Life* (1925), *The Changing East* (1926), *Life, Journalism and Politics* (1927), *Fifty Years of Europe* (1933), *These Times* and *A Short History of Our Times* (1934), *Great Britain, Empire and Commonwealth, 1886–1935* (1936), *The Government of Mankind* (1938) and *New Lamps and Ancient Lights* (1940). He died in Farnborough, Kent, June 21. (See *Encyclopædia Britannica.*)

Spices. Distribution became adjusted to government rules. The 1941 OPA ceiling on whole black pepper was lowered. Trading became desultory, restrictions making flat, colourless markets. The year 1942 closed with about 23,700 tons in public warehouses, sufficient black pepper for probably two years. Spice grinders held good "invisible" stocks.

Deliveries of black and white peppers, pimiento, cloves, ginger, cassia, cinnamon, nutmegs and mace were limited by the War Production board to percentages of the quantities bought in 1941. British West Indies were the only source of mace, nutmegs and pimiento.

In May, 1942, the general maximum price regulation of the Office of Price Administration froze prices at March, 1942, levels. This "roll-back" for many meant ceilings below replacement costs. OPA invited appeals for the adjustment of price anomalies.

East Indian nutmegs, mace and the rich-flavoured Batavia and Corintjie cassias were expected to disappear soon. The preferred Saigon cinnamon formerly shipped via Hongkong was almost gone. The Chinese areas from which Kwangsi, Taiwo and other cassias were obtained were in enemy hands. Some cinnamon trickled in from Ceylon.

Imports of East Indian peppers were not expected to be resumed for many years. In India (Malabar district) black pepper formerly was big business. Without Indonesian competition, cultivation of Tellicherry and Alleppy black peppers were expected to be revived.

U.S. farmers were alert. Their experiments with coriander, caraway and poppy seeds, also sage and paprika proved the suitability of U.S. soil, etc. for such spices. Pods for making the familiar ground red pepper in small tins are a regular crop in South Carolina, Louisiana and Mississippi. Mexican chili peppers (for chili con carne), despite lack of usual Japanese labour, was an important crop in California.

Large harvests of mustard seed in the northwest, with South Dakota a newcomer, were gathered in 1941–42. Enough yellow seed was accumulated to last well into 1944. There were no Government restrictions on sales of mustard. Adequate supplies of celery seed (formerly from France), fennel, cumin, white poppy, sesame seeds and turmeric were obtainable from India.

An OPA meeting in Washington discussed price ceilings for raw spices in original packages. Attendance represented about 90% of the industry. On September 25, 1942, the ceilings for 45 spices were published. With prices thus controlled, following limitation of deliveries (M-127-B), federal regulation was practically complete. WPB import licences were necessary for most spices.

Tin or black plate was unobtainable. Spices were expected to be sold in glass, plastic or paper board packages.

Statistics of imports were not released by the Department of Commerce.

The many tons of ground and packed spices required by the armed services of the U.S. constituted a large percentage of total output. (C. A. T.)

Spirits: *see* Liquors, Alcoholic.

Spodumene: *see* Lithium Minerals.

Sports and Games: *see* Air Races; Angling; Archery; Automobile Racing; Badminton; Baseball; Basketball; Billiards; Bowling; Boxing; Chess; Cricket; Curling; Cycling; Fencing; Football; Gliding; Golf; Gymnastics; Hand-ball; Horse Racing; Ice Hockey; Ice Skating; Lacrosse; Motorboat Racing; Polo; Rowing; Shows; Skiing; Soccer; Softball; Squash Racquets; Swimming; Table Tennis; Tennis; Track and Field Sports; Trap-shooting; Wrestling; Yachting.

Spurgeon, Caroline Frances Eleanor (1869–1942), British educator and writer, was a student in Dresden, Paris and at King's college and University college, London, where she won many honours. A noted scholar of Chaucer and Shakespeare, she was one of the first women professors at the University of London, 1913–29. During the same period, she was head of the English literature department at Bedford College for Women in London. She was a founder and first president of the International Federation of University Women. From 1920 to 1921, Dr. Spurgeon was visiting professor at Columbia university. In 1937, she went to live in Tucson, Ariz., where she died Oct. 24, 1942.

Squash Racquets. Charles W. Brinton, Princeton senior, won his second straight national squash racquets championship with his conquest of the 1942 field at Buffalo. He defeated Harold Kaese, Boston sports writer, in the final, three games to two. Brinton also retained his national intercollegiate championship. Lieut. Hunter Lott, Jr., and William E. Slack of Philadelphia won their fifth straight doubles title in the 34th annual championship. G. Fred Rogers of Buffalo dethroned Joe Janotta of Chicago as National Veterans' champion.

The United States easily captured the Lapham trophy against Canada. Boston won the Lockett trophy, and Detroit won the national amateur team championship of squash racquets. Lester Cummings of New York continued his reign as national professional champion, while Miffin Large and Donald Strachan of Philadelphia won the pro doubles.

Squash racquets and its two sister indoor sports, racquets and squash tennis, were hard hit by the rubber shortage. Squash racquets play subsided after the nationals in February, and the

1943 tournament, originally awarded to Detroit, was called off. No squash balls were available during most of 1942, although seamless missiles, made from repossessed rubber, were expected to be used in 1943.

H. Robert Reeve of the Bayside Tennis club, N.Y., won the national amateur squash tennis championship, defeating Joseph J. Lordi of the New York A.C. in the final. Lordi was the defending champion. Reeve, who entered the Navy as an ensign after winning the title, was the first player to top the squash tennis rankings since 1930, when Harry F. Wolf started his long reign. Robert Grant III captured the national championship in racquets. (M. P. W.)

Stader Splints: *see* MEDICINE: *Surgery*.

Stainforth, G. H. (1899?–1942), British air ace, was a member of the Schneider Cup Trophy team which set a world speed record of 408.8 mi. an hour in Sept. 1931. A member of the R.A.F. after 1923, he aided the development of the modern British fighter planes by his skill and daring in test flights. In World War II, he saw action on the middle east front as wing commander, and lost his life while on night fighter duty, according to a Cairo report of Sept. 30.

Stainless Steels: *see* METALLURGY.

Stalin, Joseph Vissarionovich (1879–), Russian statesman, was born in Georgia and succeeded Lenin as virtual dictator of the Soviet Union in 1924 (see *Encyclopædia Britannica*). On May 6, 1941 Stalin assumed the premiership of the U.S.S.R. after the resignation of Vyacheslav Molotov from that office. After the German invasion began June 22, 1941, Stalin, emerging from his accustomed seclusion of former years, made a number of public appearances and addresses. On July 3, 1941, in one of his rare radio addresses, he exhorted his people to "know no fear," to scorch the earth before the German advance. On July 19, 1941, he took over the post of defense commissar. On Oct. 19, he called upon all Muscovites for a last-ditch fight to save the capital.

On April 30, 1942, he assured smaller European powers that the U.S.S.R. had no territorial ambitions other than to liberate its lands from the nazis. On Aug. 12, he conferred with Churchill in the Kremlin and on Sept. 23 he received Wendell Willkie. Although he declared on Oct. 3 that Allied aid was not commensurate with Russia's contribution in holding the nazis at bay, he expressed confidence on Nov. 6 that the Allies would open a second front "sooner or later." Two days later, U.S. forces landed in Morocco and Algeria; on Nov. 13 Stalin said these operations had opened the way for an early axis collapse. (*See* also UNION OF SOVIET SOCIALIST REPUBLICS.)

Stalingrad. (formerly Tsaritsyn), a town of the U.S.S.R., is the administrative centre of Stalingrad province, which occupies 1,354,000 sq.km. with a population of 2,289,000, of which (census 1939) 1,396,000 lived in rural districts and 893,000 in towns. It is the most important town on the right bank of the most western salient of the Volga river and is 1077 km. from Moscow.

During the civil war Stalingrad was the arena for fierce fighting between the Red and White armies, and Stalingrad province suffered very much from the famine of 1921. As a consequence of all this destruction, it took ten years to restore the town and province to its former economic significance. But from 1928 there began a rapid process of the building of many large factories in Stalingrad. It became one of the most important industrial towns on the Volga. Its population rose from 151,490 in 1926 to 445,476 in 1939, and it ranked as the 13th most populous town in the U.S.S.R.

On the eve of World War II there were working in Stalingrad two very large power stations which together possessed a productive capacity of 200,000 kw., a lorry factory with a yearly productive capacity of 100,000 lorries, a tractor factory with a yearly production of 40,000 caterpillar tractors, large factories producing quality steel, a large oil refinery, war factories, chemical industries, important textile industries (*e.g.*, a cotton factory with 100,000 spindles, a knitted fabric factory with 5,000 tons yearly productive capacity), food industries, etc., as well as a dockyard for river barges.

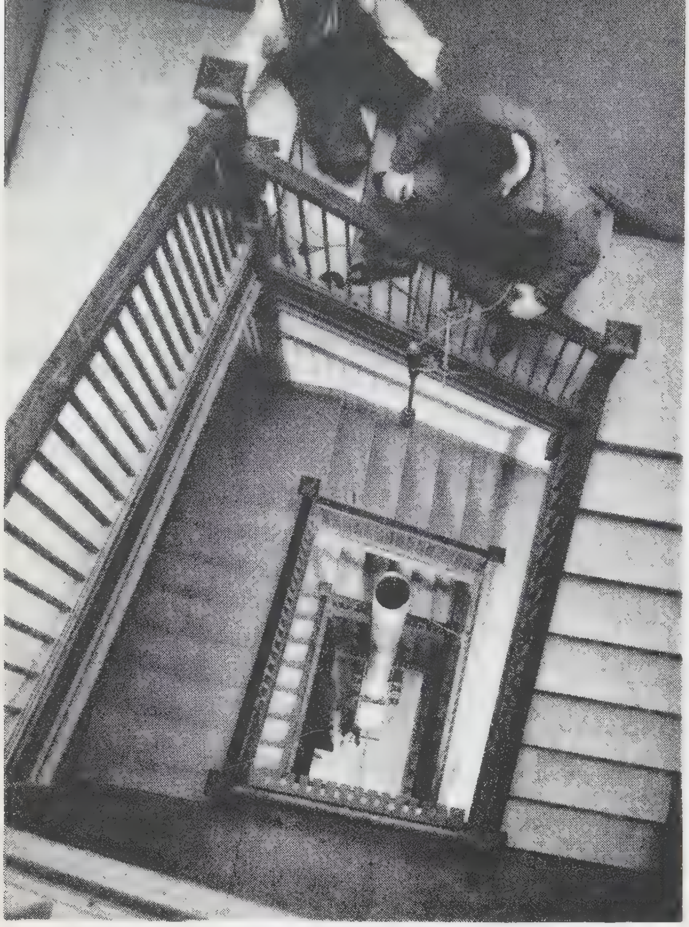
Stalingrad is also the largest cultural and educational centre of the low Volga, with a university, many technical and high schools, central hospitals for the whole of Stalingrad province, etc.

On Aug. 23, 1942, the Germans launched a direct attack against Stalingrad. In their first large-scale attack they used over 1,000 planes, hoping to force Stalingrad to surrender. The Germans continued to press the attack on a scale unprecedented in history, using between 700 and 800 planes daily, and up to 22 divisions with over 500 tanks, 1,000 mortars and 1,200 guns. But the Russians stood firm, at the beginning of November began to counterattack, and by the end of the month were on the offensive. By the end of the year the Russian offensive had made important progress (*see* WORLD WAR II). Only the military skill, endurance and heroism of every defender of Stalingrad could explain the successful defense of this city which presents no natural military obstacles to the attacker, stretching as it does for miles in a narrow strip along the Volga, close to the shore. (A. M. Bv.)

Stamp Collecting: *see* PHILATELY.

Standards, National Bureau of. The national bureau of standards of the department of commerce was established by act of congress March 3, 1901. Its functions are the development, construction, custody, and maintenance of the reference and working standards used in science, engineering, industry, and commerce. The bureau's services are available to the national and state governments and under certain conditions to private firms and individuals. It acts as one of the principal testing laboratories of the federal government in connection with the purchasing of supplies (other than food, drugs and certain military equipment), and conducts research in co-operation with governmental agencies and with engineering societies and trade associations.

TESTING WEATHER RESISTANCE OF PORCELAIN ENAMEL at the laboratory of the National Bureau of Standards in Washington, D.C. Enamelled metal was being used on roofs and walls of buildings in 1942 in place of more critical materials



THE BUREAU OF STANDARDS developed a method for determining the resistance of plastic aircraft window materials to impact. A soft-headed dart, released from an electromagnet mechanism, is dropped onto the test specimen through a long tube, from heights up to 65 feet

The bureau is made up of nine scientific and technical divisions, three divisions dealing with commercial standardization, and a special group set up as a war measure, and concerned wholly with military problems. The regular divisions are the following: electricity, weights and measures, heat and power, optics, chemistry, mechanics and sound, organic and fibrous materials, metallurgy, clay and silicate products, simplified practice, trade standards and codes and specifications. Each division consists of from four to ten sections which are the working units covering specialized fields.

On June 30, 1942, the bureau staff consisted of 1,780 employees and 52 research associates. The regular appropriation for the fiscal year was $2,968,000. In addition, $398,941 was made available in deficiency items. Of this total, $230,000 was for the construction of a new station for broadcasting standard frequency radio signals, $600,000 for building and equipping a new materials testing laboratory, and $280,000 for constructing a service building and for adding a second story to the main radio laboratory.

During 1942 it was necessary to shift a steadily increasing percentage of the scientific and technical personnel and laboratory equipment from peacetime to war activities. A great variety of problems requiring the special facilities of almost every section of the bureau, from textiles to atomic physics, were submitted by governmental agencies engaged in the war effort. The navy department in particular sent many problems to the bureau, and that some of these at least have been handled successfully is attested by the award to the bureau of the navy's "E" pennant for excellence in production.

The necessity of finding substitutes for critical materials gave rise to research along many diverse lines. Synthetic rubber, textiles and plastics were studied intensively.

In this connection it seems worth while to point out that ever since its establishment the bureau recognized the importance of fundamental research and advocated its more liberal support. The soundness of this argument was strikingly illustrated in the case of rubber. Painstaking measurements over a period of many years on the constants and properties of rubber and more recently on the rubber substitutes resulted in the accumulation at the bureau of a great deal of basic information on these complex hydrocarbons. This information was of the greatest value. Precise measurements made on isoprene when it was a laboratory curiosity were being put to practical use in the making of synthetic rubber in 1942.

The increased volume of research work was accompanied by an equally heavy demand for the testing of supplies for the government and of weights and measures, precision instruments and other apparatus for the public. The fee value of the bureau's test work showed the unusual increase of 33% over 1941. More than 18,000,000 bbl. of portland cement were tested for federal construction projects at the bureau's six strategically located branch laboratories. Approximately 16,000 precision gauge blocks were compared with the bureau's standards to determine whether or not they were sufficiently accurate as master length controls in the manufacture of aeroplanes, tanks, automotive equipment, guns and ammunition. The bureau's commercial standardization group co-operated with the War Production board in eliminating unnecessary varieties of types and sizes of articles offered for civilian consumption, in the development of commercial standards, and in the drafting of emergency alternate specifications covering substitutes for strategic materials. A valuable service to manufacturers was rendered by the bureau in keeping them informed of changes in specifications affecting their products. The bureau likewise took the lead in the preparation of safety codes for protecting federal buildings against air raids and saboteurs.

(L. J. Br.)

Stanford University (The Leland Stanford Junior University), an institution of higher education near Palo Alto, Calif. As the 4-quarter system had been in effect since 1927, the university was readily geared for the accelerated program of the war. Increased emphasis was given to the Reserve Officers Training corps, physical fitness programs, and to work in engineering, medicine and other sciences immediately important in war. Special courses were introduced in radio, physiotherapy, nutrition, nautical astronomy, marine navigation and secretarial training. Approximately 5,000 persons were instructed, under the engineering, science and management war training program, in ultra-high-frequency radio techniques for the army signal corps, the navy and for industry. Appropriate instruction was given to 707 students enlisted in army and navy reserves (air corps, medical, V-1 and V-7). A quartermaster corps unit was established by the war department under the Graduate School of Business.

Largely supported by a grant of $47,500 from the Rockefeller foundation, a School of Humanities was set up to include the following departments and divisions: classics, English, Germanic languages, graphic art, history, music, philosophy, religion, Romanic languages, Slavic languages, speech and drama. Instruction was extended in Chinese, Japanese, Russian, Serbo-Croatian, German (military), French, Spanish and Portuguese. Cultural subjects were emphasized as of vital significance in war and peace.

For statistics of enrolment, faculty, endowment, library volumes, etc., *see* Universities and Colleges. Chancellor: Ray Lyman Wilbur.

(R. L. W.)

Stark, Harold Raynsford (1880–), U.S. naval officer, was born at Wilkes-Barre, Pa., on Nov. 12. Graduated from the U.S. Naval academy in 1903, he was commissioned ensign two years later and served on various ships and at various naval stations from 1903 to 1917. During World War I he was on the staff of Admiral William S. Sims, commander of the U.S. naval forces in European waters. On March 15, 1939, he was appointed chief of naval operations with the rank of admiral. After this appointment he was persistent in his pleas for a larger U.S. fleet and appeared a number of times before congressional committees to urge, usually with success, larger appropriations. In the spring of 1941 he announced his support of the lend-lease bill and of U.S. convoys in the Atlantic.

The functions of his office were altered when Adm. Ernest J. King was appointed commander in chief of the U.S. fleet, Dec. 20, 1941; King was made directly responsible to the president and the secretary of the navy rather than to the chief of naval operations. On March 9, 1942, King also took over the post of chief of naval operations, and Stark was made commander of U.S. naval forces operating in European waters.

Stars: *see* ASTRONOMY.
State, U.S. Department of: *see* GOVERNMENT DEPARTMENTS AND BUREAUS.
State Guard: *see* NATIONAL GUARD.

Stauning, Thorvald (1873–1942), Danish politician, was born Oct. 26 in Copenhagen. A cigar sorter by profession, he rose through trade union ranks to a position of prominence in the Danish government. He entered parliament in 1906, became head of the Labour party in 1913 and was minister of state in the Zahle cabinet, 1916–20. When the Labourites came into power in 1924, Stauning agreed to form a cabinet and held office until 1926. He formed a second government in 1929 and remained in power until his death. Stauning's protest over the occupation of Iceland in July 1941 by United States troops led many to believe that the Danish premier was pro-nazi in sympathy. Anti-Hitler circles in the United States denied this, however, declaring that the premier was a true patriot and democrat whose statement was probably made under duress. He died in Copenhagen May 3.

Steamships: *see* SHIPBUILDING.
Steel: *see* IRON AND STEEL.

Steer, Philip Wilson (1860–1942), British painter, was born Dec. 28 at Birkenhead, England. His works are represented at the Metropolitan museum, New York city, the British museum and the Tate gallery, London, and the Uffizi gallery in Florence, Italy. Steer was one of the first British artists to receive the Order of Merit. He died at his home in the Chelsea quarter of London on March 21. (See *Encyclopædia Britannica.*)

Stellar System: *see* ASTRONOMY.
Stilboestrol: *see* CHEMISTRY.

Stilwell, Joseph W. (1883–), U.S. army officer, was born March 19 at Palatka, Fla. He was graduated from West Point, 1904, and served with the A.E.F. n France during World War I. After the armistice, he studied Chinese at the University of California, spent three years at Peiping mastering several Chinese dialects and served as military attaché in China, 1932–39. After Pearl Harbor, he was promoted o lieutenant general, Feb. 1942. He served a month as General Chiang Kai-shek's chief of staff and in March 1942 Chiang gave him command of the 5th and 6th Chinese armies fighting the Japanese invading Burma. Unable to pronounce his name, the Chinese troops called him General Sze; his Yank units nicknamed him Uncle Joe. Beaten by numerically stronger and better-equipped Japanese, Stilwell retreated toward India. After the fall of Burma in May 1942, Stilwell led a group of 400 refugees through 140 mi. of jungles and mountains to safety in India; the trip took them 20 days. After turning up at allied headquarters in New Delhi, Stilwell said with surprising frankness: "I claim we got a hell of a beating. We got run out of Burma and it was humiliating as hell. I think we ought to find out what caused it, go back and retake it."

Stimson, Henry Lewis (1867–), U.S. statesman, of whom a biographical sketch appears in *Encyclopædia Britannica.* A Republican, he became an ardent admirer of Cordell Hull's policies as secretary of state (the office Stimson had held in Pres. Hoover's cabinet) and was always quick to defend Hull's actions against criticism. He favoured in particular a strong stand for the United States against Japan, Germany and Italy. Pres. Roosevelt appointed him secretary of war on June 20, 1940. Like his fellow cabinet-member, Frank Knox, Stimson favoured a militant foreign policy in 1940 and 1941. An advocate of a large army, Stimson revealed on Feb. 7, 1942, that a program for a 2,000,000-man air force was under way. On Oct. 14 he urged the senate to speed legislation permitting the draft of youths 18 and 19 years old and disclosed that the army planned to have a force of 7,500,000 men by 1943.

Stock, Frederick August (1872–1942), U.S. conductor and director of the Chicago Symphony orchestra for 37 years, was born Nov. 11 in Jülich, Germany. From his father, a bandmaster, he received his early musical training and later studied violin and composition at the Cologne conservatory. Theodore Thomas, founder and conductor of the Chicago Symphony orchestra, discovered Stock when he was a violinist with the Cologne orchestra and invited him to Chicago to join the new orchestra in 1895. He made his debut there as a viola player and six years later became Thomas' assistant and associate conductor. Shortly after the Chicago Symphony moved into its new quarters at the Orchestra Hall in 1905, Dr. Thomas died and Stock became his successor. He directed from the Orchestra Hall podium for the next 37 years, except for a short period during World War I, when public opinion forced his resignation until he could obtain his final U.S. citizenship papers. Dr. Stock was said to have introduced more scores by U.S. composers than any other conductor in the country. He composed three overtures, two symphonies, a violin concerto, a 'cello concerto, a *Festival March* and *Hymn to Liberty.* He died in Chicago, Oct. 20.

Stock Exchanges: *see* STOCKS AND BONDS.

Stocks and Bonds. **Stocks.**—Rarely had annual stock market price fluctuations, as well as the annual volume of transactions, been smaller than during 1942. Strange as it seemed, this unusual record occurred despite momentous developments of a domestic and international character. Neither war events, both favourable and unfavourable, nor extraordinary domestic news with respect to the dislocation of industry, the imposition of greatly increased taxes, and the introduction of rationing and other control systems, seemed to have any real effect, except momentarily, upon either the price level of stocks or bonds or the volume of transactions. Moreover, throughout 1942 the price level of stocks was extremely low, in view of corporate earnings and dividend distributions. For all of the leading groups of stocks, the price level sank gradually from January to May, and thereafter rose moderately from June to the end of the year.

Using the Standard & Poor's barometer figures (average for each month based on daily closing prices), the average monthly price of 20 representative railroad stocks stood at 28.1 for Jan., 1942, as compared with 24.9 and 29.8 for December and January of 1941. Thereafter a slight decline occurred until June, when the monthly average stood at 24.0. The steadiness of the market for railroad shares was indicated by the monthly averages of 28.0 for February, 26.2 for March, 24.8 for April, 24.6 for May, and 24.0 for June. For July the monthly average rose to 25.8, by August to 26.7, by September to 27.2, by October to 29.7, and for November 29.3. By way of summary, the monthly average dropped by 14% during the first half of 1942, and subsequently during the next five months rose by 22% over the June low of 24.0.

In the field of industrial stocks, using Standard & Poor's average for 50 leading issues, the average monthly price stood at 89.2 for January, as compared with 88.2 and 102.6 for December and January of 1941. Following Jan. 1942, the monthly average sank from 89.2 to 79.0 for May, or a decline of 11%. After May the average monthly price again rose gradually from 79.0 to 95.5 for November, an increase of 21%.

Similar price movements by months occurred in the public utility and copper and brass groups of stocks. For 20 public utility stocks the Jan. 1942 average stood at 35.4, as compared with 34.3 and 55.0 for December and January of 1941. Following Jan. 1942, the average monthly price declined from 35.4 to 28.8 in April, a decline of nearly 19%. Thereafter the price again rose from 28.8 to 35.4 for November, an increase of 19%. The Nov., 1942, average of 35.4, it should be noted, just equalled the 35.4 for Jan. 1942, but stood nearly 36% below the average price of 55.0 for January of 1941. The copper and brass stocks monthly average price stood at 80.9 in Oct. 1942, as compared with 88.3 for January, 70.8 for May, and 75.3 for September.

Combining all of the aforementioned groups of stocks (90 representative shares), the market showed a decline from 70.9 for January to 62.2 for April, or more than 12%. Subsequently the price rose to 75.3 for November, or an increase of 21%.

On Jan. 1, 1942, the market value of all listed shares on the New York Stock exchange stood at $35,785,946,533, with an average market price of $24.46. On Dec. 1, 1942, this market value stood at $37,374,462,460, with an average market price of $25.41. An appreciation in value of slightly over 4% was thus shown for the year. The aforementioned figures compared with a valuation of $40,280,000,000 for January, and $35,785,000,000 for December of 1941.

From the foregoing data it is evident that 1942 stock market price movements were reasonably steady and remarkably nonsensational. The decline during the early months of the year was substantially counterbalanced by the rise in the later months. The entire showing was rather unexpected in view of sensational war news, the tremendous enlargement of business activity along certain lines to meet huge war orders and the curtailment and disarrangement of businesses which did not fit into the war effort, and the tremendous earnings of the larger corporations with shares listed on U.S. exchanges. In fact, with respect to many of the listed issues of common shares, the dividend distribution to stockholders during 1942 equalled an 8% to 10% return on the prevailing market price, whereas the return on choice investment bonds remained extremely low.

Number, Volume and Amount of Stocks.—According to the New York Stock exchange's compilation, the total of stocks listed on that exchange on Dec. 1, 1942, stood at 1,470,976,125 shares, with a market value of $37,374,462,460. This value compared with $37,882,000,000 and $41,848,000,000 at the corresponding dates of 1941 and 1940, respectively. Of 1942's total, United States stocks aggregated 1,430,000,000 shares, valued at $36,614,000,000, and stocks of other countries 40,479,000 shares, valued at $759,796,000. The total of shares was distributed over 1,224 separate United States issues and 18 issues of other countries, representing a total of 836 issuing corporations.

Total shares traded on the New York Stock exchange during 1942 amounted to 125,677,963, as compared with 170,534,363 during 1941; 207,605,359 during 1940; 262,015,799 in 1939; 297,446,059 in 1938; and 1,124,991,000 in 1929, the largest total on record. The 1942 market, as was the case in 1941, was relatively stagnant. October was the largest month on the New York Stock exchange, with 15,932,595 shares, while May was the smallest, with only 7,229,097 shares. Up to Dec. 1, Nov. 9 was the largest day of the year with 1,207,643 shares, while July 1 was the smallest full day with a total of only 206,680 shares. The New York Curb market had sales during 1942 of 22,327,822 shares, as compared with 34,690,900 shares during 1941, and 43,041,774 shares during 1940. For other security exchanges of the country, data were not available at the time of this compilation, but the other United States exchanges are relatively unimportant as regards volume of transactions, in comparison with the New York Stock and the New York Curb exchanges.

Bonds.—Using the Standard & Poor's barometer figure for composite bonds (average for each month based on daily closing prices), the average high price stood at 100.3 for Jan. 1942 and 100.6 for February. Thereafter, for the rest of the year, the high average price varied between 102.9 for October and 99.22 for July. Moreover, the monthly fluctuation between high and low was very meagre. Only during January was there a range between high and low as great as 2.80 points.

The yearly price movement thus showed a remarkably stable bond market during 1942, and a comparatively high price level. The unsettled conditions prevailing in the stock market probably caused many to put their faith in presumably nonspeculative bonds. Again, the flotation of new bond issues almost reached the vanishing point, thus bringing to the fore a considerable pressure for in-

Table I.—*Security Market Prices*

Month	Railroads 20 stocks		Industrials 50 stocks		Public Utilities 20 stocks		Copper and Brass 7 stocks		Stocks 90 stocks	
	1941	1942	1941	1942	1941	1942	1941	1942	1941	1942
Jan.	29.8	28.1	102.6	89.2	55.0	35.4	*86.9	*88.3	83.8	70.9
Feb.	28.4	28.0	96.1	86.4	51.4	33.9	*80.1	*85.1	78.5	68.7
March	28.7	26.2	96.9	82.1	50.6	30.8	*81.1	*81.4	79.0	64.9
April	29.0	24.8	93.9	79.0	47.6	28.8	*78.5	*76.9	76.5	62.2
May	28.7	24.6	92.4	79.8	44.4	29.8	*83.4	*70.8	74.9	62.9
June	28.7	24.0	96.2	84.4	44.9	31.1	*88.3	*71.4	77.5	66.1
July	30.0	25.8	101.5	87.9	45.9	30.6	*94.1	*76.1	81.5	68.6
August	30.3	26.7	101.0	87.3	45.2	30.0	*93.2	*75.6	81.1	68.2
Sept.	29.4	27.2	101.7	88.1	44.6	30.4	*90.8	*75.3	81.3	68.9
Oct.	28.6	29.7	97.7	94.1	42.1	33.7	*83.4	*80.9	78.0	74.0
Nov.	27.8	29.3	93.8	95.5	37.9	35.4	*82.7		74.4	75.3
Dec.	24.9		88.2		34.3		*82.4		69.5	

*Copper and Brass figures use 1935–1939 as a base period. All other figures use 1926 as a base period.

The above figures are an average for the month based on daily closing prices, except for Copper and Brass, which are weekly prices.

(Source of data: Standard & Poor's *Trade and Securities, Current Statistics.*)

vestment by insurance companies and other large investment concerns. For the year 1942, according to the New York Stock exchange's record, bond and note flotations of U.S. corporations during the first 11 months of the year totalled only $876,256,000. But exclusive of refunding issues, investment trusts and holding companies the total flotation amounted to only $236,166,000.

Table II.—*Bond Prices for 1942*

Composite Bonds
Dollars per $100
(Standard Statistics Company)

Month	High	Low	Month	High	Low
Jan.	100.3	97.5	July	99.22	98.47
Feb.	100.6	98.89	Aug.	99.72	98.82
March	99.50	98.01	Sept.	101.4	99.76
April	99.51	98.78	Oct.	102.9	101.4
May	99.28	98.21	Nov.		..
June	98.63	97.64	Dec.		

Number, Volume and Amount of Bonds.—According to the New York Stock exchange's compilation, the total par value of bonds listed on that exchange at the beginning of Dec. 1942 stood at $67,155,675,692, with a market value of $64,543,971,299. These figures compared with $58,236,901,000 and $55,033,616,000 for Dec. 1941. The increase in the par value of bonds during 1942 was largely attributable to the issue of large amounts of new United States government securities. Of 1942's total, United States corporation bonds amounted to (beginning of December) $17,078,188,000 par value, with a market value of $13,389,451,000; company bonds of other countries with a par value of $864,116,000 and a market value of $714,931,000; United States government bonds (inclusive of corporations and subdivisions) with a par value of $47,010,151,000 and a market value of $49,153,422,000; and other governments (inclusive of subdivisions) with a par value of $2,203,221,000 and a market value of $1,286,167,000. The total listed bonds of United States corporations were distributed over 858 issues with 440 issuers; of United States government bonds with 79 issues and 5 issuers; and other governments with 159 issues and 53 issuers. Total bonds traded on the New York Stock exchange during 1942 amounted to $2,182,625,800, as compared with $2,114,098,550 during 1941, $1,671,598,875 during 1940, and $2,048,000,000 during 1939.

Stock Exchanges.—During 1942 the New York Stock exchange made a considerable number of important changes in its rules and practices. The most important changes may be grouped under the following five headings:

Changes with Respect to Exchange Practices.—Reference under this heading should be made to the following six actions of the exchange:

(1) On Jan. 29, 1942, effective Feb. 16, the board of governors of the exchange adopted a "special offerings" plan, providing for "the marketing on the floor of the exchange, by announcement on the ticker tape and by payment of a special commission, of blocks of listed securities which could not readily be absorbed in the auction market within a reasonable time and at a reasonable price." By December the exchange reported the completion of 56 such special offerings for a total of 655,839 shares, with a value of $17,329,764, and with a "time elapsed period" ranging from a minimum of 15 minutes in most cases to a maximum period of 1 hour and 41 minutes. It also reported 11 uncompleted offerings with 59,333 shares sold, with a value of $2,848,972, and 25,786 shares unsold, with a value of $1,250,032.

(2) On July 30, the board of governors approved an amendment to the constitution of the exchange, permitting the board, at its discretion, to change the unit of trading in listed stocks. This action was approved by the membership of the exchange on Aug. 31. Twenty-eight stocks were selected to be traded in units of 10 shares, beginning Sept. 1. Sixteen inactive and high-priced stocks were also added to the list. The change was not expected to have any adverse effects upon odd-lot houses.

WEEKLY MILITARY DRILL was begun by members and employees of the New York Stock exchange in the fall of 1942

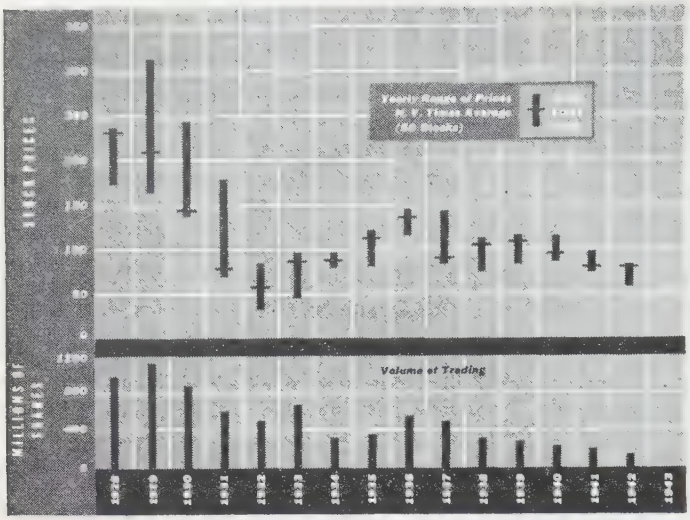
(3) For many years the Stock Clearing corporation conducted a "night branch" for the clearance of securities. On Sept. 1, 1942, this branch was discontinued, thus effecting, according to estimates, a saving of $100,000 a year in clearance charges for member firms. While the exchange lost this revenue, it was also estimated that the change would produce a saving of $48,000 annually in the rentals of machines and on taxes.

(4) In view of possible air-raid alarms or other emergencies, the rules of the exchange were amended "to provide for flexibility in trading hours by making it possible to postpone the opening; to advance the closing; to close temporarily and reopen; or to extend trading hours beyond the normal closing."

(5) The SEC adopted, on Nov. 27, a rule "requiring all registered brokers or dealers dealing with the public, to file, on a standard type financial questionnaire, annual audited financial reports with the Commission." A copy would also be sent to the exchange, in accordance with its requirements effective since 1924, in place of the form used previous to this standardization.

(6) With respect to the merchandising of blocks of securities, the president of the exchange on Aug. 27 requested a group of the board of governors to consult with him in a study of this important subject.

Changes with Respect to the Practices of Listed Corporations.—On Jan. 16, 1942, the department of stock list suggested to the presidents of listed corporations "that their inventory policy be disclosed in annual reports to stockholders and transmitted a bulletin prepared by the Committee on Accounting Procedure of the American Institute of Accountants which discussed special reserves made necessary by war-time conditions." The chairman of the SEC also reported, on Aug. 17, that "following a second meeting with representatives of the financial industry, standard financial report forms would be adopted soon, and that consider-



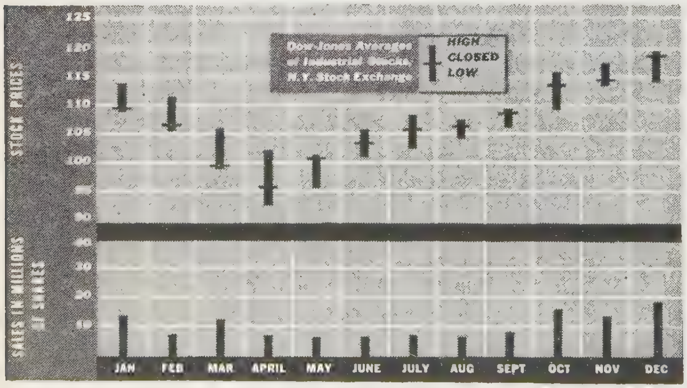
TRADING IN STOCKS on the New York Stock Exchange: yearly range of prices and number of shares sold, exclusive of odd-lot and stopped sales

able ground work had been made in the solution of other problems."

According to press accounts, the stock exchange also recognized the fact that many corporations would be unable to file their annual financial reports by the customary dates required by their listing agreements with the exchange. Upon application by the corporations, showing the necessity, the exchange expressed a willingness to extend the time limits for an appropriate period beyond three months after the close of the fiscal year, and to a date 15 days in advance of a postponed annual meeting or the reconvening of an adjourned meeting.

Proposed Legislative Changes.—On Feb. 10 the president of the exchange and the president of the Association of Stock Exchange Firms appealed to the committee on ways and means of the New York assembly for relief from the high state stock transfer tax. Governor Lehman signed the Coudert-Mitchell bill (passed by the legislature on April 24), eliminating the double taxation on odd-lot transactions. The president of the exchange explained that this "was a measure of tax relief which long had been needed and from which investors will derive encouragement." He further expressed the hope that the legislature "would consider additional relief and realistically examine the whole stock transfer tax structure."

Changes in Commission Charges and Membership Dues.—On Feb. 26 the board of governors adopted amendments to the constitution "raising minimum non-member and member commission rates approximately 25% and 10% respectively. The amended rates were approved by the membership on March 12 and became effective March 16."



SALES AND PRICES on the New York Stock exchange, 1942

Effective May 1, 1942, amendments to the constitution of the exchange were approved by the board of governors, "covering a comprehensive revision of the rates of membership dues and other charges payable to the exchange by members and member firms so as to provide a fairer allocation of charges in relation to the services and benefits received."

Financial Record of the New York Stock Exchange.—According to the annual financial statement of the exchange and affiliated companies, the year ending Dec. 31, 1941, showed a net loss for the year, after depreciation, of $2,229,560, compared with $981,348 in 1940. As in previous recent years, the price of New York Stock exchange seats remained exceptionally low throughout 1942.

The prices varied between a minimum of $17,000 and a maximum of $30,000. These prices compared with a minimum of $19,000 and a maximum of $35,000 for 1941, and a minimum of $33,000 and a maximum of $60,000 for 1940. (*See* also BUSINESS REVIEW.) (S. S. H.)

Stomach Disorders: *see* ALIMENTARY SYSTEM, DISORDERS OF.

Stone.

The following table lists the production of the various types of stone in the United States, so far as data were available at the close of 1942.

Production of Stone in the United States
(In thousands of short tons or thousands of dollars)

Name of Stone	1940			1941		
	Dimension	Crushed	Total	Dimension	Crushed	Total
Basalt	22	15,694	15,716	10	17,927	17,937
Granite	658	10,222	10,881	782	13,517	14,299
Limestone	1,082	111,576	112,658	814	132,350	133,164
Marble	89	151	240	69	107	176
Sandstone	172	6,327	6,498	183	7.409	9,592
Others	83	7,656	7,740	89	9,851	9,940
Total	2,107	151,626	153,733	1,947	181,161	183,108
Value	$21,417	$138,627	$160,044	$21,396	$173,942	$195,338

Dimension Stone.—Sales of dimension stone in 1941 were 8% less in quantity than in 1940, but only 1% less in value. Building construction used 83% of the total, with small percentages going to monumental work (marble and granite only), paving, curbing and flagging. In addition to the stone listed above, 180,990 tons of slate was sold as dimension stone in 1941.

Crushed Stone.—Sales of crushed stone in 1941 were 181,160,980 short tons, an increase of 19% over 1940, while value increased 26%; this does not include 42,735,000 tons of crushed stone used in the production of cement, 11,827,000 tons used in making lime, or 437,670 tons of crushed slate. Concrete and road metal took 61% of the total, metallurgical and refractory uses 16%, agricultural uses 7% (all limestone), and railroad ballast 6%. (G. A. Ro.)

Straits Settlements.

A British crown colony, under Japanese occupation in 1942, one of the three principal administrative divisions of British Malaya, the others being the Federated and the Unfederated Malay States (*qq.v.*). Area of the Straits Settlements 1,356 sq.mi.; pop. (estimate of 1941) 1,435,895, divided racially as follows: Europeans 18,101, Malays 315,629, Eurasians 13,540, Chinese 927,003, Indians 148,851, others 12,771. The capital is Singapore (*q.v.*). It is normally under the administration of a governor with an advisory council. The governor since 1934, Sir Thomas Shenton Whitelegge Thomas, was made a prisoner of the Japanese in 1942. Along with the rest of Malaya, the Straits Settlements was overrun by the Japanese in Jan. and Feb. 1942 (*See* JAPAN; WORLD WAR II).

Education, Finance, Communications.—There were 420 schools, with 83,078 students, in 1940. The unit of currency was the Straits dollar, equivalent to 47.51 U.S. cents in 1941. The pound sterling, however, was often used in financial statements. Revenue in 1941 was £5,501,790 and expenditure £7,056,729. The unrealized budget of 1942 called for revenue of £6,969,793, expenditure of £6,804,603. Imports in 1940 were £96,146,000, exports (including re-exports) £131,257,000. At the end of 1940 there were 1,073 mi. of metalled roads and 133 mi. of gravelled roads in the colony. There were radio stations at Singapore and in Province Wellesley, for Penang. (W. H. Ch.)

Strategic Mineral Supplies.

When World War II started in Sept. 1939, the official list of strategic and critical materials as compiled by the U.S. Army and Navy Munitions board included nine strategic and nine critical materials of mineral origin, the main differentiation between the two being that for the former major shortages of supply were anticipated, but for the latter only minor shortages. After the United States was brought into the war, practical considerations led to the replacement of the former strategic and critical list by the War Production board's Material Substitution and Supply List, containing a listing of more than 500 products, arranged in three groups and graded according to necessity in the war effort and adequacy of supply.

Group I, supply is inadequate to meet demands;

Group II, supply is approximately equal to demands;

Group III, supply is in excess of demands.

Those members of Group I that are shortest in supply are marked with a star, so that in a way, these starred items correspond approximately to the former strategic list, and the unstarred items to the critical list. Omitting a number of materials that are on the list because of lack of production or conversion facilities, and considering only those there because of scarcity of the basic raw material, it is to be noted that the latest copy of this list, issued Nov. 6, 1942, includes a total of 28 items of mineral origin, nine of which were starred, as follows:

*Magnesium
*Aluminum S
*Copper
*Tin S
Cadmium C
Zinc
Steel
*Tantalum
Beryllium
Rhodium
Lithium
Iridium
*Molybdenum
*Nickel S
*Vanadium C
*Tungsten S
Cobalt
Chromium S
Asbestos C
Corundum
Cryolite C
Graphite C
Kyanite
Mica S
Quartz crystals
Sodium nitrate
Strontium
Talc

While there are nine starred items, just as there were nine former strategic items, only four of these are identical; of the others, three strategic items have a sufficient current supply to be listed in Group II, while of the other five starred items one was critical and four were not listed. Of the 19 unstarred items, two were formerly listed as strategic, four as critical, and the remaining 13 were not listed. The former strategic materials are indicated by S, and the critical by C. But one of the most important points is that the list includes copper, zinc and steel, with copper starred.

Space is lacking to discuss in detail the many reasons behind the fact that shortages in 1942 were so much different and so much greater than had been anticipated, beyond the brief statement that previous planning and estimates were based on the attitude that the United States had only to plan against its possible invasion; hence, as matters developed, requirements had to be successively enlarged for lend-lease aid, for following a rapid spread in the scope of the war geographically, as well as in intensity, and above all to meet the ever expanding demands of mechanized warfare, with its heavy consumption of metals.

TUNGSTEN CONCENTRATE from a Canadian refinery in Ottawa. The supply of this critical mineral, used in war industries to harden tool steel, became scarce after the fall of Burma in 1942. The new Canadian refinery, however, helped offset the loss

This development can best be illustrated by a concrete example, and for this aluminum is selected, as it is near the top of the list in relative scarcity. The first proposal for an increased plane output called for 4,000 planes in a year, to build which would have required only about one-sixth of the current output of aluminum, leaving five-sixths for civilian uses. A recent official report announced that plane construction in 1942 would be approximately 49,000; when one takes into consideration that on top of this twelve-fold increase in number, the average size of the planes being built was approximately doubled, and that the 1943 program would probably call for twice as many as that of 1942, one can better understand why aluminum production capacity was increased to a point where it was expected to reach 1,050,000 tons in 1943, or more than six times the 1939 output.

Another phase of the problem is the role that proper control of the distribution of strategic mineral supplies can be made to play in the future, in avoiding a repetition of world wars. The Mineral Sanctions provisions of the League of Nations were planned to provide such protection, but failed, partly because the United States, not being a member of the League, was not subject to its control, and partly because the enforcement of sanctions at the time that they were needed happened to be contrary to the political and economic interests of certain members of the League, and no effective control could be secured without their support. (G. A. Ro.)

Strikes and Lock-outs.

The United States, Canada and Great Britain publish current statistics of strikes and lock-outs, their causes and results, together with detailed reports upon the more important strikes of each year. Most of the other nations report them less regularly; some not at all. The Canadian department of labour published a report on strikes throughout the world in the *Labour Gazette*, March 1937.

The political situation in Germany, Italy, Russia and Japan made it "inadvisable" for wage earners to undertake strikes. World War II added Czechoslovakia, Poland, France, Norway,

Table I.—*United States: Number of Strikes, Workers Involved, and Man-Days Lost, 1935—1941**

Monthly Labor Review, United States Bureau of Labor Statistics (May 1942)

Year	Number of Strikes Beginning in Year Indicated	Workers Involved in Strikes Beginning in Year	Man-days Idle During Year
1935	2,014	1,117,213	15,456,337
1936	2,172	788,648	13,901,956
1937	4,740	1,860,621	28,424,857
1938	2,772	688,376	9,148,273
1939	2,613	1,170,962	17,812,219
1940	2,508	576,988	6,700,872
1941	4,228	2,362,620	23,047,556

*Strikes involving fewer than 6 workers or lasting less than 1 day are not included in this table nor in the following tables. Notices or leads regarding strikes are obtained by the Bureau from more than 650 daily papers, labour papers, and trade journals, as well as from all government labour boards. Letters were written to representatives of parties in the disputes asking for detailed and authentic information. Since answers to some of these letters had not been received, the figures given for the late months are not final.

Table II.—*United States: All Strikes, 1942-41 Compared by Months; Also War Industries' Strikes, 1942 Compared by Months*

Month	Number Strikes			Workers Involved			Man-Days Lost		
	1942		1941	1942		1941	1942		1941
	All Industries	War Industries		All Industries	War Industries		All Industries	War Industries	
January	155	27	240	32,500	11,605	91,897	390,000	46,197	663,185
February	190	50	257	57,000	24,587	71,875	425,000	118,700	1,134,531
March	240	66	348	65,000	34,957	118,271	450,000	166,680	1,558,457
April	310	91	403	55,000	26,255	511,570	375,000	173,513	7,112,742
May	275	125	463	58,000	44,891	321,485	325,000	137,330	2,172,303
June	350	171	357	100,000	78,627	142,689	550,000	254,653	1,504,056
July	400	198	439	87,500	74,812	142,969	450,000	233,614	1,325,758
August	350	195	465	80,000	70,352	211,515	450,000	266,353	1,825,488
September	290	156	470	80,000	71,912	295,270	450,000	318,892	1,952,652
October	235	93	432	60,000	38,321	197,803	325,000	167,865	1,925,328
November	165	..	271	55,000	..	227,721	175,000	..	1,396,585
December	..	..	143	..	..	29,555	..	..	476,471

Compiled from *The Monthly Labor Review*, U.S. Bureau of Labor Statistics.

Denmark, the Low Countries, Bulgaria, Rumania, Greece, Finland, to the area in which strikes would be ruthlessly suppressed.

The year 1940 saw less strike activity in the United States than in 1939 but a definite increase in the number of strikes toward the end of the year which continued on into 1941, when strike activity was much greater than in either 1939 or 1940. There were 4,228 strikes started during 1941, compared with 2,613 in 1939 and 2,508 in 1940.

Table III.—*Relative Frequency and Size of Labour Disputes in Great Britain in 1942 and 1941*

Month	Number of Disputes Started in Month		Number of Work People Involved in All Disputes during Month		Working Days Lost in Labour Disputes during Month	
	1942	1941	1942	1941	1942	1941
January	57	64	17,100	13,300	59,000	24,000
February	55	60	14,900	13,100	28,000	23,000
March	62	121	15,200	63,400	43,000	285,000
April	83	97	33,800	45,700	63,000	187,000
May	174	113	94,400	31,700	306,000	74,000
June	135	82	112,200	28,200	356,000	89,000
July	74	60	18,500	16,500	42,000	25,000
August	118	94	21,600	22,100	37,000	44,000
September	123	135	25,000	30,600	53,000	93,000
October	.	145	.	33,000	.	96,000
November	.	111	.	46,300	.	72,000
December	.	76	.	22,400	.	37,000

Compiled from British *Labour Gazette.*

Table IV.—*Causes of Labour Disputes in Great Britain, 1942, by Months*

Cause	J	F	M	A	M	J	J	A	S
Demands for wage increases	7	7	14	19	80	45	30	32	40
Resistance to wage reductions	8	2	3	3	5	3	.	6	4
Other wage questions	14	20	21	18	48	43	19	31	30
Hours	2	2	5	4	6	2	4	6	5
Employment of particular classes of people or individuals	10	11	5	7	17	17	13	15	23
Other working arrangements	15	13	12	28	15	22	8	24	18
Questions involving trade union principles	1	.	2	2	1	.	.	4	3
Sympathetic strikes		.	.	2	2	3			.

Compiled from British *Labour Gazette*, Oct., 1942.

Table V.—*Results of Labour Disputes in Great Britain Settled in 1942*

Results of Strikes	J	F	M	A	M	J	J	A	S
Settled in favour of labour	11	6	7	10	22	18	11	17	11
Settled in favour of employers	28	28	23	37	75	87	28	54	72
Settled by compromises	15	9	10	21	33	22	14	25	28
Negotiations pending, but work resumed	6	11	21	14	28	24	18	19	18

Compiled from British *Labour Gazette*, Feb.-Oct., 1942.

Table VI.—*Number and Time Loss in Canadian Labour Disputes, 1942 and 1941*

Month	1942			1941		
	No. of Disputes	No. of employees involved	Time loss in working days	No. of Disputes	No. of employees involved	Time loss in working days
January	13	2,715	46,606	10	1,453	3,238
February	16	2,901	23,997	8	1,787	7,514
March	18	3,770	23,191	11	1,135	3,515
April	17	6,838	20,403	35	20,460	77,036
May	32	6,904	18,047	34	5,975	22,397
June	54	16,069	41,232	32	7,547	39,284
July	73	22,672	54,402	29	22,170	48,859
August	59	21,795	53,535	35	13,314	33,569
September	43	13,316	37,838	29	10,773	82,463
October	26	6,107	26,926	23	5,511	19,693
November	27	20,490	103,770	12	4,740	41,764
December	.	.	.	10	2,715	46,606
Total	378	123,577	449,947	268	97,580	425,938

Compiled from *Canadian Labour Gazette.* All 1942 figures are preliminary.

Table VII.—*Trend of Labour Disputes in Canada, 1931–41*

Year	Number of disputes	Number of workers involved	Time loss in man-working days
1931	88	10,738	204,238
1932	116	23,390	255,000
1933	125	26,558	317,547
1934	191	45,800	574,519
1935	120	33,269	284,028
1936	156	34,812	276,997
1937	278	71,905	886,393
1938	147	20,395	148,678
1939	122	41,038	224,588
1940	192	63,469	268,169
1941	268	97,580	425,938

Compiled from *Canadian Labour Gazette.*

In 1939 there was a loss of 17,812,219 man-days, in 1940 only 6,700,872, and in 1941, 23,047,556. During 1937 the loss of man-days was 28,424,857. The maximum loss of man-days in any month of 1941 was 7,099,392 in April. The next largest month was 4,876,744 in April 1939.

Table I shows for the United States the number of strikes, workers involved and days lost, 1935–41. The year 1937 was still the record year in number of strikes since 1917. The number of strikes began to increase in 1933 and rose steadily through 1937. The number declined steadily through 1940 and increased again in 1941.

The monthly reports on strikes issued by the U.S. bureau of labour statistics indicated that close to one-half of the strikes of 1941 involved some question of union recognition, with wages the other major issue. This distribution was characteristic of 1937 through 1941. Tables IV and V show the causes of British disputes in 1942 and their results. Two contrasts with the U.S. situation stand out—in Table IV the absence of "union recognition" unless included in "questions involving trade union principles," and in Table V the large percentage of the strikes which ended definitely in favour of the employers.

Canada had only 192 strikes in 1940 involving 63,469 workers and but 268 involving 97,580 employees in 1941. (*See* also Labour Unions; National Labor Relations Board; United States; War Labor Board, National.) (D. D. L.)

Strontium. War demand for strontium salts, used in tracer bullets and signal flares, increased the demand for the usual supplies for civilian uses that had been met by imports, and caused the opening of mines on the west coast that had been practically idle after 1918. Shipments of strontium minerals from

United States mines in 1941 amounted to 4,724 short tons, valued at $69,054, more than doubling the 1940 output. At the same time imports increased from 2,751 tons in 1940 to 3,172 tons in the first nine months of 1941, mostly from England, but with substantial amounts from Mexico, a new source of supply.

(G. A. Ro.)

Submarine Warfare.*

The War on Shipping.—*Axis Submarine Campaign.*—The question of maintenance of adequate shipping against the depredations of axis submarines was the most vital one of 1942, with the advantage, at least in Atlantic waters, largely in favour of the axis powers. With the opening of new fronts all over the world the problem of supply lines became ever more pressing and, with merchant bottoms being sunk faster than new ones could be commissioned, the United Nations seemed destined to eventual defeat. By year's end, however, new factors had developed to such an extent that, although the submarine menace was still one to tax the utmost powers of the Allies, there was cause for a much more optimistic view of the final outcome.

Total losses of usable Allied and neutral merchantmen prior to 1942 were estimated to be 8,229,000 tons, increasing each year. In 1942 the vise of censorship clamped down tight; the United States announced only the numbers of ships lost, without mention of size, while London vouchsafed no information whatever. German pretensions were, however, still received through shortwave broadcasts. In October Berlin claimed a total toll for the year of 6,600,000 tons; extended through December this would amount to approximately 8,000,000 tons. Previous experience with nazi claims proved they were exaggerated by nearly 100%. If this was still true it may be guessed that actual shipping losses of the United Nations amounted to about 4,000,000 tons during 1942, or a total loss to date of somewhat in excess of 12,000,000 tons. As a check on this figure we have an unofficial estimate early in Dec. 1942 that a total of 2,029 United Nations merchantmen were sunk during the course of the war. Assuming that seagoing cargo ships displace an average of 6,000 tons this also amounts to a total loss of slightly more than 12,000,000 tons. We hazard a guess, then, based on the meagre information available, that losses in Allied and neutral merchant bottoms during 1942 amounted to approximately 4,000,000 tons (greater than in any preceding year of the war) and that total losses for the war up to the close of 1942 were close to 12,200,000 tons.

As the year opened the submarine front was relatively quiet. The reason for this soon became apparent—a change in submarine strategy was under way and the U-boats were enroute to new hunting grounds. The new strategy quickly revealed itself. A large steamship was sunk off Nova Scotia about mid-January; the next day a tanker went down near Long Island, and five days later another was lost off North Carolina. It was evident that a large scale attack on shipping along the coast of the United States was being undertaken and that other areas were being denuded of U-boats to make this new offensive effective. By the end of January these attacks had extended the full length of the North American coast.

February saw an extension of warfare into the Caribbean, with daring attacks on tankers and the oil refinery at Aruba. Official London expressed grave concern and estimated that the axis powers had at least 100 submarines operating in the western Atlantic. Early in March Prime Minister Churchill voiced alarm at this "most serious increase in shipping losses" and added that "we are strained to the limit." The curve of sinkings rose steadily and the full import of the crucial situation began to be felt in the United States. Atlantic coastal shipping was the principal target of the marauders and North Atlantic convoys were comparatively free from assault.

By April the U-boats had worked steadily southward and the whole coast, from the bulge of Brazil to Newfoundland, was blanketed with submarines. The nazi strategy was plain to behold: (1) this new campaign was a co-operative gesture toward Japan; (2) these unprotected shipping routes were a lucrative hunting ground; (3) popular clamour in the United States might cause naval forces to be withdrawn either from the Pacific or from North Atlantic convoys; (4) the weakest point of American shipping, tanker strength, was singled out for special attention. But Washington refused to be stampeded into the trap; Pacific forces were undisturbed and North Atlantic convoys went on as before. This new battle had to go by default until its own special protection could be built up and put in operation.

In May and June, with the coming of summer, the curve of merchant sinkings rose more steeply, averaging three a day. The Caribbean and Gulf of Mexico became real hot spots. Mines laid by U-boats off Hampton Roads took a small toll. Attacks on the well-protected lend-lease convoys to Britain and Russia were at a minimum, except in the Barents sea, where combined air and undersea raids were carried out with questionable success. Late in June the navy department announced the installation of a convoy system along the Atlantic seaboard, and soon thereafter Germany admitted meeting stronger submarine defenses in this area. The month ended with a meeting in Washington between Prime Minister Churchill and President Roosevelt to discuss joint means of combating this increasing submarine threat.

July was probably the peak month of the war for shipping losses. The coastal convoy system was not yet in full operation and beaches throughout the length of the Atlantic seaboard were strewn with wreckage and defiled with fuel oil. About mid-July Navy Secretary Knox announced that shipping in the Caribbean was being escorted and that convoys would soon be established in the Gulf of Mexico. Soon thereafter the navy department reported that its meagre coastal anti-submarine forces had been augmented by British and Canadian vessels and by some units of the royal air force. That counter-measures were becoming increasingly effective was certain, and was corroborated by the statement of the nazi submarine admiral, Doenitz, that he did "not underestimate the enemy."

As the convoy system improved, August witnessed a distinct drop in sinkings in the western Atlantic and operations of axis submersibles shifted steadily southward toward the African trade routes. Increasing attention was also paid to the arctic route to Russia, and the gravity of this situation was accented by the admission that some arctic convoys were losing as much as 50% of their cargoes. An increased tempo of warfare against convoys near the Canadian coast was also noted. The German radio claimed in late September that one combined air and undersea attack on a 45-ship arctic convoy netted 38 ships, totalling 270,000 tons; this was refuted by British authorities, who insisted that the great majority of ships reached their Russian destination. Also during September Berlin claimed a highly successful U-boat attack on a westbound convoy, sinking 19 ships for a total of 122,000 tons.

The last quarter of the year saw a reduction in shipping losses on all routes, with the possible exception of those servicing Africa. This improvement was due in part to more effective anti-submarine measures on all fronts, and in part, especially in the North Atlantic, to the advent of winter with its attendant heavy seas and briefer periods of daylight. In October a flurry of U-boat activity off the bulge of North Africa again indicated the possibility of axis use of Dakar as a base. Later reports of numerous U-boats operating off Cape Town, Freetown and Sierra Leone lent credence to the probability that African communications had become a principal winter target. North Atlantic sea lanes were still receiving attention, however, and occasional raiders still showed up off the Atlantic seaboard and in the Caribbean.

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*All assertions or opinions contained in this article are the private ones of the writer and are not to be construed as official or reflecting the views of the U.S. navy department or of the naval service at large.

The outstanding event of November was the invasion of North Africa by British and United States forces. This involved an armada estimated as high as 850 ships, including warships. The axis powers certainly had some warning of this attack and disposed an underseas fleet to meet it, but, as only one ship was reported lost before the landing, it is probable that they expected the blow to strike farther south, perhaps at Dakar. But before transports, supply ships and tankers could be completely unloaded, U-boats had concentrated off the area of operations, and Berlin claimed a total of 89 merchant ships sunk or damaged, amounting to 183,000 tons. The United Nations reported heavy attacks, and Admiral Sir Andrew Cunningham estimated that at least 50 submarines were lurking off the African theatre. The loss of a British aircraft carrier and 15 transports and cargo ships was admitted. The opening of the African front necessitated long and vital supply lines from the United States and there was no doubt that these would be in constant danger of U-boat attacks; the Strait of Gibraltar and the roadstead at Casablanca are practically in the front yard of those based on the Bay of Biscay.

At year's end U-boat activity on the Atlantic seaboard had dwindled to insignificant proportions, but the sea lanes of the North Atlantic, off South America and Africa were still subject to deadly attacks. British officialdom, however, announced in late December that more than 100,000 merchantmen had been convoyed over all routes and that of these the losses were less than one ship in 200.

Japan's Submarine Effort.—The most welcome disappointment of the year was the unproductive use of Japan's large fleet of submersibles. Except for isolated stabs at unescorted ships successful attacks on the huge war shipments to Hawaii and Australia were lacking; whether this was due to lack of effort or was a tribute to effective convoys was not known. Possibly Japanese strategy called for use of its submarines with its fleet, operating against warships, but it was more probable that Japanese psychology failed to measure up to the submarine's exacting demands. During the summer a number of merchant sinkings were reported in Mozambique channel, probably the work of Japanese submarines working out of Vichy Madagascar; after the British cleaned up that island in September this activity ceased.

British Submarines Against Supply Lines.—The small but efficient force of British submarines continued its depredations on axis supply lines from Italy to Libya, and these undoubtedly had a real effect on the Egyptian campaign. In September Admiral Max Horton, chief of Britain's submarine forces, announced that his boats had, throughout the war, accounted for 300 axis supply ships. While most of these were in the Mediterranean, it was also apparent that there was still some activity against nazi supply routes to Norway and the Low Countries. A few submarines were also known to be operating briefly against the Japanese in the Indian ocean. The main effort, however, was directed against axis lines in the Mediterranean, and it was here that the greatest successes were achieved.

Russian Submarines in Commerce Warfare.—In February British official sources announced that, since Russia's entry into the war, soviet submarines had accounted for 43 axis ships, totalling 170,000 tons. Spring brought forth repeated reports of successful actions in the Barents sea against German convoys to Petsamo. During the summer persistent reports emanated from Sweden that its convoys to Germany and Finland were being attacked, with some success, in the Baltic. Although Russia denied attacks on neutral Sweden there seemed little doubt that Germany had a submarine problem of its own, in its own back yard—the Baltic. As far as was known Red submarines in the Black sea and at Vladivostok were inactive.

Pig-boats in the Pacific.—United States submarines, known affectionately as pig-boats, achieved an enviable record in the western Pacific. Strategists in Washington early realized that one of Japan's weakest points, with her ever-extending lines of communication, was her shortage of merchant bottoms; accordingly the decision to attack this weakness with everything available was speedily reached. The first indication of this was in early January when Tokyo bleated about the loss of two large ships in its home waters. From then on navy communiques reported an ever-growing list of vital Japanese shipping sunk. Early in the year a number of submarines operated from the Philippines and Java, and later from Australia, but, while these scored some notable successes in the China sea and southern waters, the bulk of sinkings came from those that made the long trek from Pearl Harbor to Japan. Late in December Premier Tojo admitted losing 65 merchantmen and warned that this loss was serious. But United States figures at the end of the year indicated that, considering cargo bottoms only, its submarines had sunk 85, probably sank 12 more, and damaged 18. Using, as before, an average of 6,000 tons per ship, it is estimated that over 500,000 merchant tons can be credited to the pig-boats.

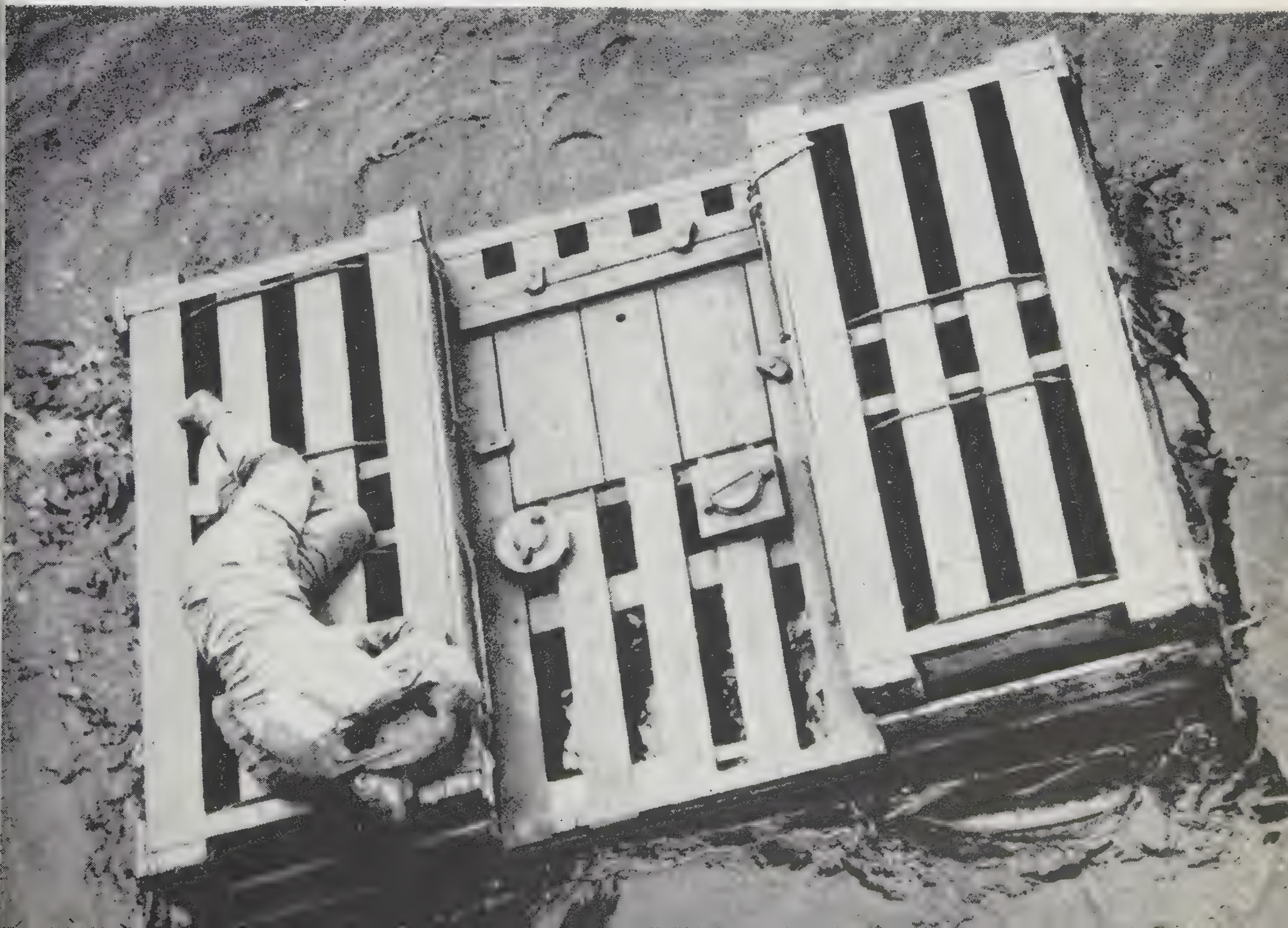
Combative Measures.—As the trend of the whole global war might well be influenced by shipping losses, every effort was bent toward stemming the tide of U-boat warfare. Combative measures took several forms. Most important was extension of the convoy system, but, because of lack of escort vessels in suitable numbers to cover all threatened areas, this was difficult. As soon as one shipping lane was well protected the elusive U-boats shifted to another route. The only solution was fully to protect one sea lane at a time, extending the system as new craft became available. All types of small vessels were used in this work—destroyers, corvettes, patrol craft, yachts—augmented by planes and blimps. The latter, with their ability to hover and attack, proved unexpectedly valuable. In June Mexico's entry into the war added its small navy to the almost non-existent escort forces in the Gulf of Mexico, and during the same month the convoy system was partially installed from Florida to Maine. By midsummer effective new types of submarine killers were coming off the ways in flocks, and the system was gradually extended to the Caribbean and later to the Gulf of Mexico. The efficiency of these measures was proved by the withdrawal of most axis submarines to happier hunting grounds. Brazil's navy and air force entered the fight when that country declared war in August, and this reinforcement helped considerably in protecting South American waters. At year's end it appeared that the important shipping lanes still to be safeguarded were the African coastal route and the United States-Good Hope lane. The coming of Dakar into the Allied fold should contribute greatly to the ease of this task—when and if strong anti-submarine forces are based on this strategic port.

The struggle to launch new bottoms faster than old ones were destroyed was another important phase in combating the U-boat. British yards built rapidly and well, but their capacity was limited. The real effort was expected to be made in the United States, where President Roosevelt set a seemingly impossible goal of 8,000,000 tons of new shipping in 1942. Shipbuilders, faced with a shortage of critical materials and with labour troubles, accomplished miracles. In April Maritime Commissioner Vickery reported that the United States was building two ships a day, but replacements were still far behind sinkings; in July he announced

PHOTOGRAPH OF A RAMMED GERMAN U-BOAT, close by the Canadian destroyer "Assiniboine" which sent it to the bottom of the north Atlantic in 1942. The German crew surrendered just before the submarine sank

GERMAN "SUBMARINE FORTRESS" on the Atlantic coast, built to protect docked U-boats from aerial attack. This photograph was smuggled out of German-occupied France in 1942

CHINESE SEAMAN, unconscious from exposure and cold, adrift on a life raft ust before his rescue by a Canadian minesweeper in Jan. 1942. He was one of a few survivors from a merchant ship torpedoed off Nova Scotia



that the building rate had now passed the rate of United States losses—but not of United Nations losses; in September the rate finally reached three new ships a day. The Allied invasion of North Africa in November created a new supply problem and increased the number of bottoms, especially tankers, required; to offset this Admiral Cunningham asserted that the opening of the Mediterranean to Allied shipping would, by obviating the long cruise around Good Hope, amount to a saving of at least 2,000,000 tons. Although losses were still dangerously high there was reason for hope in the splendid achievements of American and British shipbuilders and it seems certain that the goal of 8,000,000 tons was reached. (*See* also SHIPBUILDING.)

Heavy air attacks on the bases and building yards of U-boats was another method employed to combat the peril. Submarine bases from the eastern Mediterranean to northern Norway were harried with ever-increasing bomb-loads, with special attention to bases in occupied France—Le Havre, Brest, St. Nazaire, La Pallice. A commando raid on St. Nazaire in March introduced a change in technique; reminiscent of the Zeebrugge raid in 1918, it employed an explosive ship to shatter the lock gates, presumably leaving the U-boats in the basin high and dry. Heavy bombing raids were also directed at submarine building yards at Hamburg, Emden, Bremen, Flensburg, and faraway Danzig. Even factories in the interior, known to be manufacturing submarine parts, received their share of attention, but the real effect of these raids on retarding submarine construction can only be guessed at. Germany countered the bombing of bases by building bombproof shelters over the slips where U-boats lay up for rest and overhaul and it was doubted if much vital damage was inflicted.

Anti-submarine material was undergoing constant improvement. The use of echoing devices against submarines, both submerged and on the surface, developed rapidly, with excellent results. Depth charges were improved to cope with strengthened U-boat hulls. New types of patrol craft were being turned out in numbers that should soon be sufficient to give all coastal shipping routes a reasonable amount of protection.

In summary, then, it appeared that the menace of axis submarines was still the chief obstacle to be overcome if the United Nations were to win the war. Global warfare involved a multiplicity of supply lines and these had to be adequately protected if far-flung troops were to operate successfully. By the close of 1942, such was not the case. Shipping losses remained dangerously high. U-boats were probably produced faster than they were destroyed. But there was reason for cautious optimism. The increase in tonnage losses over 1941 was largely due to lack of protection of American shipping in the western Atlantic; this deficiency was almost overcome. In addition, the rapid rate at which new bottoms were launched, the measures taken to retard U-boat construction, and the improvement of anti-submarine material gave rise to the belief that 1943 would witness a downward rate in sinkings and the beginning of the end of U-boat depredations.

Submarines in Naval Actions.—Germany, Italy and the United States made the principal objective of their submarine fleets the shipping of their respective enemies. Great Britain, too, concentrated on lines of communication but, as these lines were supplying enemy forces, the objective had also a military nature. Japan's lack of success against shipping intimates the possibility that its submersibles were working mainly in conjunction with surface naval forces, against naval objectives, although their success in this field was also limited. There were, however, numerous occasions, planned or otherwise, when submarines operated destructively against combatant vessels.

In January the Admiralty admitted the loss of the light cruiser "Galatea," which received three submarine torpedoes off Alexandria. Shortly thereafter a United States submarine reportedly sank either a Japanese transport or auxiliary carrier. The same month the Admiralty announced that a British submarine had made a sure kill of a U-boat and had damaged an Italian destroyer. Late in January a Nipponese aircraft carrier was reported probably sunk by a United States submarine in the action at Macassar straits. The month ended with the delayed report of the loss of H.M.S. "Barham," British dreadnaught, in Nov. 1941, by four submarine torpedoes off the Libyan coast—a real prize.

Early in February the navy department announced the loss to a Japanese submarine of the naval oiler "Neches," and later in the month the Fighting French corvette "Alice" and the United States Coast Guard cutter "Alexander Hamilton" fell victims to U-boats while on escort duty in the North Atlantic. This was followed by the report that a British submarine had damaged a nazi cruiser, believed to be the "Prinz Eugen." Early in March the navy department claimed its pig-boats sank a Japanese destroyer and put out of action an aircraft carrier and three cruisers, probably near Java. Shortly thereafter the old United States destroyer "Jacob Jones" was a U-boat victim off the Delaware coast, and British submarines reported the sinking of two Italian submarines in the Mediterranean. As March ended, the Admiralty announced the loss of the light cruiser "Naiad" by submarine torpedo, probably while escorting a Murmansk convoy.

April opened with the reported loss of a Japanese light cruiser to a United States submarine, and the damaging of two more by the same pig-boat, operating south of Java. Following this the sinking of an Italian heavy cruiser off Libya by a British submarine was reported. In the southwest Pacific a United States submarine claimed the sinking of a Japanese destroyer, while later in the month another waylaid and probably sank a Japanese submarine. As the month closed the German radio claimed that U-boats had entered the Mediterranean for some months past and were responsible for sinking three cruisers, seven destroyers, four corvettes and five patrol boats in 1942; all these losses were not reported by the Admiralty and are subject to some doubt.

Early in May the navy department announced the loss of another old destroyer, "Sturtevant," off the Florida coast, and soon thereafter the Admiralty admitted that the heavy cruiser "Edinburgh" had gone down before submarine torpedoes, probably in an arctic convoy. About mid-month a navy communique stated that a Nipponese submarine had fallen victim to a pig-boat in the western Pacific, while in the Caribbean the United States destroyer "Blakely" suffered a damaging submarine attack. A later communique announced serious damage by submarine to a Japanese heavy cruiser in the western Pacific.

June was a banner month for submarines. In the Midway action a pig-boat scored three hits on the Mikado's carrier "Soryu"; due to combined bomb and torpedo pounding this prize later went to the bottom. But the score was soon more than evened. The United States carrier "Yorktown," returning disabled to Pearl Harbor, was waylaid by a Japanese submersible which sank not only the "Yorktown" but also the destroyer "Hammann," which lay alongside. At mid-month, during heavy convoy actions in the Mediterranean, a British submarine captain reported that he sank an Italian heavy cruiser and damaged the battleship "Littorio." Other June victims were an Italian destroyer and the United States seaplane tender "Gannet."

In July United States submarines became active against Japanese forces operating in the Aleutians. Attacks resulted in the sinking of six destroyers, the probable sinking of one, and the damaging of another. These actions were followed by reports from Moscow that a Russian submarine had torpedoed and seriously damaged the nazi battleship "Tirpitz" during an arctic convoy battle; this is unverified. In the western Pacific proof of the sinking of a large Japanese destroyer by a United States submarine was afforded by a photograph of the stricken vessel taken through the periscope, the first of its kind.

In early August the Berlin radio claimed the sinking in the Mediterranean of the British carrier "Eagle" during an attack on a Malta convoy; this loss was quickly acknowledged by London. During the same action a British submarine claimed heavy damage to an Italian cruiser. Late in the month United States submarines in the Aleutians sank an unidentified Japanese cruiser or destroyer and probably sank another destroyer. In September Admiral Horton announced that to date British submarines had sunk a total of 87 axis warships of all categories. In mid-September a telling blow by a Nipponese submarine was struck in the southwest Pacific when the United States carrier "Wasp" received three torpedoes; aggravated by magazine and gasoline explosions the damage was such that she quickly sank. Soon after this the Canadian Navy Minister admitted that his destroyer "Ottawa" and the escort vessel "Racoon" had fallen victims to U-boats in a convoy battle, while Berlin claimed two destroyers and a corvette in what was probably the same action. In another axis attack on an arctic convoy Berlin claimed the sinking or "knocking out" of four destroyers and two patrol craft, while the Admiralty admitted losing the destroyer "Somali" and the minesweeper "Leda." At month's end Berlin claimed the U-boat sinking of another destroyer.

In October a Japanese heavy cruiser and large seaplane tender went down under attack by United States submarines in the western Pacific. November reports showed an auxiliary Nipponese carrier attacked by a pig-boat in the same area and left burning. The African coup of the United Nations was cheap in warship losses, the price being one British carrier, probably a converted job, although Berlin also claimed damage to a British destroyer. Soon after this the navy department reported the sinking in the western Pacific by United States submarines of a Japanese destroyer and patrol vessel. The last November report was that of the damaging and beaching of the United States gunboat "Erie" as a result of submarine attack in the Caribbean.

In December the probable loss of two more Japanese destroyers was announced—victims of United States submarines. Toward the end of the month London reported that an Allied (probably Greek) submarine in the Mediterranean sank an axis destroyer. At year's end the total warship toll for United States submarines was announced to be 21 sunk, 8 probably sunk and 9 damaged. Those listed as sunk were 3 cruisers, 12 destroyers, 2 tenders and 4 of miscellaneous type.

The most fantastic claim of the year was entered by the commander of the Italian submarine "Barbarigo." In May he reported having sunk off Brazil an American battleship under destroyer escort; in July he claimed to have placed four torpedoes in the hull of another United States battleship off Africa, causing its total loss. For these exploits he was showered with honours and promotions, but in October his claims were thoroughly spiked by British data which proved his attacks were carried out, respectively, on a British freighter and corvette.

Submarines were used for military purposes other than direct attack on enemy vessels throughout 1942. Early in the year it was reported that U-boats were being used as troop transports in the Mediterranean. The diary of a captured nazi soldier also referred to 6,000-ton U-boats carrying troops and supplies to Libya, but this was considered doubtful. It was possible, however, that the American descent on Makin island was secretly accomplished by use of large submarines as transports for marine raiders.

Inconsequential bombardments have been carried out sporadically by Japanese submarines at objectives on Australia, Canada, Oregon, California, New Hebrides, Samoa and Midway. The same manoeuvre when indulged in by U-boats at Aruba and Curaçao had somewhat better results. The only report of Allied submarine bombardments came late in the year when a British submarine, on three successive nights, shelled the railroad between Tripoli and El Agheila and damaged it considerably.

Submarines of all nations were probably used for all-important reconnaissance and observation of harbours; Admiral Nimitz stated in June that his pig-boats had performed brilliantly as scouts. During the siege of Bataan and Corregidor it was officially announced that a submarine had slipped at night alongside a Corregidor dock, landing ammunition and bringing off treasure and important passengers. Judging by the lack of other submarine activity during this period and the large number of evacuees it is probable that a regular ferry service was then in operation between Australia and Corregidor.

Submarines also saw use in transporting spies, the first reported instance being the landing of nazi saboteurs on the United States coasts in June. The secret mission of General Mark Clark to North Africa, paving the way for invasion, was transported by a British submarine, and the same craft also made possible the escape of the French General Giraud from a Vichy-French port.

Submarine Losses.—*Germany and Italy.*—The European axis powers admitted no losses whatever during the year. In 1941 it was estimated that nearly 200 axis submarines met death at the hands of their enemies. A search of the records for 1942 indicated that only 11 individual sinkings were officially claimed by the United Nations, while 38 more were reported unofficially—a total of 49. In September the Admiralty's First Lord Alexander stated that losses during July and August had been the highest of the war, and at the same time the Admiralty said it believed that Italy now had little more than half its original force remaining. In October Mr. Alexander surprisingly claimed that 530 axis submarines had been sunk or damaged during the course of the war by the British and American navies alone, not counting those sunk by air forces. As this figure was far in excess of any previously given out there was a tendency by the press to discount it, but on further analysis it seemed likely to be correct, although in accepting it one must remember that "damaged" does not infer lethal injury. It was known that the rate of U-boat construction was high and, as the increase in numbers of U-boats at sea was not proportionately larger, it was safe to assume that many were being lost. Because of the nature of submarine operations losses could never be determined definitely by anyone except the nation that sent them out and failed to get them back, but this writer believes that German and Italian losses would eventually be revealed to average over 200 a year.

Japan.—Official United States sources announced the sinking of 12 Japanese submarines during 1942, and unofficial claims were made to 14 more. In view of the paucity of Nippon's submarine operations and of anti-submarine measures in the Pacific the unofficial claims should probably be discounted. But the number sunk was undoubtedly greater than that officially claimed, for the reason that official claims were made by the United States only on definite proof. It was estimated that Japan lost approximately 20 submarines during the year.

United States.—Only four submarines were reported lost during the year, including the "S-26" which was not sunk by enemy action. The total for the war stood at five, and, except that some reports might be delayed, this was believed authentic. Considering the active role played by the pig-boats this figure was exceedingly low and paid a high tribute to both personnel and material. One Netherlands submarine, while operating with United States forces was also lost.

Russia.—Soviet officialdom maintained complete silence on submarine losses, and no axis claims of having sunk Russian submarines were noted.

France.—Vichy admitted the loss of a submarine in operations against the British off Madagascar. Three other Vichy-French submersibles were unofficially reported lost in action off Casablanca in November. Another three escaped from Toulon in December and joined the Allies at Algiers, while it was also reliably reported that 8 to 12 submarines at Dakar and one at Alexandria had cast their lot with the United Nations.

New Construction.—*Germany.*—There was no doubt that Germany, realizing the tremendous importance of these weapons, concentrated on building submarines and turned them out as rapidly as possible. The growing dearth of materials and labour, and the ever-increasing raids on submarine yards and dispersed parts factories, operated together to retard production and it is doubtful if the nazis' vaunted goal of a U-boat a day was reached. It is probable, however, that from 250 to 300 were produced in 1942 and that the fleet was still increasing in size. U-boats are of four general classes. The smallest, about 250 tons, is used for training and work in home waters. The next class is 517 tons, length about 220 ft., surface speed 16 knots, mounts 5 torpedo tubes and one 3.5-in. gun, with endurance of about 10,000 mi. at normal cruising speed. The newest class is of 740 tons, the increased size giving it the endurance (14,000 mi.) necessary for offensive patrols far from home. This type has a speed of 18 knots, mounts 5 torpedo tubes and a 4.1-in. gun; it also has better armour protection to withstand light gunfire while attacking in the awash condition. It is simple, rugged and easy to handle. The nazis also build U-boats of 1,060 tons, but these are comparatively few in number and are used chiefly as minelayers. There were persistent rumours of still larger types, some guesses running up to 6,000 tons, for use as troop carriers and submarine supply ships. The rumours lacked verification and were considered unlikely. The newer U-boats were built to withstand much greater depths than formerly, 500 to 600 ft., and more torpedo-carrying capacity was provided. It was probable that they were now equipped with radar for use on the surface for locating victims in darkness or fog, and they also made considerable use of the electric torpedo which, although it had a shorter range, left no wake. Underwater listening and echo devices were reported to be much improved. It had long been rumoured that Germany had a new engine which used fuel oil on the surface but operated submerged on a mixture of hydrogen and oxygen, and this rumour again received much notice during the year. As the practical drawbacks to such a design more than offset the advantages claimed, the rumour was seriously doubted. Another development was the magnetic explosive head on torpedoes, which detonates either on contact with the hull or when it passes under the keel of a vessel.

Italy.—The fascists build numerous types of submarines, although it was possible that, under the influence of nazi specialists, there was a trend toward standardization. No estimate of the rate of submarine construction was possible, but it was thought to be insufficient to replace those sunk. Italian submarines were known to be less rugged than U-boats and were less efficiently operated. The distinctively large conning towers were cut down in order to reduce the silhouette.

Japan.—Several types of submarines are built in Japan but the best known of these was the long-range I-class, which is able to make the round trip across the Pacific. These boats displace between 1,500 and 2,000 tons. Japan continued to use midget submarines, as was demonstrated by the ineffectual attack in June on Sydney. Three of these were sunk but were later raised and found to be 57 ft. long, larger than those used at Pearl Harbor; they were fitted with net cutters, 18-in. torpedoes and a 600-pound explosive charge. Most interesting was a keel fitting which indicated they were carried on the deck of a large submarine until launched for their close-in attack. Nothing was known of the current rate of Japanese construction, but lack of facilities should keep it low.

Great Britain.—No figures or estimates on submarine construction during the year were available. As British submarines achieved an enviable record of performance it might be expected that the value of this weapon was fully realized and that construction at least offset losses.

United States.—With American submarine operations aimed almost entirely at Japan the long-range 1,500-ton boat was favoured. Almost all new construction was of this capable class. While there had been little change in basic characteristics of these boats, all new developments in searching and ranging devices were installed. No exact figures as to numbers under construction were available, but building was greatly accelerated. In late spring congress voted $900,000,000 for new construction which would add more than 100 submarines to the flotillas, bringing the total eventually to well over 200. The excellence of design was proved by the few losses incurred and the fact that many stood up under prolonged and heavy depth-charging.

Russia.—No information available.

Submarine Personnel.—Despite rumours, there was no evidence that the morale of U-boat crews was in any way strained. While it was known that relatively green crews were seeing active service, the standard of performance remained high. The nazi submarine admiral, Doenitz, paid meticulous attention to morale; his officers were well-trained, were encouraged to be individualists and to use initiative, and were thoroughly propagandized in the party line. Democracy between officers and men was fostered. Italian personnel was thought to be much inferior to that of Germany, and Japanese crews, largely because of lack of achievements, were not rated highly. British morale remained excellent and officers and crews functioned brilliantly. The high spot of the year, however, was the splendid performance under gruelling conditions of the hitherto untried men of the United States submarines. The "Silent Service" had always been highly restrictive, and the careful weeding-out of the unfit throughout the years paid high dividends in the crucible of war.

Submarine Tactics.—Reports of nazi use of the famed "wolf-pack" tactics diminished during the year and it appeared that U-boats were operating with more freedom of movement. This was due partly, it is believed, to the inclusion of auxiliary aircraft carriers with important convoys, and partly to the fact that U-boat crews were lacking in the experience necessary to make such attacks profitable. While twilight seemed still to be the favourite time for attack, there were also many night attacks which were probably conducted by means of radio-echoing equipment. In such cases the U-boat approached its prey in an awash condition, ready for complete submergence if counter-attacked, in which case it would be entirely under in half a minute and might go to depths greater than 300 ft. to escape depth charges. The usual firing range for U-boats was from 500 to 800 yds., though in case of attack on a convoy this might increase to over 1,000 yards. As far as is known, submarines of other nations worked independently and the year brought forth no radical changes in tactics. (*See* also BLOCKADE; NAVIES OF THE WORLD; WORLD WAR II.) (E. E. HA.)

Sudan: *see* ANGLO-EGYPTIAN SUDAN.

Sugar.

Effective consumer rationing of sugar was begun in the United States in 1942 at the rate of ½ lb. per person per week, and industrial uses of sugar were curtailed be-

SUGAR being unloaded from a freight car and stored in a warehouse of the Brooklyn navy yard in 1942, for later transfer to U.S. warships

cause of war-reduced imports and the need for diverting sugar to the manufacture of alcohol for smokeless gun powder. The United States production of cane sugar in 1942 was estimated by the department of agriculture as 537,000 short tons of 96° raw sugar, the second highest crop on record. The 1941 output was 419,000 tons and the ten-year (1930–39) average 355,000 short tons. Production was from two states: Louisiana, 420,000 tons in 1942 and 323,000 tons in 1941; Florida, 117,000 tons in 1942 and 96,000 tons in 1941. United States production of beet sugar in 1942, estimated from factory reports, was 1,664,000 short tons, equivalent to 1,780,000 tons raw value, compared with 1,484,000 tons, equivalent to 1,588,000 tons raw value, in 1941. The ten-year average was 1,363,000 short tons. Inadequate labour supply handicapped sugar beet growers throughout the season. The acreage of beets harvested was 979,000 ac., a new record; (754,000 ac. in 1941). The yield was 12.2 tons per ac. in 1942 compared with 12.5 tons per ac. in 1941. Acreage of sugar cane in 1942 was 302,900 ac., compared with 256,000 ac. in 1941. United States deliveries of sugar to the allies from April 29, 1941, to Oct. 31, 1942, were reported by the department of agriculture as 382,897,206 lb. of raw cane sugar and 165,721,716 lb. of granulated sugar. Shipments of sugar from Hawaii to the United States during the first ten months of 1942 were 674,958 tons. This was 137,500 tons less than the shipments from Hawaii in the same months in 1941. Most of this reduction, however, was in the several months immediately following the attack on Pearl Harbor by the Japanese. Throughout most of 1942, shipments were maintained at about normal volume. Labour shortages handicapped sugar production in Hawaii throughout the year. A large part of the 1942 crop in Cuba was converted to alcohol for the manufacture of smokeless powder. (*See* also BEE-KEEPING; MAPLE PRODUCTS; RATIONING; SYRUP, SORGO AND CANE.)

(S. O. R.)

U. S. Production of Beet Sugar by States, 1942 and 1941

State	1942 short tons	1941 short tons	State	1942 short tons	1941 short tons
California	358,000	313,000	Idaho	115,000	107,000
Colorado	334,000	299,000	Utah	81,000	82,000
Michigan	176,000	158,000	Wyoming	71,000	79,000
Montana	142,000	118,000	Ohio	56,000	46,000
Nebraska	115,000	121,000	Other states	216,000	161,000

Suicide Statistics.

Indications provided by the mortality experience of industrial policyholders of the Metropolitan Life Insurance company showed that the death rate from suicide in the United States in 1942 was about 10% less than in 1940. In the latter year, the last of complete record, 18,907 deaths from suicide were reported for the United States, the death rate being 14.4 per 100,000 population. The reduction in suicide mortality just noted is a situation commonly experienced during periods of war. Provisional records for England and Wales showed a drop of about 15% in the suicide death rate for males from 1939 to 1941. German data pointed to a decrease of about 30% in the suicide death rate over the same period. These decreases may be partly accounted for by a submergence of individual worries in the common national problems in time of war. Improved economic status resulting from intense industrial war activity may be another contributing factor.

An analysis of police records of suicides in 27 large American cities in 1941 showed the following distribution of methods used: asphyxiation, 21.2%; firearms, 20.4%; hanging, 19.0%; poison, 16.3%; drowning, 5.2%; cutting instruments, 4.5%; miscellaneous, 13.4%. In a total of 161 American cities surveyed, the death rate from suicide in 1941 was 14.2 per 100,000, while in 1940, it was 16.3. The corresponding figures for 11 cities in Canada were 7.8 per 100,000 in 1941 and 8.2 in 1940.

When deaths are allocated according to place of residence, it is found that suicide is most frequent in large communities and least frequent in rural areas. Thus, in 1940, cities of 100,000 and over in the United States had a suicide death rate of 16.8 per 100,000; cities of 10,000 to 100,000, a rate of 15.6; cities

Deaths from Suicide per 100,000 White Persons in the United States, 1940

State	Rate per 100,000	State	Rate per 100,000
United States	15.5	Montana	21.1
		Nebraska	16.8
Alabama	11.7	Nevada	41.3
Arizona	15.2	New Hampshire	16.3
Arkansas	8.0	New Jersey	16.9
California	27.2	New Mexico	11.2
Colorado	19.4	New York	17.2
Connecticut	17.9	North Carolina	10.4
Delaware	15.2	North Dakota	9.7
District of Columbia	25.9	Ohio	16.3
Florida	19.8	Oklahoma	8.7
Georgia	12.1	Oregon	16.9
Idaho	17.7	Pennsylvania	13.2
Illinois	15.0	Rhode Island	12.5
Indiana	17.3	South Carolina	9.7
Iowa	15.2	South Dakota	10.5
Kansas	13.0	Tennessee	10.0
Kentucky	10.3	Texas	13.6
Louisiana	12.4	Utah	12.2
Maine	15.7	Vermont	16.7
Maryland	18.0	Virginia	18.4
Massachusetts	13.3	Washington	22.7
Michigan	14.2	West Virginia	10.6
Minnesota	14.4	Wisconsin	15.2
Mississippi	10.1	Wyoming	23.5
Missouri	16.6		

of 2,500 to 10,000, a rate of 15.1; and rural areas, 12.0.

The white population of 5 states, all in the far west, and the District of Columbia had death rates of more than 20 per 100,000 in 1940; the states were Montana, Wyoming, Nevada, Washington, and California. On the other hand, rates of less than 10 per 100,000 for the white population were found in only four states, North Dakota, South Carolina, Arkansas, and Oklahoma. Suicide death rates for each state are shown in the table on p. 671.

The suicide death rate varies strikingly with race, sex and age. In the white population of the United States in 1940, the rate was 15.5 per 100,000; Negroes had a rate of only 4.0; Indians, 8.4; Chinese, 45.2; and Japanese, 26.0. Males, of all races combined, had a death rate of 21.9 per 100,000; females, 6.8. The death rate in the general population varied with age from 6.1 per 100,000 at ages 15 to 24 years, to 13.5 at ages 25 to 34, to 19.4 at ages 35 to 44, to 27.7 at ages 45 to 54, and then to about 33 at ages 55 and over.

During 1940, the peak month was April with a suicide rate of 16.2 per 100,000; the low points were 12.5 in January and 12.9 in November.

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Sulphonamide Drugs: *see* BACTERIOLOGY; EAR, NOSE AND THROAT, DISEASES OF; UROLOGY.

Sulphur.

The production of sulphur in the United States in 1941 increased by 15% over 1940, to 3,139,253 long tons, while shipments increased 33% to 3,401,410 tons. Stocks at the mines declined by 300,000 tons, to 3,900,000 tons, which is still more than a full year's supply. Imports in the first nine months of 1941 were 20,954 tons, mostly from Canada, and exports were 474,551 tons of crude and 24,683 tons of refined, a total of 499,234 tons, against 766,213 tons in 1940. Domestic consumption was estimated at 2,239,000 tons in 1941, an increase of 22%. Production during the first three quarters of 1942 was 2,667,087 tons, and shipments 2,584,062 tons; stocks had increased to 4,972,045 tons.

The Chilean production was 25,182 metric tons in 1941, and exports 21,719 tons, both declines from 1940. Specific information was lacking from other producing countries, of which Italy and Japan are the most important. (G. A. Ro.)

Sumatra: *see* DUTCH EAST INDIES; NETHERLANDS COLONIAL EMPIRE.

Sunday Schools.

The largest of the 51 national and international bodies which are federated in the World's Sunday School association was in 1942 the International Council of Religious Education, representing 48 Protestant denominations in the United States and Canada, and enrolling about one-half of the Sunday school scholars of the world. Because of war conditions, its 21st quadrennial convention was limited to one day, and held in Chicago, Feb. 10, 1942. A memorial service was held for Russell Colgate, president of the council since 1924, who had died on July 31, 1941. The president for the ensuing quadrennium was Governor Harold E. Stassen, of Minnesota. The convention inaugurated a "United Christian Education Advance," in accordance with a carefully planned program of interdenominational co-operation. In addition, the council developed special programs to meet the religious educational problems and needs created by the wartime dislocations of population. With the Federal Council of the Churches of Christ in America it participated in the work of the Christian Commission for Camp and Defense Communities, and was one of the sponsors of the Service Men's Christian league, a voluntary organization of men in military service.

In countries controlled by the axis powers, Sunday school work suffered because movements appealing to or seeking to organize Christian youth were increasingly suspect and for the most part banned. In Spain, Protestant schools were "provisionally suspended" with no likelihood of the suspension ending. Yet encouraging word concerning the maintenance of Sunday school work came from Czechoslovakia, Finland, Portugal, Sweden and Norway. In China the work of the National Committee for Christian Religious Education continued to be effective under hard conditions. (*See* also CHURCH MEMBERSHIP.)

(L. A. WE.)

Suñer, Ramón Serrano: *see* SERRANO SUÑER, RAMÓN.

Superphosphates.

The production of superphosphates in the United States in 1941 was 4,196,314 short tons of all grades, equivalent to 5,055,737 tons of 16% grade, the standard of the industry. This is an increase of 12% over 1940. The consumption of phosphate rock was approximately 2,860,000 tons, and of sulphuric acid 2,333,000 tons. Both production and shipments in the first three quarters of 1942 were considerably higher than in 1941. (G. A. Ro.)

Supreme Court of the United States.

Personnel.—At the end of 1942 the high bench comprised Chief Justice Harlan Fiske Stone and Associate Justices Owen J. Roberts, Hugo L. Black, Stanley Reed, Felix Frankfurter, William O. Douglas, Frank Murphy and Robert H. Jackson.

The latest appointee to the court in 1942, James F. Byrnes, resigned to become Director of Economic Stabilization, an office created by presidential order to carry out the purposes of the Amended Price Control act of Oct. 1942. In Jan. 1943 Wiley B. Rutledge was named to fill the vacancy.

The government's appeal in the anti-trust suit against the Aluminum Company of America and its affiliates was dismissed for want of a quorum of justices qualified to sit in the case: the Chief Justice, Mr. Justice Reed, Mr. Justice Murphy and Mr. Justice Jackson were unable to participate in the questions of the case on the merits.

The court convened on Dec. 21, 1942, to pay tribute to one of its most distinguished members, the late Louis D. Brandeis. In reviewing Justice Brandeis' active judicial service, which covered a period of 23 years from 1916 to 1939, Chief Justice Stone said:

> These bear internal evidence of the prodigious labour and painstaking care with which they were prepared. In cases involving the validity of legislation or the application of statute or common law to new fact situations, his opinions, like his briefs at the bar, give us the results of his extensive researches into the social and economic backgrounds of the questions presented, buttressed by expert opinion and accounts of the experience in other states and countries. His statements of fact and law were simple, direct, orderly, powerful, proceeding to their conclusion with convincing logic. In their discussions of the principles of constitutional freedom and of civil liberty they rise to heights of dignity and power which place them among the great examples of legal literature. He was never willing to sacrifice clarity to the turn of a phrase, for he wished above all to be understood. For laymen as well as lawyers his opinions are a compendium of legal aspects of the social and economic phenomena of our times. Together they constitute one of the most important chapters of the history of this court.

Issues.—The court met in extraordinary session to hear the petition of the German saboteurs on July 29, and in an opinion which safeguards all the freedoms of a democratic state confirmed the authority of a military tribunal which eventually condemned six to death and the remaining two to life imprisonment.

The supreme court considered the limits of governmental authority as between federal and state governments, the right of individuals in relationship to government control, and the interpretation and application of federal legislation. In one of its most significant decisions it has ruled that when federal laws have pre-empted the field, a state may not enact conflicting legislation. Accordingly an Alabama statute was invalidated which authorized inspection and condemnation of packing stock butter transported into the state as raw material used in the manufacture of processed or renovated butter intended for shipment in interstate commerce (*Cloverleaf Butter Co.* v. *Patterson*). On the other hand, mere passage of the National Labor Relations act was held not to have impaired the sovereignty of the several states in regard to regulating such union activities as mass picketing threatening employees, picketing their domicile, and obstructing plant entrances and free use of public streets. (*Allen-Bradley Local No. 1111* v. *Wisconsin Employment Relations Board.*)

Civil rights were again championed by the supreme court when it reversed a conviction for contempt of court arising out of a newspaper publication of a telegram denouncing a court decision and the publication of certain editorials admonishing a judge to deny probation in a pending case. It declared unconstitutional a statute requiring sterilization for habitual criminals when that class was arbitrarily designated, and struck down a Georgia statute providing that any person who contracts to perform services with intention not to perform, as calling for involuntary servitude. (*See* LAW.)

In the realm of labour, out of 60 cases 20 were reversed by the court. The principles set forth included restriction of labour's right to picket even though peaceful; the definition of the scope of employees' right to freedom of speech under the Wagner act; application of minimum wage and maximum hour provisions of the Fair Labor Standards act to various wage payment plans; computation of regular pay where employees work irregular hours for a fixed weekly wage by dividing his weekly wage by his weekly hours of labour; applicability of the act to service employees employed by the owner of loft buildings leased to manufacturers of goods for interstate commerce; the right of an employer to fix by contract with his employees the regular rate of pay for the purpose of computing overtime; lack of authority of the Wage-Hours administrator to delegate power to sign and issue a *subpoena duces tecum* (for production of records); and the inapplicability of the Norris-La Guardia Anti-Injunction act to controversies in which the employee-employer relation has no bearing.

Statistics.—At the supreme court's 1941–42 term decisions of courts below were affirmed in 40% of the cases decided by opinion. Seventy cases were affirmed; 85 reversed and 2 modified. A total number of 162 majority opinions were announced by the supreme court during the 1941–42 term, disposing of 174 cases. This was four fewer opinions than announced at the 1940–41 term. The number included opinions in several cases reargued at the 1941–42 term due to the failure of the court to dispose of them at the preceding term because of an equal division of the court. The total number of cases on the Appellate docket, 1,290, was larger than for many terms.

In contrast with the preceding term in which there were only two instances of a 5-to-4 division of the court, and three instances of a 4-to-3 division by an eight-Justice bench, the court at its 1941–42 term divided 5-to-4 in deciding 18 cases disposed of by 16 majority opinions. In three of the 16 instances, the minority was composed of Chief Justice Stone and Associate Justices Roberts, Frankfurter and Byrnes. In four instances, Associate Justices Black, Reed, Douglas and Murphy dissented from the five-vote majority opinion. Three of the instances involved labour law.

In the 16 instances in which there was a four-member dissent from the majority opinion, Associate Justices Black and Douglas were together in 10 instances, and Mr. Justice Murphy joined with them in seven of these. On the other hand, the Chief Justice and Associate Justices Frankfurter and Byrnes joined together five times in dissenting with another member of the court from a decision rendered by a majority of five. In one instance, Chief Justice Stone joined with Associate Justices Black, Douglas and Murphy to cause a 5-to-4 division of the court.

Number of Opinions, U.S. Supreme Court, 1941-42 Term

	Favourable to Government	*Against Government*
Federal tax cases	14	7
Federal labour cases	9	4
Federal regulation cases (other than labour)	15	7
Federal criminal cases	6	4
Federal miscellaneous cases	9	4
Total	53	26
State tax cases	7	2
State regulation cases	6	5
State criminal cases	3	3
State miscellaneous cases	2	3
Total	18	13
Total federal and state government cases (110)	71	39

A statistical summary of the court's work indicates:

Original Docket: Total cases 12; cases disposed of 2; cases remaining 10.

Appellate Docket: Total cases 1,290; cases disposed of 1,166; cases remaining 124.

Totals: Total cases 1,302; cases disposed of 1,168; cases remaining 134.

Distribution of cases disposed of during term: Original cases 2; Appellate cases on merits 381; Petitions for certiorari 785.

Cases Remaining on Dockets: Original cases 10, Appellate cases on merits 65; Petitions for certiorari 59.

Hearings Granted: Petitioners for certiorari granted 166; question of jurisdiction noted or postponed 34; petitions for rehearing granted 11.

(*See* also CIVIL LIBERTIES; LAW.) (B. WE.)

Surgery.

Although the value of blood transfusion had been known for some time, the importance of the use of blood plasma, blood albumin, and other blood substitutes in the treatment of shock has recently been emphasized. Plasma and albumin have the distinct advantage over whole blood in that no matching is necessary. Plasma and albumin are as efficacious as whole blood in combating shock and also can be greatly concentrated so that relatively small amounts have the same effects as much larger amounts of blood; in fact concentrated albumin has been prepared so that 25 cc. is equivalent to 500 cc. of whole blood.

Burns were treated in a variety of ways but it was fairly generally agreed that they should be treated as potentially infected wounds. In other potentially infected (contaminated) wounds the removal of the injured tissues, dirt and other foreign bodies results in prompt healing. Also in burns careful cleansing of the burned area with soap and water as soon as possible and the application of a compression bandage resulted in rapid healing. Shock which is likely to occur in burns because of the loss of albuminous material in the secretion from the burned surface could be prevented and treated by the administration of plasma.

The control of infections continued to be of paramount importance. Whereas sulphonamides were extremely valuable in surgical infections before the occurrence of actual pus formation, they were less efficacious after there had been destruction of tissue. In many staphylococcic (pus producing) infections resistant to sulphonamide drugs the use of penicillin, a substance derived from the growth of a mould, offered considerable promise. This substance is effective even in the presence of destroyed tissue and pus.

Sudden death from embolism (clot in the lung) resulting from the detachment of a clot in a vein usually in a lower extremity could be prevented. By introducing in a vein a substance which would produce a shadow on an X-ray film, it was possible to visualize the clot and then tie the vein above it so that it could not get loose to get to the heart and lung. Milk leg and its sequelae, such as persistent swelling of the extremity, could be satisfactorily treated by producing local anaesthesia of the nerves which are responsible for the symptoms.

Whereas cancer of the prostate gland had previously been extremely difficult to treat, it was shown that even in advanced cases removal of the testicles results in regression of the tumor. (*See* also ANAESTHESIA; MEDICINE.)

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Surinam (DUTCH GUIANA). A Netherlands colony in northeastern South America. Area, 55,143 sq.mi.; pop. (Dec. 31, 1941, official est.): 183,730, including an estimated 2,616 Indians and 19,032 bush Negroes. East Indians (49,300 British and 34,563 Netherlands East Indians) made up a greater proportion of the population than in any other American area. The chief cities are Paramaribo, the capital (pop. 54,853), and Nieuw Nickerie (3,788). Government is in the hands of an appointed governor and a partially elected council. The governor in 1942 was Dr. J. C. Kielstra.

History.—The effects of World War II on Surinam continued to be mixed during 1942. Normal trade channels were even more disturbed than before, owing to axis submarine activity in Atlantic and Caribbean waters, but booming bauxite exports (*see* below) and the presence of United States troops protecting the colony provided an economic stimulus.

Politically, the most important event was Queen Wilhelmina's Dec. 6 pledge of postwar "equal partnership" of Netherlands overseas territories with the metropolis, which was interpreted to mean practically complete local autonomy.

Of interest as a possible portent of the future was the arrival in late December of 122 Netherlands refugees intending to settle in Surinam.

Education.—There were four secondary and 114 elementary schools (including 44 public) in 1942, with around 21,500 enrolment, over half in Paramaribo. In addition there were 33 bush Negro and Indian schools in the interior.

Finance.—The monetary unit is the guilder (value in 1942, approx. 53 cents U.S.). Until 1941 the colony's budget showed a constant deficit (1939, 2,915,503 guilders), made up by the home government. In 1941, however, expenditures were 6,927,552 guilders, leaving a surplus of 1,090 guilders, and were estimated at 8,628,515 guilders in 1942, with income calculated at 8,643,417 guilders.

Resources and Trade.—The colony is practically undeveloped except along the coastal plain, which includes 150 sq.mi. devoted to agriculture and the bauxite deposits. Bauxite, first developed in 1922, was the chief export commodity in 1942. In 1941, bauxite export totalled 1,093,764 tons, all but equal to the combined 1939 and 1940 totals. Practically all bauxite exports were taken by the United States. Gold was the second export in value. Its production was not reported in 1942, but it normally approximates over 400,000 grams.

Exports in 1941 aggregated 11,398,377 guilders' value (93.4% to the United States, 4.2% to Great Britain). Imports were valued at 9,429,922 guilders, with the United States supplying 71.9% (1940, 57.5%; 1939, 30%), Trinidad, 5.4%, Argentina 4.6%, Great Britain 4.2%. Imports are largely manufactured goods and foodstuffs.

Agricultural exports include sugar (1941, 9,390 tons), coffee (1941, 17,763 bags of 132 lb.) and rice (1941, 1,520 tons), along with maize, oranges, molasses and rum.

Balata (1941, 275 tons) is the most important product of the interior forests.

Communication.—External communication is by steamship and air. There were 13 km. of railway in 1942 and fairly good roads along the coast. Interior communication is entirely by trails and navigable rivers.

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Sutherland, George (1862–1942), U.S. jurist, who held the distinction of being the strictest "constitutionalist" in the supreme court during his 16-year tenure, was born March 25 in Stony Stratford, Buckinghamshire, England. When he was a year old his parents emigrated to Utah, where he attended school. After studying law at the University of Michigan, he returned to Utah to practise. By the time Utah gained statehood in 1896, he swiftly climbed to political leadership. In 1905, he became U.S. senator from Utah, serving two terms until 1917. In 1920, he helped manage the Republican presidential campaign for Warren G. Harding, and he was rewarded two years later with an appointment to the U.S. supreme court as associate justice. On the bench Sutherland was a stanch conservative. The constitution was his guidepost at all times, and his dissenting opinions against New Deal legislation frequently asserted that the laws under consideration were unconstitutional. Justice Sutherland, who retired from the bench in Jan. 1938, died of a heart attack in Stockbridge, Mass., July 18.

Swaziland: *see* BRITISH SOUTH AFRICAN PROTECTORATES.

Sweden. A democratic monarchy of northern Europe. Area, 173,347 sq.mi.; pop. (Dec. 31, 1941) 6,406,474. Capital, Stockholm (est. Dec. 31, 1942, 613,000). Other principal cities are Göteborg (Gothenburg, est. 1940, 281,302), Malmö (155,465), Norrköping (70,835), Hälsingborg (62,310). Religion, Lutheran Christian. Ruler in 1942: King Gustavus V (*q.v.*); prime minister: Per Albin Hansson.

History.—Despite all efforts directed toward neutrality, the war impinged on the Swedes in innumerable ways during 1942. Bombs struck Haparanda, and several Swedish ships were sunk in the Baltic. Both German and British planes occasionally violated Sweden's neutral air, and some crashed inside the country. Nine members of a German sabotage gang were sentenced in February, and later groups of Czechs and British were convicted of espionage. Ships were lost in the Atlantic and even in the Mediterranean, where they had gone to take Canadian wheat to the starving Greeks. Arrangements had been made earlier in the war for "safe-conduct ships" sailing under the permission of both Germans and British. During 1942 the activity of these ships increased, but the traffic was still both dangerous and insufficient.

Newspapers could not be suppressed under Swedish law, yet control there had to be when publicized sentiments might get the nation in trouble. Individual issues of many papers were therefore confiscated for such things as printing atrocity stories from Norway. H. A. Möllman-Palmgren, nazi editor of *Sverige Fritt* (*Free Sweden*) was sentenced to six months' imprisonment, the paper was banned from the mails and agents were forbidden to sell it—fairly effective suppression. Yet the press as a whole showed independence in criticizing brutality and injustice whether in Norway or in Czechoslovakia, and clearly indicated the humanitarian sympathies and the liberal-democratic ideals of the Swedish people.

Positive accomplishments were manifold, partly natural, partly stimulated by the war. Swedes extended more than $4,500,000 of aid to Norway, carried food to the Greeks and conducted relief operations in Belgium and the Netherlands. About 9,000 refugees, 6,000 of them from Norway, found haven in Sweden, not counting some 25,000 Finnish children cared for. The completion of the Sandö bridge in the northeast eliminated the last road ferry between Stockholm and Haparanda on the Finnish border. Railroad electrification was achieved for the route from Trälleborg in the south to Riksgränsen in the northwest. Swedish inventive and productive genius made synthetic rubber from wood, doubled the production of cellulose fodder, increased milk production 8%, and increased production of edible oil plants to provide 10% of the nation's margarine requirements. Arrangements were made for a postwar air line direct to the United States. For the Swedes one of the most encouraging items was the rapid upswing in the birth rate, accompanied by a record number of marriages.

The city and county elections of September were significant examples of free politics within a regimented Europe. No fundamental change was recorded, but in percentage of votes cast the Social Democrats dropped (as compared with 1938) from 53.8% to 50.7% and the Conservatives from 18% to 17.4%. The Farmers party increased from 12% to 13.3% and the Liberals from 12% to 12.5%. The Socialists, now pro-nazi, lost all five of their seats on both city and county councils, and the Communists gained 16 for a total of 42—out of 1,520 altogether. The Socialists and Communists together increased their vote from 4.1% to 6.1%.

During 1942 the export of iron ore to Germany was reduced to slightly more than 8,000,000 tons, and the total trade turnover with Germany to 1,750,000,000 kr. (from 1,912,000,000 kr. in 1941). In negotiations in November and December the Swedes refused to grant further German credits, which in 1942 totalled 115,000,000 kr. German products reached Sweden satisfactorily in 1942 except for the much-needed coal and coke, which to December amounted to 3,800,000 tons out of a promised 5,700,000. Sweden refused to join the German-proposed European postal union.

Education.—In 1937–38 there were 567,579 pupils and 27,858 teachers in the elementary schools and 90,087 students in secondary schools. In the five universities, 7,606 students were enrolled in 1940. Sweden's budget for educational expenses in 1941–42 was 256,387,000 kr.

Defense.—Figures on defense were not complete after the outbreak of World War II. Prior to Sept. 1939 the following facts were valid: All men 20–45 were liable to conscription. The infantry consisted of 20 regiments and 1 corps; cavalry of 4 regiments; artillery of 7 regiments; the *Train* of 4 corps and the *Intendance* of 3 companies. The navy took about 5,000 annual conscripts and had a permanent body of about 5,500. New naval statistics published in Dec. 1942 showed that Sweden had 23 destroyers, with 6 more building; 27 submarines and 1 building; 1 new mine-carrying cruiser soon to be ready; plus the earlier 8 coast-defense vessels and at least 21 torpedo boats. The air force had not in 1938 reached its quota of 255 officers, 175 noncommissioned officers and 1,015 enlisted men. At the end of 1941, 16 squadrons were being planned. Total estimated expenditure for defense in 1942–43 was 2,700,000,000 kr., as compared with an average expenditure in the years 1931–35 of 122,601,600 kr.

Finance and Banking.—The monetary unit is the krona (26 U.S. cents at par, 23.94 cents on Nov. 8, 1941). The fiscal year ending in June 1942 left a government deficit of 2,205,000,000 kr. National income is about 12,000,000,000 kr., of which about 5,000,000,000 kr. go into state and municipal taxes. The national debt Dec. 1, 1942, was 8,041,000,000 kr., nearly double that of two years earlier. In 1940 there were 28 private banks with deposits of 4,793,477,000 kr. Gold reserves in Dec. 1942 reached an all-time record of 1,404,000,000 kr. ($351,000,000).

The budget presented to the riksdag by the king in Jan. 1943 asked for total expenditures of 4,131,000,000 kr., 48% of which is for defense: 1,985,000,000 kr. The defense item was slightly lower than for 1942, the total budget about 160,000,000 kr. higher.

Trade.—In 1942 (first 11 months) exports were valued at 1,191,000,000 kr. (drop of 41,000,000 from same period in 1941). Imports were 1,610,000,000 kr., an increase of 93,000,000 kr. Value comparisons were difficult because of rising prices.

The chief articles of export in 1939 were paper and manufactures (500,466,638 kr.), iron and steel (269,741,501 kr.), iron ore (231,840,366 kr.), wood and wood products (215,286,956 kr.), nonelectrical machinery (114,812,455 kr.). Chief articles of import were coal and coke (260,801,838 kr.), nonelectrical machinery (225,159,463 kr.), iron and steel (219,410,306 kr.), vehicles and parts (140,920,390 kr.), mineral oils (134,339,796 kr.), electrical machinery (93,068,552 kr.). Exports went chiefly to Great Britain, Germany, the United States and Norway. These countries, plus Belgium and the Netherlands, supplied most of Sweden's imports.

Communication.—On Dec. 31, 1940, there were 10,231 mi. of railroads, of which (by 1942) 3,000 mi. were electrified. In 1939 there were 53,787 mi. of highways, practically all listed as "improved." Motor vehicles licensed (Dec. 1940) numbered 81,334. Airways (1939) flew 1,536,000 mi. and carried 60,000 passengers. Telephones (Dec. 31, 1941) numbered 980,000 (about 150 per 1,000 people), putting Sweden second only to the U.S. in the per capita ratio of telephones. Telegraph mileage was 11,040. There were 1,470,375 licensed radio sets and 35 broadcasting stations.

The Swedish merchant marine consisted of 1,605,000 gross tons in 1938. The war had taken toll of 180 ships of 410,000 tons by Nov. 1942 but new building and purchase totalling 300,000 tons (166,000 tons launched in 1942) left a net loss of some 110,000 tons.

Agriculture.—In 1942 the bread-grain harvest, still 10% below normal, was almost double the 1941 crop. Fodder was 13% below normal, but provided for a 4,000,000-ton milk production, for cheese production at the existing rate and for a butter increase of 16% to about 95,000 tons. Egg production was about 60% of the 10-year average, and meat also about 60%. The potato harvest of 1942 was above normal, as were the sugar-beet and pea crops.

Manufacturing.—The total value of production in 1939 was 8,151,768,000 kr. There were 644,360 workers in 19,092 establishments. The chief manufactures were machinery and metal, 2,518,576,000 kr.; wood and paper, 1,489,655,000 kr.; foods, 1,395,787,000 kr.; clothing and textiles, 801,799,000 kr.; chemicals, 392,569,000 kr.; electrical equipment, 302,984,000 kr.; beverages, 230,845,000 kr.; stone, etc., 229,054,000 kr.; and leather, 228,717,000 kr.

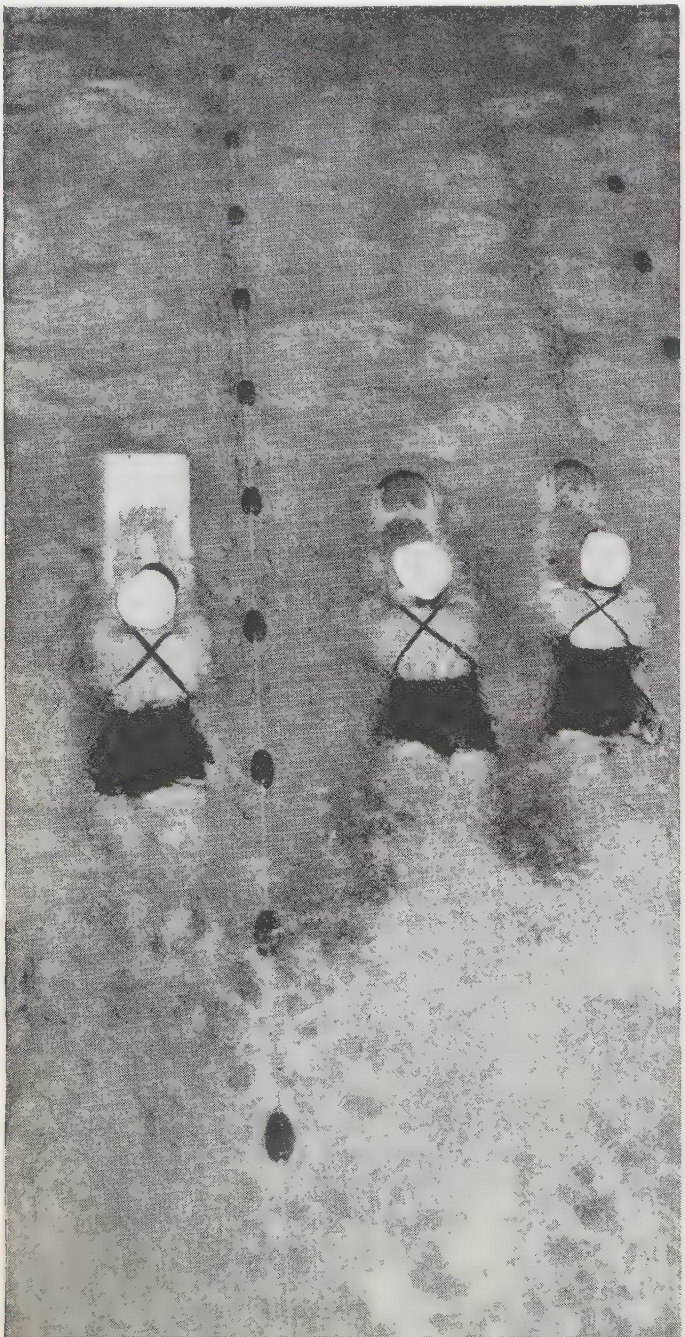
Mineral Production.—Production of the leading minerals in 1939 was as follows: iron ore, 15,197,633 tons; iron and steel, 1,300,900 tons; cast iron, 709,923 tons; coal, 489,085 tons; arsenic ore, 267,065 tons; sulphur pyrites, 211,352 tons; fireclay, 153,168 tons. Silver production amounted to 7,226,855 oz.; gold, 2,149,220 oz. (F. D. S.)

Sweet Potatoes: *see* POTATOES.

Swimming. Strangely, war served as a great stimulus to swimming in 1942. Universal realization of the vital importance of watermanship to combat forces urged virtually all belligerent nations to provide systematic instruction for their fighting men. Literally millions were taught to swim, a large percentage gaining proficiency.

Competition was encouraged everywhere, too, and although most of the warring countries again cancelled their national championships for men, there was activity aplenty, with events for service men usually featured.

CODY'S KIDS, a swimming team of four Portland, Ore., high-school girls coached by Jack Cody, held all but one U.S. free-style championship in 1942. Three of them are shown here in kicking practice



World's records continued to fall. The greatest feat achieved was that of Ragnhilde Hveger of Denmark in breaking three of her own women's marks in a single 1,500 m. free-style swim. She slashed the time for the full route from 21 min. 45.7 sec. to 20 min. 57 sec. and on the way cut the marks for 800 m. from 11 min. 11.7 sec. to 11 min. 0.7 sec. and 1,000 m. from 14 min. 12.3 sec. to 13 min. 54.5 sec.

Swimmers of the United States bettered six listed universal records for men and equalled a seventh. The qualifying "listed" is used advisedly, as the F.I.N.A., in charge of the supervision of world's records, had not functioned for two years, so marks claimed were in abeyance, unapproved and unregistered.

William Smith, Jr., 17-year-old Hawaiian, clipped the free-style figures for 440 yds. from 4 min. 40.8 sec. to 4 min. 39.6 sec. and 880 yds. from 10 min. 7.6 sec. to 9 min. 54.6 sec., but he swam the 440 yds. in a 55-yd. bath, while the tabled mark was set in a 25-yd. pool. Allowing for the gain at the turns, Smith's time represents about 4 min. 29 sec. in the shorter pool.

Kiyoshi Nakama, another Hawaiian, lowered the figures for one mile from 20 min. 57.8 sec. to 20 min. 29 sec.; William Prew and Howard Johnson equalled those for 100 yards, 51 sec., and two varsity teams beat the time of 3 min. 31.3 sec. for the 400 yd. relay, a Yale four returning 3 min. 26.6 sec. and a Michigan quartet 3 min. 27.7 sec. Adolph Kiefer brought down the back stroke marks for 100 m. from 1 min. 4.8 sec. to 1 min. 2.8 sec. and 150 yds., from 1 min. 32.7 sec. to 1 min. 30.5 sec.

Maria Lenk, of Brazil, holder of world's breast stroke records, who invaded the United States with a team of South American champions late in 1941, prolonged her visit into 1942 and defeated all comers in contest. She fell short of her best work, but broke several national marks, among others dropping the time for 220 yds. from 3 min. 7.8 sec. to 3 min. 5.8 sec.

(L. DE B. H.)

Switzerland, a republican confederation of 22 cantons of west-central Europe, bounded N. and E. by Germany, S. by Italy and W. by France. Flag, white cross on red background. Area 15,944 sq.mi.; pop. (est. 1942) 4,300,000. Chief towns: Berne (cap. 123,000), Zürich (334,000), Basle (163,000), Geneva (124,000), Lausanne (90,000). Languages (census 1930): German 2,924,314; French 831,100; Italian 242,034; Romansch 44,204 and others 24,797. President (Jan. 1, 1943) Dr. Enrico Celio.

History.—Switzerland was still able in 1942 to maintain her position as a haven of comparative peace and security in the midst of a war-torn Europe. But the difficulties of her position increased with the spread of the war. The German press frequently warned that the Swiss press must take a more friendly attitude toward nazi Germany. On the other hand, British planes frequently flying over Switzerland to bomb Turin, Genoa and other Italian centres, technically infringed Swiss neutrality, but the Swiss could do nothing about it except make protests.

After the United States and many other American states went to war with the axis powers in the winter of 1941–42, the Swiss government consented to assume the burden of looking after their diplomatic interests, in addition to representing numerous other countries already at war. Switzerland also became the great centre for the work of the Red Cross in arranging the exchange of prisoners, securing the mutual unshackling of British and German prisoners in Dec. 1942, forwarding letters and packages to internees, and securing information about soldiers reported missing.

Education.—Managed locally by the cantons and communities, education is obligatory and free. In 1939–40 the pupils in primary schools numbered 455,561, and those in secondary and middle schools 73,422, in addition to various cantonal and technical schools. The seven universities (Basle, Zürich, Berne, Geneva, Lausanne, Fribourg and Neuchâtel) had a total of 9,649 matriculated students in the winter of 1940–41.

Defense.—In the national citizen militia service is compulsory and universal, except in the case of those who are physically unfit and who pay instead certain taxes. Liability to service extends from the 18th to the 60th year of age. At the outbreak of World War II in 1939 the whole Swiss army was mobilized with a force of 650,000 men. Subsequently some of the older classes were demobilized so that in 1942 less than 500,000 were under arms. The air force in 1942 consisted of 21 squadrons with 200 planes. Military expenditure in 1941 was 1,050,000,000 francs.

Finance.—The franc, the Swiss monetary unit, was devalued about 30% in 1936, so that it contained about 200 mg. of fine gold and had in 1942 an exchange value of 23.40 U.S. cents. The budget estimates for 1941 were 517,700,000 francs of revenue, and 592,300,000 francs of expenditure, and the total debt, including railway debt, was 6,130,656,000 francs.

Trade and Communications.—Imports and exports in 1941 were 2,024,000,000 francs and 1,463,000,000 francs respectively. Swiss railways, 3,218 mi. in length, carried 23,300,000 metric tons of freight and 144,000,000 passengers. There were, in 1942, three main and three local broadcasting stations. (S. B. F.)

Symphony Orchestras: *see* MUSIC.

Synthetic Products: *see* CHEMISTRY; PLASTICS INDUSTRY; RAYON AND OTHER SYNTHETIC FIBRES; RUBBER AND RUBBER MANUFACTURE; STANDARDS, NATIONAL BUREAU OF; PETROLEUM.

Syphilis: *see* MEDICINE; VENEREAL DISEASES.

Syria, an independent republic, formerly French mandated territory, bordering the eastern Mediterranean. Area, 73,587 sq.mi.; pop. (est.) 2,800,000; chief town: Damascus (cap. 225,000). President (1942): Sheik Taj-ed-Dine-el-Hassani. Language: Arabic; religion: mainly Mohammedan.

History.—The government, which included representatives of various communities, was directed by French advisers.

New textile and footwear industries started production during 1942 and a paper industry was projected. Book publishing was started with the publication of school books.

Unemployment was practically non-existent, thousands being employed on the building of roads, railways, aerodromes and fortifications for which as much as ten times prewar daily wages were paid. Hoarding continued to cause a wheat shortage, and controlled distribution of large quantities of wheat replaced former methods of flooding the grain market in an attempt to reduce prices. Nevertheless, the price of bread remained high. American Red Cross flour was distributed in some districts by army authorities.

The following statistics refer to Syria and Lebanon jointly:

Finance.—Monetary unit, the Syrian pound (divided into 100 piastres). Revenue 1938 (at the rate of 20 francs = one Syrian pound) 588,787,596 francs. Expenditure 509,085,433 francs. Notes in circulation (June 30, 1939) £ Syrian 35,600,000; reserves (June 30, 1939), gold £ Syrian 3,500,000; foreign assets £ Syrian 31,800,000.

Trade and Communication.—Imports (1940) £ Syrian 57,000,000; (1941) £ Syrian 38,000,000; exports (1940) £ Syrian 19,000,000; (1941) £ Syrian 11,000,000. Roads (1939) *c.* 1,900 mi.; railways (1939) 890 mi.

Agriculture.—(1940) metric tons: wheat 669,500; barley 385,000; maize (1938) 27,500; oats (1939) 5,400; potatoes (1938) 41,600; tobacco (1938) 3,400; wine (1938) 43,000 hectolitres; cotton 6,500; cotton-seed 15,100; sesamum (1938) 5,300; olive oil 13,000; wool (1938) 9,900; raw silk 200.

Syrup, Sorgo and Cane. Sugar-cane syrup produced in the United States in 1942 was estimated by the department of agriculture at 18,610,000 gal. from 119,000 ac., with a yield of 156.4 gal. per ac. The ten-year (1930–39) average was 20,774,000 gal. from 135,000 ac. at 153.5 gal. per ac

Table I.—*U.S. Production of Cane Syrup by States, 1942 and 1941*

State	1942 gal.	1941 gal.	State	1942 gal.	1941 gal.
Louisiana	5,760,000	6,240,000	Florida	1,760,000	1,600,000
Georgia	3,900,000	3,564,000	Texas	665,000	840,000
Mississippi	3,300,000	3,135,000	South Carolina	485,000	500,000
Alabama	2,645,000	2,760,000	Arkansas	95,000	125,000

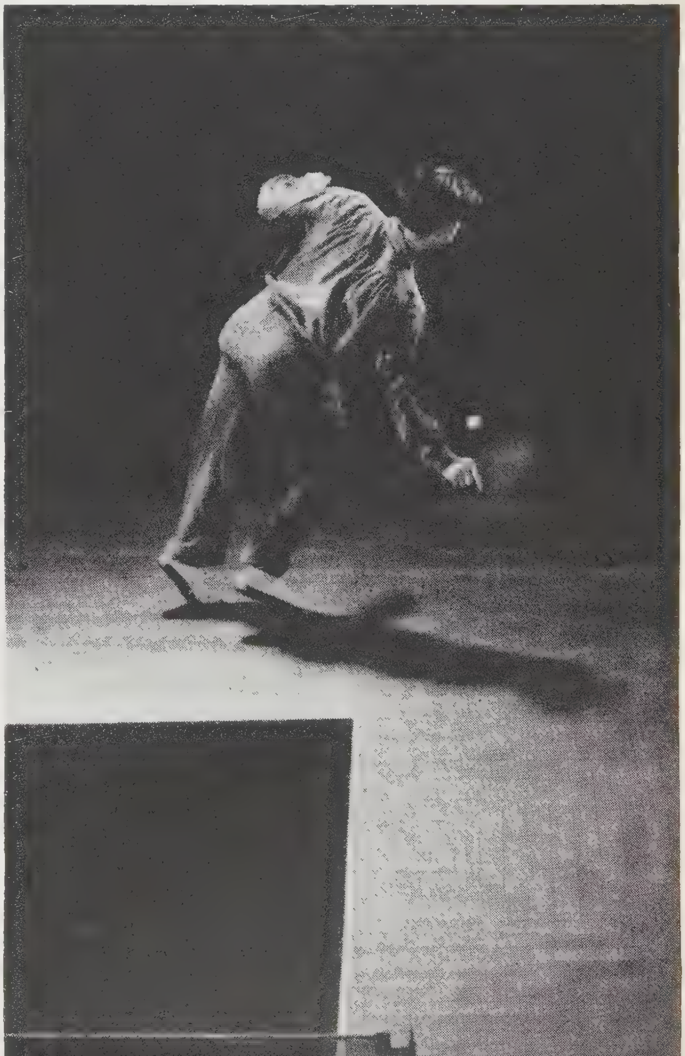
Table II.—*U.S. Production of Sorgo Syrup in Leading States, 1942 and 1941*

State	1942 gal.	1941 gal.	State	1942 gal	1941 gal.
Mississippi	1,800,000	2,150,000	Arkansas	1,155,000	800,000
Alabama	1,767,000	2,040,000	Tennessee	1,134,000	944,000
Georgia	1,220,000	714,000	North Carolina	1,065,000	522,000

Production of sorgo syrup in the United States was 13,674,000 gal. from 220,000 ac. at a yield of 62.2 gal. per ac. (*See* also BEE-KEEPING; MAPLE PRODUCTS.) (S O. R.)

Table Tennis. Few sports suffered as severely from the war as organized table tennis, the "most international game." In 1942, for the third straight year, the world

LOUIS PAGLIARO, shown here returning a shot without looking and with his back to the table, again won the U.S. table tennis singles championship in 1942, at Detroit



championship matches sponsored by the International Table Tennis federation were cancelled. The war also retarded growth of the game by causing shortages of materials, such as rubber for rackets and plywood for tables. After 1939 the U.S.A. was fast becoming the centre of formal play and was due to be the host for a return visit of the Japanese team, but these plans went up in the smoke of Pearl Harbor. Table tennis went to war: from Australia to Germany it became the most popular indoor recreation at military posts, and in civilian championship play the proceeds were given to the Red Cross and similar organizations. In the U.S., Louis Pagliaro and Sally Green again established a record by winning the men's and women's national singles titles for the third successive year. Because of travel restrictions the U.S. Table Tennis association placed greater emphasis on local and sectional tournaments for 1943. (C. Z.)

Tahiti: *see* Pacific Islands, French.
Taiwan: *see* Formosa.

Talbot, Arthur Newell (1857–1942), U.S. engineer, was born Oct. 21 in Cortland, Ill. After receiving a degree in 1885 from the University of Illinois, he joined the university staff. Dr. Talbot, who retired from the faculty in 1926, made important contributions in the fields of reinforced concrete, hydraulics, water purification, sewage treatment and railroad track stresses. His investigations in the latter field led to the right-of-way system for high-speed trains. He was one of the founders of the University of Illinois experimental school in engineering. Dr. Talbot died in Chicago, April 3.

Talc. The record output of 281,375 short tons of talc and related minerals produced in the United States in 1940 was surpassed by 48% in 1941, when a total of 416,369 tons was reached. The bulk of this total was ground talc, but the tonnage of crude talc and of sawed talc both more than doubled, as a result of war demand. Imports declined and exports increased. The largest increases in use were in the paint, ceramics and rubber industries. Production also increased heavily in Canada and India. Little was known of conditions among the smaller producers. (G. A. Ro.)

Tanganyika: *see* British East Africa; Mandates.
Tanks, Military: *see* Munitions of War; World War II.

Tariffs. Tariffs were of trifling significance in 1942. In most countries and for most commodities the struggle was to obtain supplies and to facilitate their entry. There were reductions, suspensions and repeals of duties for importations of military supplies, to hold down the cost of living, or to aid the development of manufacturing industries in agricultural countries. Few of these changes were of permanent commercial significance. There were scattered increases of duties to supply revenue, or to favour domestic industries, but rather as assurance for the future than because foreign supplies were currently competing. There were, to be sure, great surpluses of certain commodities in various countries, but the shortage of shipping was such that they could move only to the extent to which they were regarded as indispensable elsewhere. In general, products could now be shipped from one country to another only after the grant of an export permit, an import permit and a shipping priority. Products which could clear these hurdles were not likely to be stopped by tariffs.

The process of commercial negotiations between governments had not wholly ceased, but most of the negotiations of 1942 related to arrangements primarily conditioned by the war and even if they touched on tariffs, as a few of them did, they had little or no enduring significance. The United States afforded the chief exception to this statement. It continued its trade agreement program, making agreements with Peru, Uruguay and Mexico. These agreements became effective respectively on July 29, 1942, and on Jan. 1 and Jan. 30, 1943. Of these agreements, naturally, that with Mexico affected the greatest amount of trade. The United States reduced duties on more than half of the dutiable imports from Mexico, and Mexico reduced duties on a somewhat greater value of imports, on the basis of the trade of 1939. The general import duty on sugar was halved in the agreement with Peru, making it only 18 cents per 100 lb. above the preferential rate on Cuban sugar. This reduction might become significant in the future. On a different tack, by an exchange of notes on March 2, 1942, the United States allowed Ecuador to impose higher duties on a list of products whose rates had been previously bound; and in February it permitted Haiti to grant discriminatory concessions to Santo Domingo.

During 1942 the interest in tariffs centred on the possibility of significant postwar developments. The United Nations gave general approval to the Atlantic Charter and a beginning was made in reducing the aspirations of that document to concrete terms. On Feb. 23 the Mutual Aid or Lend-Lease agreement between the United States and the United Kingdom provided that the settlement of the Lend-Lease obligations should be "such as not to burden commerce between the two countries, but to promote mutually advantageous economic relations between them and the betterment of world-wide economic relations." Agreement was to be sought "directed to the expansion, by appropriate international and domestic measures, of production, employment, and the exchange and consumption of goods, . . . to the elimination of all forms of discriminatory treatment in international commerce, and to the reduction of tariffs and other trade barriers. . . ." Similar agreements were made with many other of the United Nations. (*See* also International Trade.) (B. B. W.)

Tasmania. A state of the Australian commonwealth, forming an island 26,215 sq.mi. in area to the southeast of the mainland, from which it is separated by 140 mi. of Bass strait. Pop. (est. Dec. 1941) 241,171. Chief cities: Hobart (cap., 66,620); Launceston (33,250). Governor (1942): Sir Ernest Clark.

History.—The Labour government with R. Cosgrove as premier remained in office throughout 1942. Celebrations which had been planned before the war to mark the tercentenary of the discovery of Tasmania by Abel Tasman on Nov. 24, 1642, had to be abandoned. To commemorate the event, the Tasmanian government was to publish, in volume form, selections from Professor Heeves' translation of Tasman's journals.

For the fiscal year 1941–42 the state finances showed a balanced budget, revenue exceeding expenditure by £A1,585.

Education.—In 1939: state primary schools 420; average daily attendance 25,538; state high schools 5; average attendance 1,783.

Finance.—Revenue (1940–41), £A2,920,000; expenditure £A3,110,000; public debt (June 30, 1941), £A28,162,000.

Communication.—Dec. 31, 1939: roads, 9,350 mi.; railways: government, Dec. 1941, 642 mi.; private, 132 mi. Motor vehicles licensed (March 31, 1942): cars 14,134; trucks 5,422; cycles 2,314. Wireless receiving set licences (March 31, 1942) 46,037. Telephones (June 30, 1941) 19,565.

Industries.—Production 1939–40: primary £A8,185,110; secondary £A6,253,029. Labour 1940–41 average: factory employment, 15,839 employees; unemployment (March 1942) 0.7%. (W. D. Ma.)

Taxation. **United States.**—The Revenue Act of 1942, signed by President Roosevelt on Oct. 21—the heaviest tax-producing measure ever enacted—was notable not only for the taxes it imposed but for the various tendencies developed during the long consideration preceding its adoption. They included such devices as the Ruml plan to "forgive" all federal taxes of a chosen calendar year and credit tax payments made that year to the next year's assessments, so that the future federal tax collections of the United States would be established on a "pay-as-you-go" basis. Another proposal receiving widespread support, but defeated by treasury and administration opposition, was a general sales tax. The treasury, on the other hand, advanced a complicated compulsory savings plan, based on stiff taxes upon amounts spent by individuals, and also continued without success its advocacy of a federal tax on all issues of state and local securities, and a requirement for mandatory joint income tax returns by husbands and wives.

For seven months and seven days after the tentative tax bill was presented to the house ways and means committee by the treasury, the revenue-raising discussion commanded major attention throughout the nation. It ranked in public interest second only to the war developments. An avalanche of letters from current taxpayers and prospective taxpayers descended upon congress. The inevitable "broadening of the tax base" had at last made the electorate tax-conscious.

Total annual revenue of between $24,000,000,000 and $26,000,000,000, depending upon the size of the national income, was expected under the revised revenue laws of 1942. This would bring the grand total of taxes in the United States—federal, state and local—to approximately $36,000,000,000 a year, excluding social security taxes. Even this huge annual revenue was generally conceded to be inadequate to provide a sound basis of financing the government during the war period. The treasury announced it was preparing plans for further increasing of taxes by more than $6,000,000,000 a year. Congressional tax experts estimated the 1942 Revenue act would yield $9,700,000,000 a year in new taxes, of which $1,700,000,000 would be refundable after the war. Chairman George of the senate finance committee declared: "The bill approaches the maximum direct tax which can be levied on the taxpayers during the war, but it does not go very far in checking inflation." Senator George had been among those supporting a general sales tax, which was blocked by administration opposition but which remained a very live issue at the close of 1942.

"QUOTH THE RAVEN, 'WHY NOT ME?'" Congress continued to ignore the sales tax in 1942, as pointed out in this cartoon by Duffy of the Baltimore *Sun*

The Victory Tax.—The outstanding innovation of the 1942 Revenue act, a law that was expected to touch more citizens than any direct income tax ever enacted, was the Victory tax. This tax did not apply to 1942 income, but was to become effective on Jan. 1, 1943. The treasury estimated that approximately 50,000,000 persons would pay this tax for the year 1943. It was a flat tax of 5% on all income above $624 a year, regardless of whether the taxpayer is married or single, with a portion returnable. The 5% tax on wages and salaries was to be withheld by employers, except in the case of military or naval service, farm labour employment, household service or casual labour. An individual with income other than wages or salary would be required to file a special Victory tax return at the time for filing regular income tax returns. Income from dividends, interest, rents and other similar sources must be reported. Capital gains or interest from government bonds were exempted, and in the case of rents and some business transactions only net income was to be affected. This tax was distinct from and in addition to the regular income tax.

The act provides that the government shall return to the taxpayer after the war 25% of the Victory tax, up to $500, for single persons: 40%, up to $1,000, for married couples or head of a family, and an additional 2%, up to $100, for each dependent.

The taxpayer is given the option of accepting the deferred refund plan or of taking credits each year against the postwar refund. These credits may be taken as follows: (1) for amounts paid in premiums during the taxable year on life insurance in force on Sept. 1, 1942, on the life of the taxpayer, his spouse or dependents; (2) for reduction of individual indebtedness, computed upon the smallest amount of debt of the taxpayer outstanding at any time during the period beginning Sept. 1, 1942, and ending with the close of the preceding taxable year; (3) for net purchases of war bonds, the amount being determined by comparing the total bond holdings of the taxpayer at the end of the taxable year involved with the amount of bonds owned Dec. 31, 1942, or on the last day of any preceding taxable year ending after Dec. 31, 1942, whichever amount is the greater. The aggregate amount of such credits is limited by the amount of postwar refund to which the taxpayer may be eligible. (C. A. Sr.)

Individual Income Tax.—In the U.S. fiscal year 1942, the individual income tax accounted for $3,263,000,000 of the total revenue of $8,007,000,000 from federal income and excess profits tax collections. Income taxes produced $529,000,000, or 13.7%, of estimated total state tax revenues (exclusive of unemployment compensation taxes) during the fiscal year 1942.

For taxable years beginning in 1942, personal exemptions were reduced by the Revenue Act of 1942 from $750 to $500 for single persons and from $1,500 to $1,200 for married persons and heads of families. Members of the armed forces below the grade of commissioned officer were granted additional allowances, bringing their exemptions up to those of the preceding year. The credit for dependents was reduced from $400 to $350.

The normal tax rate was increased from 4% to 6%. The surtax rates were also increased, to range from 13% on the first $2,000 of surtax net income to 82% on surtax net income in excess of $200,000. Under the 1941 act they ranged from 6% to 77%, the latter applying to surtax net income over $5,000,000.

A significant innovation in the individual income tax was the deduction allowed for medical expenses. The allowance was limited to payments in excess of 5% of the taxpayer's net income, but could not exceed $2,500 where a joint return or head of a family return was filed or $1,250 in other cases. Numerous other changes were made to achieve greater equity and to improve the administration of the income tax.

Several important treasury recommendations were not included in the 1942 act (*see* above). The treasury recommended elimination of three "special privileges," namely, the tax exemption of interest from state and local securities, the use of separate returns by married couples, and the option of percentage depletion for mines and oil wells. These changes were not made. The treasury recommended that a portion of the regular individual income tax be collected at source from wages, salaries and dividends (the "pay-as-you-go" plan). The act as passed provided for collection at source of most of the Victory tax but not of the regular income tax. The treasury also recommended enactment of a tax to be levied at progressive rates on expenditures for consumers' goods and services in excess of personal exemptions of fixed amounts required for necessities and some comforts, and exempting personal savings. The spendings tax was not enacted.

It was estimated that more than 27,000,000 persons would pay a net income tax on 1942 incomes and that approximately 43,000,000 would be subject to the net income tax or the Victory tax on 1943 incomes. The final compilation of tax returns filed for 1940 revealed 14,710,771 individual income tax returns, including 7,437,307 taxable returns. Returns with net income reported net income of $36,300,000,000 and income tax liability of $1,400,000,000. Returns with net income of $5,000 and more accounted for 6% of the total number of returns, 24.5% of the reported net income and 92.8% of the tax liability. In the fiscal year 1942, collections from the individual income tax amounted to $3,300,000,000.

There were few significant developments during 1942 in state taxation of personal incomes. Rate changes were made in Massachusetts, Mississippi and New York.

Corporation Income and Excess Profits Taxes.—Although under the Revenue Act of 1942 the corporation normal tax rates were left unchanged at 24% for corporations with normal tax net income over $25,000, and at rates graduated from 15% to 19% for corporations with lesser amounts of such income, the surtax rates were increased to 10% for corporations with surtax net income not over $25,000, and to 16% for corporations with surtax net income over $50,000. Corporations with surtax net incomes over $25,000 but not over $50,000 were required to pay a surtax equal to the sum of $2,500 and 22% of the amount of the corporation surtax net income over $25,000. Previously the surtax rates were 6% on the first $25,000 of surtax net income and 7% on the balance.

In place of rates previously graduated from 35% to 60%, a flat excess profits tax rate of 90% was substituted, and profits which were subject to excess profits tax were not subject to income tax. However, the excess profits tax was limited to an amount which, when added to the income tax, was not to exceed 80% of surtax net income before deduction of the excess profits tax base. Furthermore, provision was made for a postwar refund equal to 10% of the excess profits tax imposed in each taxable year. In addition to these changes in excess profits tax rates, the invested capital credit was reduced to 8% on the first $5,000,000, 7% on the next $5,000,000, 6% on the next $190,000,000 and 5% on the balance. Unlike the 1941 treatment, the amount of excess profits left after the excess profits tax was not subject to the income tax.

Increased tax rates, however, were accompanied by other changes in the corporation income and excess profits tax structure which, in the case of many corporations, would at least partially offset the effect of higher tax rates. A few of these follow: A two-year carry-back of losses and unused excess profits credit was provided in addition to the two-year carry-forward of losses and unused credit previously allowed. Corporations making net repayments of debt might credit against excess profits taxes, an amount not to exceed 40% of the net debt repayment or 10% of excess profits taxes imposed in the year of repayment, with a corresponding reduction in the postwar credit for such year. The income from certain mining and timber operations under certain circumstances was granted full or partial exemption from excess profits taxes. Taxpayers using the average earnings credit in computing the excess profits tax were granted automatic relief for low income in one of the base period years, and taxpayers with abnormally low base period earnings were permitted to apply to a relief division to be set up within the tax court of the United States for a constructive earnings base.

Closely-affiliated corporations were granted the privilege of making consolidated income tax returns. Corporations making consolidated income tax returns were subjected to an additional tax of 2% on surtax net income.

Changes were also made in the treatment of capital gains and losses of individuals and corporations (*see* below), as well as in the income tax provisions relating to insurance companies, investment companies and U.S. corporations trading in the western hemisphere. The capital stock and declared value excess profits taxes were retained, but provision was made for the annual redeclaration of capital stock value.

Preliminary statistics of income tax returns for 1940 revealed 511,741 returns, of which 43,741 were for inactive corporations. Net income was reported in 220,980 returns and amounted to $11,200,000,000, and the income tax liability was $2,100,000,000.

There were no important developments during the year in state corporation income taxes. (*See* also BUDGETS, NATIONAL.)

(R. BL.)

Social Security Tax.—Over the protest of President Roosevelt, written in a letter to Chairman George of the senate finance committee, congress adopted an amendment to the Federal Insurance Contribution act (Internal Revenue Code, Sec. 1400), freezing the social security old-age benefit tax rate for another year at 2%, divided equally between employer and employee. Under the social security law the rate was scheduled to be doubled automatically on Jan. 1, 1943. Under the provisions of the amendment (sponsored by Senator Vandenberg, R., Mich.), the rate of 1% each on employer and employee would continue through 1943, increasing to 2% each on employer and employee for the years 1944 and 1945. Testimony introduced in the senate showed that at the rate prevailing in 1942 the social security tax was producing seven times the amount of revenue needed to pay current social security benefits. The action of congress was taken in the face of an administration-sponsored bill to increase social security taxes, liberalize benefits and to federalize unemployment insurance.

Capital Gains and Losses.—The 1941 law applicable to capital gains and losses was completely rewritten. Short-term and long-term gains and losses were redefined, short-term referring to assets held for not more than six months, and long-term being over six months. Short-term gains are taxable as ordinary income. Gains from capital assets held longer than six months are subject to a maximum tax rate of 25% instead of the regular income tax rate. Losses, either short- or long-term, may be used to offset gains, either short- or long-term. A net capital loss may be applied against other income up to a limit of $1,000. Losses may be carried forward for five years and offset against income to the extent of $1,000 a year.

Excise on Commodities and Services—Excise taxes were increased on many commodities and services. Typical changes were: distilled spirits, $6 per gallon compared with $4 under the 1941 law; beer, boosted from $6 to $7 per barrel; cigarettes, from $3.25 to $3.50 per 1,000; telegraph, cable and radio messages, from 10% to 15%; local telephone service, from 6% to 10%. The increases extended to lubricating oil, slot machines, cigars, photographic apparatus, transportation fares and admissions.

Estate and Gift Taxes.—There were no rate changes affecting estate and gift taxes, though the estate exemption was cut from an aggregate of $80,000 to $60,000, with the specific exemption of $40,000 for life insurance abolished. Regarding gifts, the cumulative lifetime exemptions were cut from $40,000 to $30,000.

Salary Limit Regulations.—Supplementing the 1942 tax law as a revenue producer was the exercise of extraordinary wartime power by the president, acting through Economic Stabilization Director Byrnes, to limit top salaries of business executives to a "basic amount" of $67,200 a year (estimated to yield a net of not more than $25,000 after taxes), and to freeze salaries of most other "white collar" workers at existing levels. Except for farm workers, regulations issued Dec. 2 by the treasury covered all salaries over $5,000 a year, and also those under $5,000 paid to unorganized executive, administrative and professional persons. Certain allowances to avert "undue hardships" in unusual cases were provided.

Great Britain.—Having already approached the maximum of revenue to be derived from direct taxation without resort to broad confiscatory measures, the British government in 1942 made comparatively slight changes in income tax regulations. In Great Britain, as in the United States, fiscal policies were dominated by the fear of disastrous inflation. The 1942 budget was essentially a sumptuary program intended not only to raise money but to check spending by the people. The budget was expected to produce about £2,400,000,000, of which amount approximately £150,000,000 would be provided through heavier duties on beer, spirits and tobacco. The postwar credit of 20% against the 100% excess profits tax on corporations remained in effect. The individual normal tax rate was 32½% for the first £165 (about $660) of taxable income, and 50% on the remainder. The surtax started after the income reached £2,000 ($8,000), the rates ranging from 10% to 47½%, which latter rate applied to income in excess of £20,000. Individual exemptions were £80 for a single person, £140 for married couples and £50 for each dependent. Aggregate income assessed for taxes in all classes in the 1942 fiscal year, according to the *Accountant,* was £4,250,000,000 and the tax paid amounted to £835,000,000, compared with £3,000,000,000 assessed and £310,000,000 collected in 1939. More than 10,500,000 persons paid taxes in 1942, compared with 3,800,000 in 1939, when the exemption limit of £250 prevailed. More than one-half of the taxpayers earned between £125 and £250 in 1942, and one-third were included in the wage span from £250 to £500. Despite the objective of the British government to meet 50% of wartime expenses by taxation, the revenue from this source covered only about 44% of total expenditures. Total revenue for the 1943 fiscal year was estimated at £6,934,000,000 and national expenditures at £15,648,000,000.

Canada.—"Pay as we go" was the fiscal slogan of the Ottawa government, and the fourth war budget, presented to parliament in June 1942 by Finance Minister Ilsley, carried the nation further toward that goal. Taxation in the fiscal year ending March 31, 1943, was expected to produce four times the revenue collected in Canada in the last prewar fiscal year ending March 31, 1939. The 1942–43 budget greatly increased income tax rates, and imposed compulsory savings, a straight 25% luxury tax on the purchase of almost every article classed as nonessential, and stiffer levies than heretofore on alcoholic beverages, tobacco, chewing gum, transportation fares, telegraph and cable messages, cameras, playing cards and private telephones. Under the new law, single persons in the $1,000 income level must pay $172 a year, with $80 refundable after the war. At the $2,500 income level, single persons pay $826 tax, with postwar refund of $200, while married couples with no dependents pay $651, of which $250 is refundable after the war. Married couples without children, earning $10,000 a year, pay a tax of $4,762, with a refund credit of $1,000. The refundable portion of the tax may be deducted from current taxes to the extent that it is offset by payments during the taxable year on account of life insurance premiums, principal payments on a mortgage, and pension fund payments. The balance, if any, would be refundable to the taxpayer after the war with 2% interest. The corporation excess profits tax was increased from 75% to 100%, with a provision that 20% of the tax collected on excess profits above a certain point would be refunded after the war. The minimum rate of tax on corporations in 1942 was 40% of profits. The new law was expected to produce about $700,000,000 in corporation taxes alone for the fiscal year ending March 31, 1943, compared with a total revenue of $85,000,000 from this source in 1939.

Australia.—Extensive changes were made in the Australian tax program outlined in Labour's budget of Oct. 29, 1942. Additional taxes of £22,000,000 Australian were imposed for the ensuing year. The new budget cancelled compulsory loans and gave relief to the middle-income taxpayers, who had borne a particularly heavy share of the burden. Increases in individual taxation were confined to incomes in excess of £1,500. The wartime company tax was increased more than fourfold, with a maximum of 78% on taxable profit exceeding 16%, and the ordinary company tax was increased from 2 to 3 shillings in the pound. An increased excise was placed on beer, tobacco and cigarettes, and the sales tax was boosted on a wide range of nonessential commodities.

New Zealand.—Faced with a war budget of £133,000,000, or nearly twice the total cost to the island government of World War I, New Zealand in 1942 continued to pay two-thirds of its war costs through taxation. Income was taxed at a flat rate of 5%, which was devoted to social security, and an additional 7½% for national security. Following these taxes, incomes of the equivalent of more than $1,000 were given exemptions of $250 for each dependent. After the exemptions were deducted and after the first 12½% of taxes, the tax increased by 1½% for each additional $500 of income until the income reached $12,000. Above that point a tax rate of 90% was applicable. (*See* also BUSINESS REVIEW; INITIATIVE AND REFERENDUM; LAW.)

(C. A. SR.)

Tea.

Sources of the tea supply of the United States in 1942 were limited to India and Ceylon. By agreement in the fall of 1942 between the U.S. government and the British food ministry, the latter was to buy the tea crops of India and Ceylon and throughout 1943 allocate the supply among the United States, Great Britain, Canada, Australia, the U.S.S.R. and South Africa. The Commodity Credit corporation, it was reported, was to buy that part allocated to the United States, to be distributed through regular trade channels. In 1940 and in 1941 the United States imported about 100,000,000 lb. of tea annually. Of this amount, 43,000,000 lb. was from India and Ceylon, 37,000,000 lb. from Java and Sumatra, 14,000,000 lb. from Japan and 6,000,000 lb. from China. With the occupation of Java and Sumatra by Japan the second largest of these sources was cut off from the United States. Under the allocation plan the United States was to receive 65,000,000 lb. of tea per year beginning April 1, 1943. Of this amount about 50,000,000 lb. was to go to civilian consumption; the remainder to the military. Tea consumption was reported to have increased substantially among U.S. troops in 1942, particularly those quartered in England, Ireland and North Africa. Tea consumption was reduced voluntarily in the United States by approximately one-third beginning in April 1942. The U.S. supply on hand Jan. 1, 1943, was reported to be sufficient for the first quarter of the year. (S. O. R.)

Tedder, Arthur William

(1890–), British air officer, was graduated from Magdalene college, Cambridge in 1912, and served with the royal flying corps in France during World War I. He attended the Royal Naval Staff college, 1923–24, headed the air armament school at Eastchurch and directed training at the air ministry. In 1936, he became air officer commanding the R.A.F. in the far east and in 1940, he was promoted to deputy commander in chief of the R.A.F. in the middle east. The next year he was made commander in chief of the middle east R.A.F. with command of air operations over the vast territory from Malta to the Egyptian desert front, the Persian gulf and Madagascar. Tedder was credited with having smoothed over the friction between the R.A.F., the army and navy on the desert front in 1941. In late Nov. 1942, Tedder flew to Algeria to confer with Lt. Gen. Dwight Eisenhower, Admiral Sir Andrew Cunningham, commander of allied naval units, and Maj. Gen. James Doolittle, on co-operative strategy in Tunisia. Tedder was promoted to vice-chief of air staff of the R.A.F. on Nov. 27, 1942.

Telegraphy.

The widening field of military activity during the year 1942 continued to affect international communications by telegraph and more and more to restrict domestic wire communications services and development to the necessities of the military effort. Nevertheless certain advances were made some of which may briefly be mentioned.

Maximum Usage of Trunk Lines, for some years the subject of study and development, took on added importance. The extended use of direct circuits and of such devices as carrier systems, the varioplex, reperforator switching, improved repeaters, sub-centre switching, etc., was increasingly necessary.

Vacuum-Tube Repeaters, used extensively in telephone circuits, were improved and used to some extent in telegraph circuits. They operate successfully for long periods of time without attention and hence may be installed in offices lacking the staff required to operate and maintain the electro-mechanical type of telegraph repeater.

Reperforator Switching continued to grow in favour and additional installations were being made. In offices equipped with this apparatus, manual relays of telegrams are eliminated and greater speed, accuracy and economy is assured. An improvement provided, automatically, a complete number sheet record of each message switched through the office, thus contributing to smoother operation and facilitating the prompt tracing of messages about which inquiry is received. The use of reperforator switching by leased wire systems was extended during the year.

Facsimile Telegraphy, coming more and more into use, showed continued improvement through experience and continued laboratory work. For the first time this method of telegraphy was used in the movement of trains. An improved type of cut-blank recorder in which incoming messages are recorded upon blanks fed from a continuous roll of printed paper and cut off at the end of each message, proved its efficiency. Another type of recorder was arranged to repeat, automatically, a message of which a number of copies are desired. A compact type of transmitter for use in patrons' offices was developed. In some forms of facsimile apparatus the speed of transmission and recording was considerably increased. Facsimile telegraph service between a customer's office in one city and the telegraph company's office in another city was inaugurated for the first time during 1942. Multifax, a development of the facsimile telegraph, is a business machine for the automatic preparation of stencils, copies, etc., in considerably less time than by other methods and assures absolute accuracy. The multifax principle was extended to the preparation of stencils, copies, etc., at a distance.

Multiple Tape Perforators were developed, by means of which large books of messages for transmission to many points are simultaneously reduced to prepared tape form for automatic transmission.

Magnetic Cores, the principal ingredient of which is carbonyl iron, were successfully used in the manufacture of loading coils and tuning inductances for telegraph carrier systems.

Statistics.—Reliable statistics covering the telegraph systems of the world were not available in 1942, but the latest comprehensive data for the land line wire telegraph systems of the United States (aside from that of telephone companies) showed the following plant devoted to the public service:

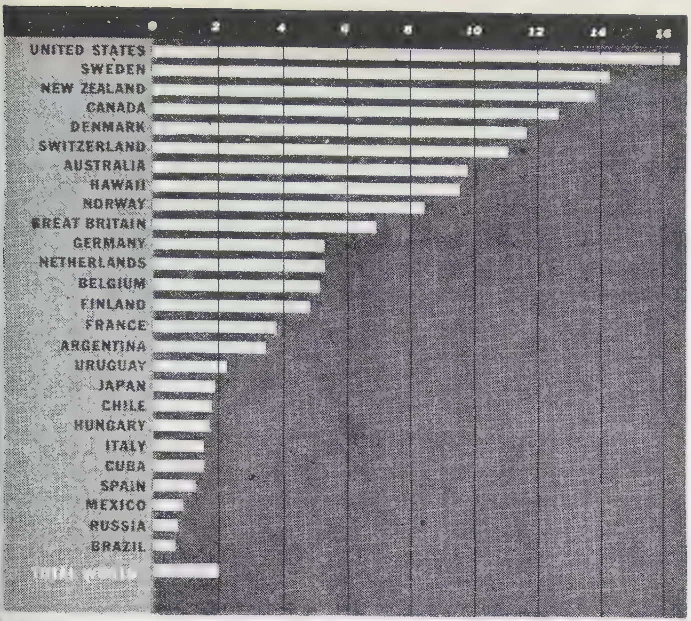
Miles of pole line	241,967
Miles of underground conduit (single duct)	6,137
Miles of aerial wire	1,820,773
Miles of aerial cable wire	119,423
Miles of underground cable wire	329,420
Miles of land line submarine cable wire	6,381
Total miles of land line wire (approximately 75% copper)	2,275,997
Number of telegraph offices	23,013
Approximate investment in operated land lines plant	$372,761,970
Approximate number of revenue messages transmitted (year 1940)	195,750,824

The submarine cable telegraph systems of the world, so far as indicated by the latest available data, consisted of about 360,000 mi. of ocean cable, containing about 432,000 mi. of copper conductors and representing a capital outlay of about $400,000,000. Approximately 80% of the total mileage of ocean cables was provided by private enterprise and the remainder by government administrations. (A. N. Ws.)

Telephone.

The needs of war raised the demand for telephone service in the United States to a new high level in 1942. The number of telephones increased by more than 1,300,000, reaching a total of about 24,800,000 by the end of the year. The number of telephone conversations averaged about 108,000,000 a day, some 4,000,000 above the corresponding 1941 figure. Completed toll calls in 1942 were estimated at 1,185,000,000, approximately 9% more than in 1941. The number of longer haul conversations was about a third greater than in 1941, and over numerous war-important routes there were increases

MEMBERS of the U.S. army signal corps receiving instruction in the operation and maintenance of teletypewriters in a Bell System training school in 1942



TELEPHONES per 100 population in various countries of the world, 1940–41

in traffic which average figures for the U.S. as a whole did not begin to suggest.

Nearly 3,000,000 circuit-miles of newly constructed toll facilities were placed in service in 1942—more than three-quarters of it being developed by carrier systems—but scarcity of materials made it impossible to build all the lines needed to keep ahead of mounting traffic. For that reason, the telephone companies widely advertised to the public the need to avoid unnecessary calls on war-busy routes. Order Number 20 of the Board of War Communications, made effective Nov. 1, 1942, provided that priority might be given to certain urgent toll calls as defined in the terms of the order.

General Conservation Order L-50 of the War Production board, issued in the spring, established the broad rule that telephone companies could provide new or additional exchange service only where line and switchboard facilities were already available as the result of previous construction. The order made exceptions to provide for service needed for war, public health, welfare or security. The telephone companies had many months previously begun their efforts to conserve materials and they continued to do so by all possible means.

Some 1942 Achievements.—The new transcontinental cable of the Bell system, running 1,600 mi. underground from Omaha, Neb., to Sacramento, Calif., and connecting at those points with the eastern and Pacific coast cable networks, was placed in service Dec. 21, 1942. This made it possible, for the first time, to telephone from coast to coast over all-cable facilities, and added greatly to the dependability of transcontinental service, especially important in time of war.

By the end of the year the number of government war projects requiring new or greatly enlarged facilities had reached approximately 2,500. Thousands of miles of private line circuits were provided for the military and other government departments. Handling of aircraft warning calls was speeded, and civilian defense telephone arrangements were improved. Special efforts were made to give personal service to soldiers and sailors. Arrangements were made to train thousands of soldiers in communication crafts at telephone company schools. Telephone company men and women, at the army's request, were maintaining and operating an increasing number of army telephone systems. Additional measures taken to protect telephone service against war damage included provision of pre-engineered and packaged switchboard units which could be quickly moved to the scene of disaster from strategic locations.

Telephone manufacturers greatly restricted their output for regular telephone purposes and concentrated on production of communication equipment for the armed forces. For example, the Western Electric company, manufacturing unit of the Bell system, increased its production of war materials—including radios for tanks and planes, field telephones, field wire, battle announcing systems for warships, and many types of secret equipment—more than seven times over 1941.

Telephone research was likewise at war. All available resources of Bell Telephone laboratories in 1942 were devoted to development of war tools involving communications techniques, or to related purposes. At the end of the year the laboratories were working on more than 300 development projects for the army, navy and National Defense Research committee.

In 1942 the telephone industry of the United States, thanks to co-operative effort by all units, resourceful application of the results of continuous research, and diligent endeavours to make the most of existing facilities and materials, successfully met the task of giving to the United States at war a greater quantity of fast, dependable communication than had ever been required before. (W. S. G.)

Telescopes.

Although the war interrupted and reduced astronomical research all over the world, 3 important new telescopes were completed and put into operation during 1942. The largest of these was in the southern hemisphere, where further observations with powerful telescopes were greatly needed. The new telescope in Mexico could also reach many southern objects of exceptional interest.

60-inch Reflecting Telescope (F 4.9) of the National observatory, Cordoba, Argentina. Operated in 3 combinations: Newtonian, 24.5 ft. focal length; Cassegrainian, equivalent focal length, 103 ft.; Coudé, equivalent focal length, 214 ft. Designed primarily for astrophysical research. One grating spectrograph completed and others under construction.

27-inch Schmidt-type Telescope (F 3.5) of the National observatory of Mexico. Located at Tonanzintla near Puebla, elevation about 7,000 ft. Concave mirror 31 in. in diameter, correcting plate 27 in. Planned especially for direct photography and photometry of the southern Milky Way.

24-inch Schmidt-type Telescope (F 3.5) of the Warner and Swasey observatory, Case school, Cleveland, Ohio. Concave mirror 36 in. in diameter, correcting plate 24 in. Stars to photographic magnitude 18.4 have been photographed in 9 min. with this instrument.

The mounting of the 200-in. telescope of the California Institute of Technology on Palomar mountain in southern California was to a large extent completed and erected, but no attempt was made in 1942 to instal the driving and control mechanism. Optical figuring of the 200-in. and auxiliary mirrors was continued to a point at which the time for completion should coincide closely with that required for the remaining mechanical parts of the telescope. (W. S. Ad.)

Television.

Pearl Harbor, and the consequent entry of the United States into World War II, came to pass only about five months after television had at last turned the famous "corner" which, for so many years, it had been "just around." Thus the life of public television, and its opportunity to develop into a self-supporting economic entity analogous to the everyday broadcasting of sound programs, extended only from July 1, 1941, until shortly after Dec. 7. During the year of 1942, on account of the necessary diversion of men and ma-

TELEVISING INSTRUCTIONS FOR AIR-RAID WARDENS in New York city in 1942. Wardens had only to visit their police precinct to receive their instruction through television receiving sets

terials to more direct war purposes, television broadcasting saw only retrenchment—nothing of the long-anticipated and long-awaited expansion.

It is ironical that the contraction of television activities in the civil field, because of wartime requirements, might have been reversed if the science had been recognized as a potential public service a few years earlier. The fact that it was economically and patriotically unwise to apply manpower to the production of daily and extensive television programs, for broadcasting in the several large cities where television transmitters were established and were in part-time operation, resulted almost wholly from the fact that there were only a relatively few home television receivers in use. In the greater New York area, for example, where daily television programs were made available throughout the latter half of 1941 by both the National Broadcasting company (WNBT) and the Columbia Broadcasting system (WCBW), and where a third station operated by Dumont was momentarily expected to deliver a similarly extensive program, it was estimated that not more than 15,000 homes were equipped to receive the televised pictures. In contrast to this, homes in the same geographical area contained more than 3,000,000 regular sound broadcast receivers. Assuming that television users turned to their televisors in about the same proportion as broadcast listeners used their receivers, it was probable that the two active New York stations seldom had audiences of more than a few thousand families each, and that the average audience was considerably less. Television of this order of magnitude could hardly be rated as "mass communication" in a city where normal radio audiences ran as high as 2,000,000 families for an especially important program.

If radio users had had several years, however, in which to learn the value and utility, the interest and importance, of television, and in which to purchase adequate television receivers at reasonable prices, a totally different situation might well have developed. Sound broadcasting, with its ability to reach nearly the whole population instantaneously and simultaneously, and with its demonstrated ability to inform the public, to recruit manpower and money for the war, and to aid in maintaining civil and military morale, was recognized as an essential war industry. While it was not expanding, its needs for the maintenance of its service and stature were being met by the allocation of material under suitable preference ratings and by the deferment of essential men. Had television enjoyed a real opportunity to make a real start, one might reasonably assume that, like sound broadcasting, it would be performing a genuinely essential service, its capacity for bringing living sound and graphic motion simultaneously before millions of observers being utilized on an increasing scale.

In spite of the fact that television's limited audience, numerically speaking, did not warrant rating it as a medium of mass communication rivalling the normal broadcasting of sound alone, television's inherent and particular ability to emphasize sound by backing it up with sight (or vice versa) was being put to constructive wartime use. In New York city, and, it was understood, in other cities, television receivers were installed at the meeting places of workers in the Civilian Defense Volunteer office, the Red Cross, the American Women's Voluntary service and other civilian organizations contributing to the war effort. Thus television was made available to specially interested audiences of very substantial size, and the system became an effective basis for the distribution of illustrated lectures to air-raid wardens, first aiders and other similarly interested groups. During 1942, many such training courses were given, and their success was attested by the fact that they were repeated again and again.

(J. V. L. H.)

Great Britain.—The main published work in Great Britain in 1942 was again that of J. L. Baird, since the research departments of the various manufacturers were confined to war applications of television. His experimental stereoscopic colour system in which the images were viewed directly through a magnifying lens was abandoned in favour of the anaglyph system owing to the difficulty of arranging direct viewing by an audience of several people.

In the anaglyph method the frames are projected on the viewing screen as slightly displaced red and blue pictures, the viewer being equipped with glasses having a red filter for the right eye and a blue filter for the left eye. The picture then stands out in proper relief when viewed through the colour filters.

When stereoscopy is combined with colour, the anaglyph principle is not altogether satisfactory, as the right eye sees only red and the left eye only blue. Any frame in which either of these colours predominates will therefore lose the effect of relief.

It appeared that stereoscopic viewing was more successful when applied to monochromatic pictures, and in this case the additional apparatus required to adapt a receiver for stereoscopy was not expensive or elaborate. The main addition was a rotating two-colour filter disk, mounted in front of the screen and synchronized with the field frequency, and while this did not mar the reproduction of ordinary monochromatic pictures, it could be swung out of the way of the screen when not required.

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(G. P.)

Tellurium. There was an enormous expansion in the production and use of tellurium in the United States in 1941, with output increasing 162% to 224,640 lb., and sales 170% to 240,000 lb. Canadian production also increased, but no statistics were reported.

(G. A. Ro.)

Tempest, Dame Mary Susan (1866–1942), British actress and favourite of theatregoers on both sides of the Atlantic, was born July 15 in London. She studied piano in Paris and won medals as a student of voice at the Royal Academy of Music in London. For nearly a decade she starred in light opera, and made her American tour with the Duff Comic Opera company. A London musical comedy producer had to buy out her American bookings in order to get her ack in London to star in *An Artist's Model* in 1895. At the turn f the century, she abandoned light opera for straight comedy les and made an auspicious start as Nell Gwyn in *English Nell.* n 1925 she appeared in London in *Hay Fever,* a play written for er by Noel Coward. Her last appearance on the stage was in *The irst Mrs. Fraser.* Illness prevented her from taking part in a new how she was rehearsing shortly before her death. Further misortune beset her during the bombings in London, when her home as demolished and most of her possessions lost. She was made ame Commander of the Order of the British Empire in 1937. Ier death was reported in London, Oct. 15.

emple, William: *see* Canterbury, Archbishop of.

ennessee. A south central state, 16th to enter the union, called the "Volunteer State." Land area 41,961 q.mi.; water area 285 sq.mi.; pop. (1940) 2,915,841; rural 1,88,635; urban 1,027,206; rural farm 1,271,944; native white ,395,586; Negro 508,736; foreign-born 11,320; other races 199. apital, Nashville (167,402). Other cities include Memphis (292,42); Chattanooga (128,163); Knoxville (111,580).

History.—Prentice Cooper, Democrat, was re-elected governor ov. 3, 1942. Other state officials were as follows: secretary of ate, Joe C. Carr; state treasurer, John W. Horton; comptroller f the treasury, Robert W. Lowe; adjutant general, Thomas A. razier; attorney general, Roy Beeler. Commissioners were as llows: agriculture, C. C. Flanery; conservation, J. Charles Poe; lucation, B. O. Duggan; finance and taxation, George McCandss; highways and public works, C. W. Phillips; institutions, . T. Taylor; welfare, Paul Savage; insurance and banking, J. M. IcCormick; labour, S. E. Bryant; public health, W. C. Williams; ilways and public utilities, W. D. Hudson, Porter Dunlap and eon Jourolman. In the November election for the house of repsentatives, the Democrats polled 102,143 votes; the Republins, 52,368.

Education.—In 1941, of 5,541 elementary schools, 1,497 had ree or more teachers; the number of one-teacher schools deined from 3,555 in 1927 to 2,515 in 1941. Enrolment in eleentary schools in 1941 was 521,129. In 1941 there were 589 gh schools with a total enrolment of 126,285; the number of achers was 5,227.

Public Welfare, Charities, Correction.—In June 1941, 121,3 people received public assistance amounting to $2,825,000; PA recipients 29,449, amount $1,396,000; old-age recipients, ,154, amount $408,000; aid to dependent children, 35,921 4,343 families), amount $267,000; aid to blind, 1,645, amount 8,000. In 1940–41 there were seven correctional institutions th approximately 4,306 inmates; expenditures, $1,156,231. In 40 payment for unemployment compensation was $6,275,000; mber of initial claims, 125,000; continued, 1,229,000. Separate hools were maintained for the blind, the deaf and the underivileged; three state hospitals for the insane; a home and aining school for feeble minded.

Communication.—In 1940, of about 82,000 mi. of public road, 520 mi. were state highways; state expenditures were $10,794,7 for the year ending June 30, 1940. There were 3,573 mi. of ilroads in 1941; as of Oct. 1942 there were 26 airports; 718 mi. airways; 307,000 telephones in the state, of which 211,000 ere residential and 96,000 business. Water-borne commerce on e Tennessee river in 1940 amounted to 2,206,913 short tons; mberland river, 852,138; Mississippi river, 7,055,675 short tons om Ohio river to Baton Rouge, and 1,841,068 at Memphis.

Banking and Finance.—On May 20, 1942, there were 70 naonal banks with 17 branches, and 227 (June 30, 1942) state nks with 32 branches; assets, $667,614,000 for national and $245,801,997 for state banks; deposits, $616,607,000 for national banks and $219,574,397 for state banks. Savings and loan associations in 1940 numbered 39, with assets of $30,240,032.

Total state revenue for the fiscal year 1941–42 was $55,488,103; revenue shared with counties and cities $8,601,362; revenue for state purposes, $46,886,741. Direct bonded debt for the state June 30, 1942, $95,289,000; highway reimbursement debt, $13,770,104; gross debt $109,059,104; unencumbered surplus in sinking fund, June 30, 1942, $12,033,176; net debt $97,025,928.

Agriculture.—There were 247,617 farms in 1940; 18,492,898 ac. in farms, with 6,158,662 ac. of cropland harvested. Gross value of agricultural production in 1941 was $264,483,000; cash farm income, $203,880,000 (including government payments); cash farm income from crops was $110,616,000; from livestock and livestock products, $80,840,000; government payments to farmers, $12,424,000. Gross farm income from crops was $133,722,000 in 1941. The forest area was about 14,000,000 ac.

Table I.—*Leading Agricultural Products of Tennessee, 1942 and 1941*

Crop	1942*	1941
Corn, bu.	74,518,000	69,615,000
Tame hay, tons	2,230,000	2,148,000
Cotton, bales	614,000	598,000
Wheat, bu.	5,612,000	5,415,000
Tobacco, lb.	93,675,000	88,310,000
Potatoes, bu.	3,483,000	2,604,000
Sweet potatoes, bu.	4,400,000	4,664,000

*Estimated.

Manufacturing.—In 1939, 2,289 manufacturing plants yielded products valued at $728,087,825, of which $320,341,902 was added by manufacture. The number of wage earners increased from 107,645 in 1925 to 131,874 in 1939; wages paid in 1939, $109,661,769.

Table II.—*Principal Industries of Tennessee, 1939 and 1937*

Industry	Value of products	
	1939	1937
Rayon and allied products	$59,724,728	$59,132,660
Hosiery	33,798,963	29,219,241
Meat packing, wholesale	28,266,104	29,491,149
Chemicals	25,639,499	38,048,635
Cooking and other edible fats	19,787,646	36,457,022
Footwear (except rubber)	17,740,737	20,897,976
Flour and other grain mill products	16,147,788	22,673,578
Cottonseed oil, cake, meal linters	15,390,972	20,150,709

Mineral Production.—The total value of minerals produced in Tennessee in 1939 was $40,119,893, as compared with $32,428,512 in 1938.

Table III.—*Principal Mineral Products of Tennessee, 1939 and 1938*

Mineral	Value 1939	Value 1938
Coal	$10,402,000	$9,007,000
Stone	8,312,977	4,237,351
Cement	5,613,477	5,063,628
Phosphate rock	3,856,505*	....
Sand and gravel	1,967,356	1,605,049
Ferro-alloys	1,442,967	779,913
Lime	893,161	901,460
Coke	527,535	508,771
Clay, raw	425,008	347,035
Barite	372,348	209,040
Manganese ore	128,176	77,806

*Inc. Virginia. Value at Mines

(C. E. A.)

Tennessee Valley Authority. The Tennessee Valley authority in 1942 was gearing its organization to the United States war effort, by supplying power to war industry and building new hydroelectric plants; by strengthening the land for more and better food production; by producing ammonium nitrate for munitions and elemental phosphorus for chemical warfare, and by preparing to produce calcium carbide for synthetic rubber.

Improved phosphate fertilizers developed by TVA had strengthened the soil for more and better food production in a farm program directed by state agricultural extension services on 25,000 demonstration farms in 27 states. The authority was perfecting a process to produce alumina, raw material of aluminum, from abundant domestic clays; was carrying on extensive research for utilization of vermiculite and for magnesium-bearing olivine; was carrying out mapping assignments from the war department; was putting into practical use a demountable house built in three-dimensional sections and its smaller counterpart, a trailer house. The two house types were being built sectionally by mass production methods, both by the authority and under private contract. In addition, TVA was assembling extensive data on forest resources of the Tennessee valley enabling industry to locate supplies of wood needed for war production.

TVA was created by act of congress in 1933 for the regional development of a river valley embracing 41,000 sq.mi. in parts of the states of Tennessee, Alabama, Mississippi, Georgia, North Carolina, Kentucky and Virginia. The area in 1942 reached by TVA power embraced approximately 70,000 sq.mi.

In 1942, the series of dams on the main stream was complete except for two under construction, one at each extremity of the river (Kentucky dam, near Paducah, Ky., and Fort Loudoun dam, near Knoxville, Tenn.). TVA had received Wilson dam from the federal government, had acquired Hales Bar dam from a private utility by purchase, and had built Pickwick Landing, Wheeler, Guntersville, Chickamauga and Watts Bar dams.

On tributaries of the Tennessee river, TVA had built and was operating Norris dam, on the Clinch river; Hiwassee, Chatuge and Nottely dams, on the Hiwassee river system; and Cherokee dam on the Holston river.

TVA was building, as war emergency power projects, Douglas dam on the French Broad river; Fontana dam on the Little Tennessee river; Watauga and South Holston dams on the Holston river system; Apalachia and Ocoee No. 3 dams on the Hiwassee river system. Acquired from a privately owned utility company by purchase were Ocoee No. 1, Ocoee No. 2, and Blue Ridge dams on the Hiwassee river system.

Installed power capacity of the authority's generating system, which included several steam plants, had reached 1,500,000 kw. by the end of the calendar year of 1942. Congress had authorized a total installed capacity which would approximately double the figure. About one-half the additional capacity was being installed as rapidly as the construction could be completed.

In 1942, a contract was entered into by the Aluminum Company of America and TVA in which the site of Fontana project, in North Carolina, was deeded to the authority and it was provided that on completion of Fontana the Aluminum company's five dams on the Little Tennessee river system would be operated as units of the TVA system. The five plants of the Aluminum company (Cheoah, Calderwood, Santeetlah, Nantahala and Glenville) in 1942 had a total installed power capacity of 307,300 kw.

The authority and five municipal and four co-operative distribution systems bought power generation, transmission and distribution properties of the Kentucky-Tennessee Power and Light company in twelve counties of southwestern Kentucky.

Gross power revenues of the authority for the 1942 fiscal year ended June 30, 1942, exceeded $25,000,000. TVA power was sold at wholesale to 83 municipalities and 45 co-operatives, which distributed it to more than 500,000 retail customers.

In lieu of taxes, fiscal year 1942 payments totalling $1,859,416 were disbursed to six states and 113 counties by the authority in accordance with provisions laid down by congress. In addition, co-operative and municipal distributors of TVA power paid approximately $1,850,000 in taxes and tax equivalents on their electric systems during the same period. Thus the combined annual TVA-contractor tax and in-lieu payments for fiscal 1942 amounted to more than $3,700,000. TVA employed 39,579 persons on June 30, 1942.

Congressional appropriations to the authority amounting to $196,800,000 for the fiscal year 1942 and $136,100,000 for the fiscal year 1943 brought total appropriations, plus $65,072,500 in bond proceeds, to $733,041,770.

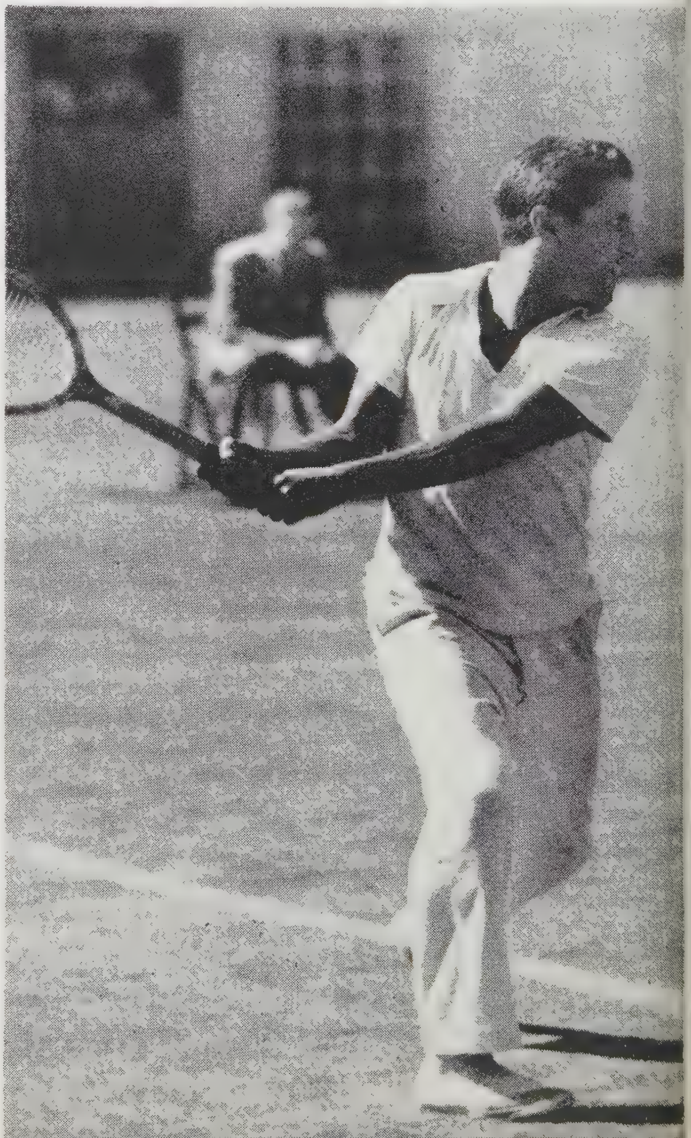
The chairman of the board of directors of the authority in 1942 was David E. Lilienthal. James P. Pope was reappointed to the board of directors by President Roosevelt for a nine-year term. (*See* also DAMS; ELECTRICAL INDUSTRIES; PUBLIC UTILITIES.)

(W. L. S.)

Tennis. Although some tournaments were cancelled either for lack of attractive competition or sufficient galleries or both, the majority were held as usual and the attempt was made to conduct the game through the summer months of the year. The national singles and doubles championships, which took place at the West Side Tennis Club at Forest Hills, showed this to be a popular decision with sporting crowds, for good-sized audiences came for the last days.

Although the quality of the play and the average class of the field was certainly the poorest in some years, Frederick R Schroeder, Jr., of Glendale, California, who became the last singles champion until after the war, seemed to be a better

FRANCISCO ("PANCHO") SEGURA, Ecuadorian star who uses a double-handed forehand drive, won the U.S. Eastern Clay Court championship in 1942



tennis player than the victors of 1941 and 1940. He had a sound, forceful game, a Californian service and volley backed by excellent ground strokes.

The class of the women's field, with the withdrawal of Miss Helen Jacobs and Mrs. Sarah Palfrey Cooke, was even lower than the men's. In the absence of any top rate player, Miss Pauline Betz of Florida defeated Miss Louise Brough of Los Angeles in a close 3-set match in the final round. The men's doubles title was captured by William Talbert of Cincinnati, Ohio, and Gardnar Mulloy of Florida, who defeated Schroeder and Sidney B. Wood of New York in straight sets. (J. R. Tu.)

Terhune, Albert Payson (1872–1942), U.S. author, was born Dec. 21 in Newark, N.J. He joined the staff of the old *New York World* in 1894 and wrote several novels that enjoyed moderate success. After two decades of writing "pot-boilers," he met immediate success with a novel called *Lad: A Dog* (1919), a story about a collie. The book proved so popular that Terhune wrote almost a score of novels woven about the dogs in his famous Sunnybank kennel in New Jersey. These books include: *Bruce* (1920); *Buff: A Collie* (1921); *Further Adventures of Lad* (1922); *The Heart of a Dog* (1926); *Lad of Sunnybank* (1928); *A Dog Named Chips* (1931); *The Way of a Dog* (1934); and *A Book of Famous Dogs* (1937). He died in Pompton Lakes, N.J., Feb. 18.

Ter Poorten, Hein: *see* Poorten, Hein ter.

Terra, Gabriel (1872–1942), Uruguayan politician, was born in Montevideo and was graduated with the degree of doctor of law from the University of Montevideo in 1895. After a steady rise in Uruguayan politics, via the chamber of deputies and the cabinet, he was elected president in 1931 on a platform of support for the constitution of 1919. But Terra staged a coup d'état in 1933, seized dictatorial power and ignored the constitution, considered by many to be a model in its checks on abuse of executive power. He dissolved the national administrative council and the congress, modified the constitution to permit his own re-election in 1935, and a year later drafted a new charter which substantially strengthened his own position. In 1935, he was shot in the shoulder by a former nationalist deputy, and later that year sporadic attempts at revolution broke out. In 1938, he stepped down from the presidency and was succeeded by his brother-in-law, Dr. Alfredo Baldomir. Dr. Terra died Sept. 15, 1942, in Montevideo.

Texas. A south-central state of the United States, admitted to the union in Dec. 1845; popularly known as the "Lone Star state." Area, 263,644 sq.mi. (plus 3,695 sq.mi. of inland water surface); pop. (1940), 6,414,824. Rural population was 3,503,435 or 54·6% of the total. Negroes and other non-whites constituted 14.5% of the population. Capital, Austin (87,930). The three largest cities are Houston (384,514); Dallas (294,734); San Antonio (253,854).

History.—During 1942 the life and economy of the people of Texas were thoroughly disrupted by the war. The rate of enlistments in the armed services was higher than in any other state of the union. War workers crowded cities and towns. There was a scarcity of farm labour. A result of these disruptions was a lack of interest in local politics.

In the second Democratic primary (in August) U.S. Senator W. Lee O'Daniel defeated James Allred, who had the strong support of the national administration, by a narrow margin (451,359 to 433,203). Only a small minority of qualified voters went to the polls. O'Daniel, after re-election to the senate, led the fight against the drafting of 18 and 19 year-olds. The antiadministration trend in Texas politics was echoed by Coke R. Stevenson (re-elected governor), who protested against rationing, and John Lee Smith (elected lieutenant governor) who criticized federal labour policy.

Other state officers re-elected were Gerald Mann, attorney-general; Jesse James, treasurer; James P. Alexander, chief justice of the supreme court; Bascom Giles, commissioner of general land office; J. A. McDonald, commissioner of agriculture; L. A. Woods, superintendent of public instruction; George H. Sheppard, comptroller.

Education.—For 1941–42 elementary schools had an enrolment of 789,896 white pupils and 178,275 Negro. Secondary schools had an enrolment of 305,154 whites and 38,484 Negroes. The total teaching staff was 49,434.

Public Welfare, Charities, Correction.—In 1942 182,483 recipients of old-age assistance received a total of $41,798,969. More than $880,000 was expended on aid for the needy blind, with 4,000 persons the highest case load in any one month. During the year, $2,783,861 was expended on aid to dependent children, with a maximum case load, for any one month, of 22,501 families and 45,945 children. WPA's rolls declined during the year from 62,012 at the beginning of Jan. 1942 to 14,649 at the end of Dec. 1942; during the first six months of 1942, certified workers were paid $14,293,350 in wages. The Texas Unemployment commission approved an estimated 85,000 claims during 1942 and issued 238,344 payments amounting to $4,058,784.

Eleemosynary institutions in the state numbered 22, of which 11 were hospitals for mental and nervous cases. The remaining institutions consisted of sanatoriums for tuberculars, schools for the blind and for the deaf (white and Negro); two homes for delinquent children; two for white orphans and one for Negro; one for crippled children; a home for Confederate veterans and one for the widows of veterans. During 1942 the state cared for more than 25,000 inmates in these institutions.

Communication.—The state in 1941 had 26,459.42 mi. of highways; including 23,997.24 mi. maintained by the state, 600.88 mi. in urban areas, and 1,861.30 not maintained wholly by the state. The amount spent by the state for regular maintenance, improvements and traffic services amounted to $9,379,940.06. Amount spent for highway construction was $23,686,500.52. There were more than 22,000 mi. of railway track in 1942.

Banking and Finance.—As of Dec. 31, 1942, there were 391 state banks in Texas with total resources of $428,580,949.32, including savings. Individual deposits amounted to $291,946,979.89, and deposits in savings departments amounted to $11,510,893.53. As of June 30, 1942, there were 439 national banks and 299 federal savings and loan associations in Texas. The total deposits of national banks in Texas at that date was $1,849,199,000, and their resources totalled $1,855,401,000.

Total gross cash receipts of the state treasury at the end of the fiscal year of 1942 amounted to $350,678,126.74. Total gross cash disbursements for the fiscal year were $292,753,922.40. At the beginning of the fiscal year, the cash balance in state funds was $70,686,694.12. At the end of the fiscal year, the cash balance was $57,924,204.34. As of Dec. 31, 1942, the state's gross bonded indebtedness was $6,871,950.00; its net bonded indebtedness was $4,102,200. On the same date, total warrants outstanding and unpaid in the general revenue fund amounted to $33,500,064.43. Its net warrant debt was $28,398,911.37.

Agriculture.—The total value of agricultural production in Texas during 1942 was estimated at $665,329,000. The total acreage harvested was in excess of 27,000,000. The total cash income from crops, livestock and government payments amounted to $839,981,000 during 1942.

Leading Agricultural Products of Texas, 1942 and 1941

Crop	1942 (est.)	1941
Wheat, bu	47,280,000	27,186,000
Barley, bu..	4,931,000	9,750,000
Oats, bu.	11,837,000	37,975.000
Peanuts, lb.	583,000,000	156,040,000
Grain sorghums, all, bu.	82,118,000	79.724,000
Rice, bu..	19,552,000	13,600,000
Hay, tons	1,777,000	1,555,000
Cotton (ginnings), 500 lb. bales	3,403,000	2,652,000
Peaches, bu.	508,000	376,000
Pecans, lb.	10.350,000	22,100,000
Grapes, tons	2.200,000	2,400,000

Manufacturing.—In 1942 the value added by manufacturing, exclusive of wages paid workers, was $451,000,000, as compared with $355,000,000 for 1941. Nonagricultural payrolls for 1942 were estimated at $1,956,000,000 as compared to $1,383,000,000 in 1941. Texas had its greatest construction year in 1942, with awards for buildings totalling $825,704,245.

Mineral Production.—The value of minerals in Texas in 1941 was about $836,260,000, compared with $686,323,000 in 1939, with oil and gas fields dominating production. In addition, the large iron deposits, smelted by use of gas heat rather than by coal, were being exploited, and other minerals useful to the war effort were being mined. (C. W. RA.)

Texas, University of.

An institution of higher education at Austin, Tex. The 60th annual session opened Sept. 21, 1942, on a 12-month war training basis. A total of 47 new war courses were opened in February, 37 in September, bringing the number of offerings to approximately 1,400, in 47 fields. A new undergraduate department of aeronautical engineering was opened, a new degree of bachelor of science in physics almost doubling mathematics and physics requirements was created, and a war-emergency training program in physics was set up to turn out fully trained physicists in 20 months. Virtually all able-bodied men students were enrolled in one of the military reserves. The first "Intersession," a special three-weeks' session between summer school and long session, was held Aug. 25–Sept. 12, 1942, to round out the 12-months-a-year war training schedule. In its engineering, science and management war training program, in co-operation with the U.S. Office of Education, the university trained 2,700 men and women for war assignments between Feb. 1941 and July 1942, and was training 3,000 in 1942–43. All research projects were converted to war purposes. The medical branch at Galveston graduated its 50th class in Dec. 1942, five months ahead of prewar schedule. Dr. Chauncey D. Leake, formerly pharmacologist at the University of California, became vice-president and dean in charge of the medical branch; Dr. E. W. Bertner, Houston physician, was named temporary director of the new cancer research centre in Houston. For statistics of enrolment, faculty, library volumes, etc., *see* UNIVERSITIES AND COLLEGES. (H. P. R.)

MOHAIR WAREHOUSE at Kerrville, Texas. Large stocks of this material, formerly used in U.S. motor car upholstery, were available in 1942 to help ease the wool shortage

Textile Industry.

Textile World's index of mill activity for 1942 was approximately 200 (on the basis of 1923–25 as 100). The three previous records had been 188 in 1941, 142 in 1940 and 132 in 1939. The fact that the 1942 index was only slightly (about 6%) above 1941 was due purely to the inability to raise the production schedules any higher because of limitations of materials, machinery, etc.

The great bulk of the industry's production was going into textiles for the armed services, for lend-lease, for allied agencies such as Red Cross and civilian defense agencies, and essential industrial needs, directly or indirectly tied up with the war effort. That meant that the remainder was necessarily directed toward essential civilian needs. Civilians therefore found increasing shortages in textiles—particularly in selectivity.

The contribution of the textile industry to war effort, whereby unprecedented output was achieved with practically no addition of equipment, was due to sharp increases in the number of shifts, and to conversion of plants from civilian to military use. The best known example of such conversion was the carpet industry which, deprived of raw material for production of its civilian product, converted its looms to the manufacture of duck and blankets, two extremely important items in the military picture.

War's Effect on Apparel.—Thus far, war made little change in the appearance of people's clothes. There were only such minor effects as the elimination of cuffs from men's trousers, the snipping of a few inches off nighties which hitherto swept the ground, and the official banning of the zoot suit. A program of further simplification partially based on the British "utility clothing" production, was being studied by officials of the Office of Civilian Supply of the War Production board. (*See* also COTTON; RAYON AND OTHER SYNTHETIC FIBRES; WOOL.) (D. G. Wo.)

Thailand (Siam).

A kingdom of southern Asia between Burma and French Indo-China, extending southwards into the Malay peninsula; area 198,247 sq.mi.; pop. (census 1937) 14,464,489 (est. March 1940) 15,717,000. Chief towns: (pop. 1937) Bangkok (former cap. 681,214); Chiengmai (544,001); Khonkaen (473,475); Chiengrai (443,476). Ruler (1942): King Ananda Mahidol; language: Siamese; religion: Buddhism.

History.—After the Japanese invasion, Thailand was under Japanese influence both politically and economically. Thailand declared war on Great Britain and the United States on Jan. 25, 1942, and Thai troops invaded Burma. Industries belonging to enemy subjects were taken over by the government early in the year, and a company was formed to work the tin and rubber industries.

On February 1 the government announced the adoption of a new currency exchange system based on a gold standard fixing the baht at .032,639 grams of pure gold. Foreign exchange transactions were controlled. On April 22 Japan and Thailand concluded a yen-baht exchange parity agreement. By a further agreement of May 2, settlement of trade accounts between the two countries was to be in yen instead of pounds or dollars. An agreement of June 18 between the Bank of Japan and the Thailand finance ministry allowed the latter to borrow up to 200,000,000 yen over a five-year period; the object was to enable Thailand to acquire gold from Japan as security for her currency.

The government resigned on March 9, and the premier, Marshal Luang Pibul Songgram, formed a new government with fewer ministers, mostly military men. A compulsory labour service of six months for the male population was established. The government decided in May to transfer the capital to Saraburi, a sacred town in the hills about 75 mi. northeast of Bangkok; the latter would remain the chief trading centre. The Nanking puppet government was recognized in July. A Free Thai movement opposed to Japanese control was stated to exist in the country itself, and anti-Japanese rioting was reported. A Free Thai movement was established in the United States and Great Britain. Great Britain decided on February 20 to revert to the name "Siam" for official use.

(*See* also WORLD WAR II.) (M. Cs.)

Education.—In 1938–39: government schools 429; scholars 61,297; local public and municipal schools 11,072; scholars 1,484,483; universities 2; students (1937) 11,525.

Banking and Finance.—(1942) revenue, 210,000,000 baht; expenditure 259,000,000 baht, expenditure, capital (est. 1941) 56,056,000 baht; public debt (Mar. 31, 1940) 69,000,000 baht; notes in circulation (July 31, 1941) 226,000,000 baht; reserves (July 31, 1941) gold 97,000,000 baht; foreign assets (July 31, 1941) 152,000,000 baht; exchange rate (average 1940) 1 baht=35.15 cents U.S.; (Sept. 1941) 1 baht=36.97 cents U.S.

Trade and Communication.—Foreign trade 1940–41 (merchandise): imports 163,400,000 baht; exports 257,600,000 baht. Communications: roads, state highways completed (1938) 1,815 mi.; railways, open to traffic (1938) 1,925 mi.; airways, length of route opened (1938) 444 mi.; motor vehicles licensed (1937–38): total 11,439 (cars 5,910; trucks 4,233; buses 146; cycles 559); wireless receiving set licences (1938) 29,834.

Agriculture and Mineral Production.—Production (in metric tons): rice (1939–40), 5,082,700; rubber (1940 exports) 45,000; tin ore, metal content (export 1940) 17,700; tobacco (1938–39) 8,400; cotton ginned (1940–41) 2,400; maize (1938–39) 5,600.

Theatre.

The year 1942 in the theatre was notable more for its lapses than for its accomplishments. In subscribing in turn to the decision of the New York Drama Critics' Circle that no new American play was good enough for its award, the Pulitzer prize committee attested further to the season's dramatic poverty. The only two plays that were even momentarily considered by a minority of the Critics' Circle, John Steinbeck's *The Moon Is Down* and Howard Koch and John Huston's *In Time to Come,* were as quickly dismissed by that body—and presumably also by the Pulitzer committee—as being unworthy of its imprimatur. As the best foreign play to be produced on the American stage, the critics, though not unanimously, conferred their blessing upon Noel Coward's farce-comedy, *Blithe Spirit,* which signified little since its only contender was Patrick Hamilton's box-office melodrama, *Angel Street.*

Following Pearl Harbor, the theatre, coming into the year 1942, suffered a six months' period of relative doldrums and did not recover until, peculiarly enough, the summer, traditionally a slack season. Suddenly, a succession of musical and vaudeville shows brought a renewed life to the box office, which continued for the rest of the term and beyond. The successful re-emergence of vaudeville, in such exhibits as *Priorities of 1942* and *Show Time,* was one of the idiosyncrasies of the year. Another was the transference of burlesque from the lowly sidestreet stages, where it had been suppressed by the authorities as inimical to public morals, to the Broadway stage. Here, at fourfold prices, it went its old way for some time unmolested until censorship finally descended upon one of the shows, *Wine, Women and Song,* which was dispensed at relatively lower prices, and several weeks later under due process of law forced its shutdown. *Star and Garter,* which was old strip-tease burlesque at $4.40, was subsequently, after it had been operating for almost six months, compelled to a self-purification under threat of prosecution, and *Strip For Action,* which was a comedy based upon the activities of a burlesque troupe and vended at almost as high a price, was similarly worried into various deletions.

As for the better-known American playwrights, Eugene O'Neill was still conspicuous for his absence from the theatre, adhering to his determination not to allow productions of any of his several completed plays until the conclusion of the war. In the latter half of the season, William Saroyan produced on his own his two short plays, *Across the Board on Tomorrow Morning* and *Talking to You,* but his amateurish stage direction ruined any chances they might otherwise possibly have had. Subsequently, he permitted Eddie Dowling to produce his *Hello Out There* and the play's excellent qualities were given their full due. Maxwell Anderson followed his feeble war play, *Candle in the Wind,* with a very much better one, *The Eve of St. Mark;* Robert Sherwood, giving his services to the government, wrote nothing for presentation; Clifford Odets came a cropper early in the year with a fuddled triangle play with fuddled overtones, *Clash by Night;* and Ben Hecht failed abjectly with an allegorical ghost drama, *Lily of the Valley.* Marc Connelly was revealed at his weakest in *The Flowers of Virtue,* which drew a warning parallel between an incipient Hitler and the real article; Philip Barry, in *Without Love,* negotiated a very poor comedy as a vehicle for the popular Katharine Hepburn; S. N. Behrman, in *The Pirate,* based on an old German play by Ludwig Fulda, did little but provide the equally popular Lunts with a serviceable box-office show; and Thornton Wilder contrived a fantasy, *The Skin of Our Teeth,* also good box office, that amounted critically to a mere clever stunt.

With the acute shortage of good new play scripts, revivals of older plays were to be expected, and they duly came about. During the year, no less than 14 such dramatic revivals were produced for better or worse. They ranged from Chekhov's *The Three Sisters* to the farce *Three Men on a Horse,* from Sheridan's *The Rivals* to the Paul Green-Richard Wright *Native Son,* and from *Hedda Gabler* to John Drinkwater's *Bird in Hand,* Karel

Capek's *R.U.R.* and Elmer Rice's *Counsellor-at-Law.* There were musical revivals as well, among the lot *The Merry Widow, The New Moon, Porgy and Bess, The Chocolate Soldier* and *The Time, the Place and the Girl,* along with a heavy serving of Gilbert and Sullivan.

Despite the curtailment of gasoline, the little summer theatres fared pretty well, more than 70 operating throughout the east. The most popular plays with the rural audiences were, in the order named, *Watch on the Rhine, George Washington Slept Here, Jason, Private Lives, Out of the Frying Pan* and *You Can't Take It with You,* with *My Sister Eileen, Ladies in Retirement, Reflected Glory* and *Theatre* all tied for seventh place.

Unquestionably the most successful production made in the national theatre during the entire year was Irving Berlin's military show, *This Is the Army,* acted by men in the armed forces for the Army Relief fund. A thrilling exhibit, it was unanimously endorsed by the press and public and played to capacity audiences in the various cities where it was shown. It played to such enormous business, indeed, that it wrecked the box office for any other play that risked the same city at the same time.

The year witnessed a renewed activity on the part of amateurs, with few of them, however, producing anything of merit. The so-called American Youth Theatre put on two revues, *Of V We Sing* and *Let Freedom Sing,* both very poor. The Studio Theatre came uptown with a weak revival of Lessing's *Nathan the Wise,* after showing a still weaker dramatization of Tolstoy's *War and Peace* in its home quarters. The Blackfriars' guild presented *The Years Between,* by Edward Burbage, *Savonarola,* by Urban Nagle, and a couple of other equally feeble plays; and the Theatre Showcase group put on, among other things, a dramatization of a Gorki story, getting nowhere with it, although it deserved some credit for producing Saroyan's *Across the Board on Tomorrow Morning* before the author got around to showing it in the professional theatre. The notable exception was the chain of theatres in the so-called National Theatre Conference, to which Anderson contributed, gratis, the rights to his *The Eve of St. Mark.* More than 75 of these amateur groups produced the play, some contriving presentations that were more than usually competent.

The once esteemed Theatre guild, entering upon its 25th season, still further lowered itself in the public eye by arrogating to itself, on the occasion of its anniversary, major credit in having converted the American theatre from a purely commercial institution into one more or less receptive to fine dramatic art. Since a large share of that credit obviously belongs to others, as the critics were quick to point out, and since the guild in later years has been fully as commercially minded as the producers it inferentially condemns, its posturing was regarded as in particularly bad taste.

Among other things, as the critics observed, the guild from its very beginning has allowed other producers to discover and sponsor talent in playwriting, and has taken over such talent only when it has already been proved at others' expense.

The best ensemble acting of the year was that in the *Candida* revival, with a company including Katharine Cornell, Raymond Massey, Burgess Meredith and Dudley Digges. The play was given 27 performances for the benefit of the Army Emergency fund and the Navy Relief society. Among the more interesting of the 1942 individual performances in drama were Nicholas Conte's in *Jason,* Victor Kilian's in *Solitaire,* Flora Robson's in *The Damask Cheek,* Eddie Dowling's and Julie Haydon's in *Hello Out There,* Jessica Tandy's in *Yesterday's Magic,* Alfred Lunt's and Lynn Fontanne's in *The Pirate,* Bobby Clark's in the revival of *The Rivals,* Canada Lee's in the reproduction of *Native Son,* Judith Anderson's in the revival of *The Three Sisters,* and Tallulah Bankhead's in *The Skin of Our Teeth.* (G. J. N.)

Statistics of the Theatre in New York city, 1942 and 1941

	1942	1941
Productions	110	94
Musical comedies	26	20
Plays	84	74
Premières	73	69
Successful productions	17	21
Performers employed	1,679	1,414
Tickets sold	7,210,000	7,360,000
Approximate cost of productions	$2,250,000	$2,000,000
Number of shows booked for other cities	94	106

(X.)

Great Britain.—The surprise of the year in the British theatre was the readiness with which the public accepted war plays. Not romantic war plays, not the spy-and-thrill stories which were popular during World War I, but genuine efforts to state in terms of theatre the emotions and ideals of the dreadful hour. The first in the field, *The Morning Star,* in which Emlyn Williams was author, actor and producer, held its place in the West End for a year.

Other successes of this type were *The Watch on the Rhine,* an American study of the war between nazi and anti-nazi relentlessly pursued overseas, and *Flare Path,* an R.A.F. play by Terence Rattigan in which the horrors of aerial warfare were austerely mingled with some humours of the airman's life on earth.

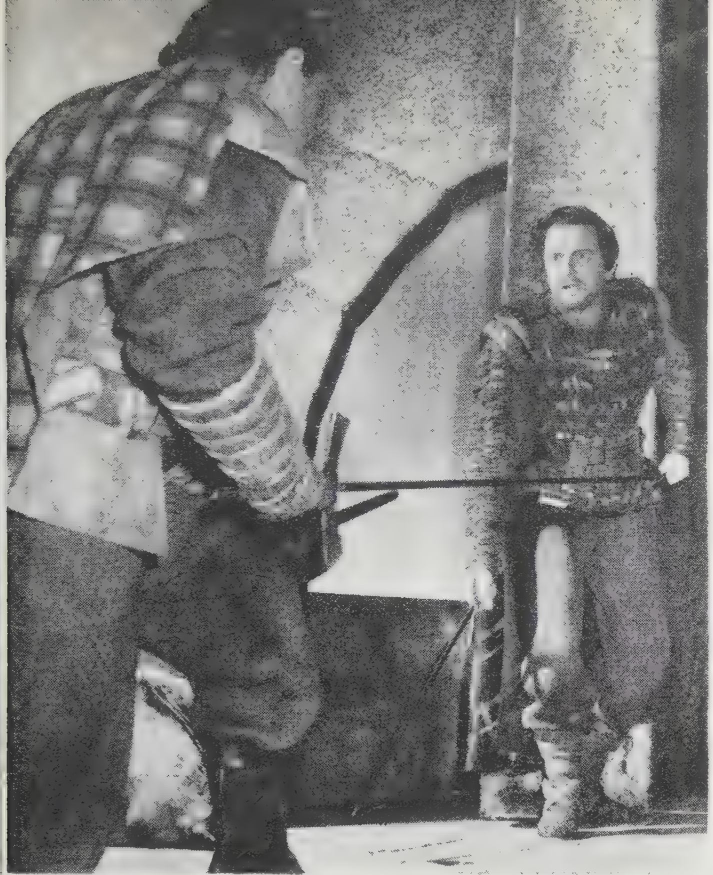
Shakespeare turned out to be obstinately popular. John Gielgud toured the country triumphantly and had a London season with *Macbeth,* while the "Old Vic" did the same with *Othello* and some of the famous comedies. Donald Wolfit was rapidly building up for himself a position as a leader of classical revivals on tour, and Robert Atkins, so well known for his open-air productions in Regent's park every summer, during 1942 had initial Shakespeare seasons in the parks of Manchester and the East End of London and these, despite uncertain weather, were very widely supported. Much of this Shakespearean work was done in connection with C.E.M.A., the Council for Encouragement of Music and the Arts which was created at the beginning of the war by a grant from the Pilgrim trust and was later adopted by the government as a vehicle for state support of the arts. Its contribution to the drama so far had mainly been the assisting of first-rate tours in regions unused to receiving them, and the taking to industrial and mining areas of drama and music of the highest calibre.

Noel Coward gave part of his time to the making of a much-approved navy film *In Which We Serve,* but found occasion to compose two new plays and to act in and direct them himself. These, along with his universally popular comedy *Blithe Spirit,* he took out on tour in the autumn. They were not seen in London in 1942.

There was considerable prosperity in the entertainment world, despite the heavily increased entertainment tax. The large numbers of U.S. and Imperial troops in the country added to the potential audience and they did not patronize the light shows only. Many who could made a trip to Stratford-on-Avon where, despite all the traffic and transport difficulties, a very successful season was again held. Naturally audiences of this kind were greatly attracted by film names since these have international currency, and Shaw's *The Doctor's Dilemma* drew huge audiences in and out of London for well over a year, a major cause of this being undoubtedly the appearance of Vivien Leigh in the part of Mrs. Dubedat.

J. B. Priestley contributed a light comedy on broadcasting and another piece called *They Came to the City.*

Musical shows were well maintained, despite the difficulties in casting and mounting them, and throve abundantly when they had first-rate artists such as Leslie Henson, Jack Hulbert, Cicely Courtneidge and Beatrice Lillie to assist them. There were abundant revues and the standard of writing and performance remained commendably high. Herbert Farjeon further confirmed his position as a leader of witty writing. (I. Br.)



THE FIRST SUCCESSFUL PRODUCTION of *Macbeth* in New York city, starring Maurice Evans (right), ran for 17 weeks on Broadway during the 1941-42 season before touring the U.S.

GYPSY ROSE LEE, strip-tease dancer and author, and Bobby Clark were the featured players of *Star and Garter,* a glorified burlesque show of 1942 on Broadway

WOODROW WILSON was the hero of *In Time to Come,* a 1941-42 U.S. drama about the League of Nations, by Howard Koch and John Huston. This scene shows Wilson (second from left, played by Richard Gaines) en route to Europe

MAXWELL ANDERSON'S *The Eve of St. Mark,* first drama of U.S. soldiers in action in World War II, opened in New York city in Oct. 1942

PAUL ROBESON in 1942 became the first Negro in the U.S. to play Shakespeare's Othello. The production, with Jose Ferrer as Iago (background) and Uta Hagen as Desdemona, was taken on summer tour

Therapy: *see* SERUM THERAPY; CHEMOTHERAPY; MEDICINE.
Thyroid: *see* ENDOCRINOLOGY.

Tibet. A country of central Asia, lying N. and N.E. of the Himalayas, mainly a high tableland. Nominally a Chinese dependency, it is in practice independent. Area, about 450,000 sq. mi.; estimates of the population vary, but 2,000,000 is a probable figure. The religion is Lamaism, a late form of Buddhism modified by animism and primitive magic, and education is in the control of the many monasteries. The ruler is the 14th dalai lama (born 1933) enthroned in 1940 as Lingerh Lamutanchu.

The geographical isolation and undeveloped condition of Tibet were no doubt the main factors in keeping it out of the actual theatre of war during 1942. Its proximity to China, however, and its possible use as a supply line to that country after the Burma road had fallen received consideration. According to a statement made on June 25, 1942, it was understood that the British and Chinese governments had made representations in the capital city, Lhasa, about the development of pack transport routes between India and China through Tibet.

Timber: *see* LUMBER.
Timor: *see* PORTUGAL; PORTUGUESE COLONIAL EMPIRE; WORLD WAR II.

Timoshenko, Semyon Konstantinovich (1895–), Russian army officer, was born in Furmanka, Bessarabia, of peasant parents. He joined the Red army during the revolution of 1917, winning renown as a guerrilla leader. After the revolution, he studied strategy in soviet military academies, and from 1935 to 1938 he commanded a number of Russian military districts. During the Russo-Finnish conflict, 1939–1940, Timoshenko built a replica of the Mannerheim line just behind Russian positions and had his troops rehearse every operation before attacking the Finnish chain of fortresses. On May 8, 1940 he was appointed people's defense commissar and was given the rank of marshal, but he was transferred from this post July 20, 1941, and took active command of Russian armies on the western zone of the German-Russian front. On Oct. 23, 1941, he was shifted to the southern front; a month later he opened a surprise offensive, recaptured Rostov and Taganrog and routed the German armies of Gen. von Kleist. Timoshenko's brilliant coup paved the way for Russian offensives along the entire Russo-German front.

Timoshenko was transferred from his command during the German drives into the Caucasus and Stalingrad sectors in July 1942 and was succeeded by Gen. Georgi Zhukov. It was later learned that Timoshenko was assigned to command Russian armies on the Leningrad front.

Tin. War demand increased world tin output to a new high record in 1940, at 237,800 long tons, 28% over the 1939 figure, and 13% over the former high of 1937. While results are uncertain because of incomplete data, it seems that there was some further increase in 1940, as indicated in the accompanying table, though the figures presented for 1941 are not in all cases actual production, but exports from the country, and in no case but Bolivia cover the full year, all others being based on data for ten or eleven months; considering possible variations, a figure of 250,000 tons seems about as close as can be expected for the year, though this may be in error by several thousand tons in either direction. No data whatever have been received for 1942, from any country.

The sources of supply for the United Nations were badly disrupted by the loss of Burma, Malaya and Netherlands East Indies, which, with Thailand and Indo-China, accounted for two-thirds of the world supply. As a result, production was being expanded elsewhere, if this were possible, and stringent economies in use were ordered. The United States has been the world's largest user of tin, and having received the bulk of its supply from Malaya and Netherlands East Indies, the position was rendered particularly acute. In order to offset these difficulties so far as possible, several small private tin smelters were started in the United States, and the government built a much larger plant, to be supplied mainly by ore from Bolivia. These plants had a combined capacity that was probably not more than half of the consumption demand of the country, so that strict economy in the use of the metal had to prevail, even if ores could be secured to keep the plants running at full capacity. Nothing was known in 1942 of the current status of imports of either ore or metal, since no statistics were published after those for the first nine months of 1941, which included 16,570 long tons of tin in ore and 114,181 tons of metal, the latter being only 8% less than the total for all of 1940.

World Production of Tin
(Long tons)

	1937	1938	1939	1940	1941
Belgian Congo . .	8,900	7,300	9,700	12,500	13,000
Bolivia	25,100	25,400	27,200	37,900	42,740
China	10,500	11,200	10,900	?	?
Dutch E. Indies. .	39,800	21,000	31,400	44,400	53,000
Malaya	77,500	43,200	56,000	85,400	81,000
Nigeria	10,500	7,300	10,900	10,300	14,800
Siam	16,500	13 500	17,000	17,400	16,200
World total . . .	209,100	149,700	184,300	237,800	250,000

Ceiling prices set by the Office of Price Administration in Aug. 1941 were continued throughout the year—52 cents for Grade A, 51 cents for 99%, and intermediate prices for intermediate grades. The official maximum price in London was £275 per long ton for 99% metal. (*See* also METALLURGY; MINERAL AND METAL PRICES AND PRODUCTION; WAR PRODUCTION, U.S.)

(G. A. Ro.)

Tinker, Clarence Leonard (1887–1942), U.S. army officer, was born Nov. 21 near Edgin, Kan. He was graduated from Wentworth military academy, Lexington, Mo., in 1908 and became a second lieutenant in the Philippine constabulary. In 1912, he was appointed second lieutenant in the regular army. During World War I he served at home and later was professor of military science. After graduating from the command and general staff school in 1926, he served as an officer at various army airfields. In 1940, he was designated an air corps wing commander. After the attack on Pearl Harbor and the resultant shakeup in the army command, Tinker was promoted to major general in Jan. 1942 and was given command of the Hawaiian air force. He was reported lost June 7, 1942, during the Battle of Midway, when he personally led a flight of army bombers from Midway island to attack a Japanese fleet east of Wake island.

Titanium. Imports of titanium ores into the United States, mostly from India, were 156,737 tons of ilmenite and 980 tons of rutile, which is approximately the same rate as in 1940, but shortage of shipping space and the uncertain conditions prevailing in the main producing area led to the installation of a plant for the treatment of the titanium-iron ores of Essex county, New York, which was planned to have a capacity of 800 tons daily of ilmenite concentrates. Imports from Brazil were increasing, but were still so small as to be negligible. (G. A. Ro.)

Tobacco. The tobacco crop in the United States in 1942 was estimated by the department of agriculture as 1,-

U.S. Production of Tobacco by States, 1942 and 1941

State	1942 lb.	1941 lb.	State	1942 lb.	1941 lb.
No. Carolina.	585,700,000	459,490,000	Florida . . .	14,288,000	11,711,000
Kentucky . .	284,773,000	294,130,000	Massachusetts	9,065,000	9,781,000
Virginia . . .	106,528,000	88,572,000	Indiana . . .	8,478,000	8,431,000
So. Carolina .	96,750,000	69,660,000	Missouri. . .	5,355,000	5,400,000
Tennessee . .	87,500,000	86,345,000	West Virginia	2,850,000	2,610,000
Georgia . . .	59,860,000	55,430,000	New York. .	1,475,000	1,700,000
Pennsylvania	49,100,000	58,182,000	Minnesota. .	720,000	705,000
Maryland . .	30,020,000	30,225,000	Kansas . . .	285,000	300,000
Wisconsin . .	29,200,000	31,640,000	Alabama . .	235,000	305,000
Ohio	23,948,000	25,311,000	Louisiana . .	100,000	57,000
Connecticut .	20,958,000	22,890,000			

417,188,000 lb. from 1,380,300 ac., as against 1,262,885,000 lb. from 1,308,100 ac. in 1941 and a ten-year (1930–39) average of 1,398,796,000 lb. from 1,676,280 ac. The goals for 1943 were the same acreage for each type of tobacco as in 1942 except that the Burley acreage was to be increased 10%. As announced in Dec. 1942 by Sherman E. Johnson, chief of the production and supplies branch, Office for Agricultural War Relations, such an acreage of tobacco in 1943 would achieve a balanced production in relation to other crops and would not "make unnecessary claim upon land and workers needed for the production of products immediately essential to the war effort." The 1943 goal for Burley tobacco was announced as 421,350 ac.

Production of different types of tobacco in the United States in 1942 was: 824,115,000 lb. of flue-cured tobacco from 791,900 ac., compared to 649,542,000 lb. in 1941 from 717,600 ac. and a ten-year average of 751,773,000 lb. from 924,750 ac.; fire-cured 72,831,000 lb. in 1942 from 75,300 ac., 70,182,000 lb. in 1941 from 75,100 ac. and a ten-year average of 125,844,000 lb. from 158,700 ac.; light air-cured (Burley) 361,025,000 lb. from 390,600 ac. in 1942 compared to 368,017,000 lb. from 382,800 ac. in 1941 and a ten-year average of 355,571,000 lb. from 441,850 ac.; dark air-cured 32,450,000 lb. from 32,600 ac. in 1942 and 31,455,000 lb. from 32,600 ac. in 1941, the ten-year average 42,138,000 lb. from 50,970 ac.; cigar filler types 60,576,000 lb. from 43,800 ac. in 1942 compared to 71,877,000 lb. from 48,000 ac. in 1941 and a ten-year average of 57,535,000 lb. from 49,870 ac.; cigar binder types 56,907,000 lb. from 36,400 ac. in 1942 compared to 61,619,000 lb. from 41,000 ac. in 1941 and a ten-year average of 56,910,000 lb. from 40,700 ac.; cigar wrapper types 126,667,000 lb. in 1942 from 89,700 ac., 143,632,000 lb. in 1941 from 99,800 ac. and a ten-year average of 123,059,000 lb. from 99,350 ac.; Louisiana Perique 100,000 lb. in 1942 from 200 ac., 57,000 lb. from 200 ac. in 1941 and a ten-year average of 181,000 lb. from 420 ac.

The 1942 acreage of tobacco in Canada was about 6% more than the 70,560 ac. of 1941, most of the increase being in the flue-cured area of Ontario, where the 55,000 ac. was 12% more than the 1941 acreage but 11% less than the allotment for 1942. The Cuban 1941–42 crop was estimated at 40,000,000 lb., about the same as in 1940–41. The Argentine crop of 32,700,000 lb. was about 18% less than the 1941 crop, while the Brazilian crop of 200,000,000 lb. was about the level of the 1941 crop. Turkey had in 1942 the largest crop, 153,000,000 lb., since 1927, and comparable to 122,000,000 lb. in 1941. Germany, which consistently competed for Turkish tobacco, objected to the high prices asked for the 1942 crop. In India, where contingents of United States soldiers were stationed in 1942, the tobacco industry made a planned effort to produce cigarettes of U.S. type, using light Virginia type leaf for that purpose. (S. O. R.)

Tobago: *see* West Indies, British.

Todt, Fritz

(1891–1942), German engineer, was born Sept. 4 at Pforzheim, Germany. During World War I, he was an officer in the air force and was chief engineer of the department of roads, 1928–1933. After Hitler became chancellor in 1933, Todt was made inspector general of roads. He was also commissioned by the reichswehr to begin construction of a gigantic defense line on Germany's western frontier that was designed to offset the Maginot line across the French border. In addition, he designed and directed construction of the German network of broad superhighways that facilitated the movement of Hitler's mechanized armies throughout the reich. The great speed with which Germany conducted its blitzkrieg drives was attributed in large measure to the system of communications and supplies organized by Todt, who was appointed minister of armaments and munitions in March 1940. After the Polish campaign, Todt was made a major general and immediately started to rebuild Poland's auto roads, which were used extensively to speed supplies and men to the eastern front in the Russo-German war. In Aug. 1941 he was appointed inspector general for water and power with the rank of reich minister. A Berne dispatch dated Feb. 8 said Gen. Todt apparently met his death while flying back to Germany from the Russian front.

Togoland: *see* Mandates.

Tojo, Hideki

(1884–), Japanese army officer and statesman, was born in Tokyo, the son of Gen. Eikyo Tojo, master strategist of the Russo-Japanese war of 1904–05. A graduate of the Military Staff college, in 1915, he went to Germany in 1919 as military attaché and studied military strategy. On Oct. 18, 1941, Tojo, then a lieutenant general, became premier after Prince Konoye resigned under a bombardment of criticism for his failure to better relations with the United States without sacrificing Japan's ambitions to create a "new order" in the far east. Tojo also took over the war and home ministry portfolios. A grim foreboding of war between the U.S. and Japan was seen in his first public statement that Japan would settle the far east crisis "by quick action, not words." On Dec. 13, 1941, six days after Japan attacked Hawaii, Tojo said Japan was "fighting in self-defense and the cause of righteousness." Tojo was not lured into over-optimism by Japan's easy conquests in early 1942 and on Nov. 30, he admitted that there were "still difficulties to overcome in our future path." On Dec. 27, he warned that the "real war is starting now" and that he expected the Allies would deliver counterblows of "great importance."

Tokyo.

The capital and largest city of Japan. Pop. (1940) 7,001,460; area, 257 sq.mi.; situated at 35° 41′ N. and 139° 45′ E. at the head of the bay of the same name on the southeast coast of Honshu, largest of the principal Japanese islands. Almost 10% of the population of Japan lives in Tokyo, which is at once a political centre, a major industrial city and the seat of many of Japan's institutions of higher learning. There were 1,029,695 buildings and dwelling houses in the city at the end of 1937.

Tokyo is an independent self-governing municipality, with a city council and board of aldermen and a mayor at the head of the administration. The municipal budget for 1939–40 was 256,394,000 yen. The latest educational census available in 1942 listed 1,906 elementary and middle schools in Tokyo, with 1,118,399 pupils. There were 104 higher schools, including 22 universities, with 107,302 students. The Imperial university has the highest prestige among the Tokyo universities and is a recognized training school for future high officials and diplomats.

At the end of 1936, Tokyo contained 29,633 small workshops, employing less than 5 operatives, with a total of 47,251 workers and 14,329 larger factories, employing 403,095 workers. The growth of munitions production undoubtedly led to a considerable expansion of these latter figures in the years following.

Tokyo is built on hills and has a port in its own right, although large ocean liners dock at Yokohama, with which Tokyo is connected by railway. It is one of the few large cities in the world where there is no regular system of numbering houses. Never a very gay city, it became more austere with the progress of war. Severe restrictions were imposed on dancing, and the use of private cars and taxicabs was greatly curtailed because of the shortage of gasoline. U.S. planes under the command of General James Doolittle (*q.v.*) carried out a surprise raid on Tokyo April 18, 1942. Apart from this episode, the Japanese capital had not been directly touched by the war by the end of 1942.

(W. H. Ch.)

Tomatoes.

The United States tomato crop for processing in 1942 was estimated at 3,152,700 tons, compared with 2,802,200 tons in 1941 and a ten-year (1931–40) average of 1,634,800 tons. In addition, the 1942 crop for fresh marketing was 26,425,000 bu. compared with 24,075,000 bu. in 1941 and a ten-year average of 22,130,000 bu. The 1942 production was the highest on record and also resulted in a record tomato pack. The government required for military and lend-lease purposes 33,000,000 cases of whole tomatoes, 24 No. 2 cans to the case; 23,000,000 cases of tomato juice and 3,000,000 cases of tomato pulp and puree. The proportions of the 1942 pack and of government requirements could be better appreciated when it was realized that for the five years from 1937 to 1941 the tomato pack averaged 27,000,000 cases of whole tomatoes, 16,100,000 cases of tomato juice and 3,100,000 cases of pulp and puree. Although the government's tin conservation orders severely restricted the pack of certain vegetables, no limits were set on tomatoes. The government estimated its requirements for 1943 as 15,000,000 cases of whole canned tomatoes, 9,900,000 cases of tomato juice and 2,100,000 cases of pulp and puree. The area planted to tomatoes for processing in 1942 was 590,070 ac. It was 460,450 ac. in 1941; the ten-year average was 372,800 ac. The planting for fresh market in 1942 was 220,230 ac. compared to 198,730 ac. in 1941 and a ten-year average of 192,500 ac. (*See* also Market Gardening; Truck Farming.)

(S. O. R.)

U.S. Seasonal Production of Tomatoes for Fresh Market and Farm Price per Bu., 1942 and 1941

	1942 bu.	1942 Farm price per bu.	1941 bu.	1941 Farm price per bu.
Fall	789,000	$2.73	830,000	$2.14
Early (1)	1,650,000	4.00	805,000	3.20
Early (2)	4,065,000	2.89	3,349,000	2.98
Second early	3,598,000	1.66	3,102,000	1.28
Intermediate	7,196,000	1.55	6,923,000	1.12
Late (1)	8,313,000	1.67	7,819,000	1.17
Late (2)	814,000	3.32	1,247,000	1.57

Tongan Island Protectorate: *see* Pacific Islands, British.
Tongking: *see* French Colonial Empire.

Toronto.

Second largest city of Canada and capital of the province of Ontario, Toronto had a population of 660,000 in 1942 and an area of 34 sq.mi. Lines of the two Canadian railways and excellent motor highways radiating from the city make it easy of access to all parts of the province of Ontario, the two adjacent provinces of Quebec and Manitoba and border points in the United States. Toronto enjoys good air service through transcontinental and local lines. Always largely concerned in the mining industry and in the manufacture and distribution of goods, it had turned most of its production facilities by 1942 to the purposes of war and its savings to the purchase of Victory bonds and War Savings certificates. A very large number of its men and women were in the armed forces, and many more were engaged in the arduous work of keeping up the supply of necessary munitions and other war material. In spite of all this dislocation, gladly suffered, the importance of Toronto as a business centre was being maintained, and the city-owned street railways and bus lines and hydroelectric distributions and other municipal services were functioning well. (G. R. G.)

Torpedoes: *see* Submarine Warfare.
Totalitarian State: *see* Germany; Italy; Spain; Union of Soviet Socialist Republics.

Towers, John H.

(1885–), U.S. naval officer, was born in Rome, Ga., January 30, and was graduated from Annapolis in 1906. One of the first men to qualify for naval aviation in 1911, he established a world's record endurance flight in a seaplane in 1912, and was assistant director of naval aviation during World War I. His competence in aviation was quickly recognized and in May 1919 he organized and led a unit of flying boats that made the first trans-Atlantic flight in history. He was assistant chief of the navy department's bureau of aeronautics, 1929–31, was commanding officer of the United States aircraft carrier "Saratoga," 1937–38, and was made chief of the bureau of aeronautics in June 1939. In the same month, he was made a rear-admiral. Adm. Towers was long an advocate of naval air expansion and was in the vanguard of the air-minded officers who fought for a vast naval air expansion program. In Sept. 1942, he was promoted to rank of vice admiral and given command of the Pacific fleet air force.

Town and City Planning.

In the United States the establishment and extension of war industries brought about acute congestion in such areas as Norfolk, Va.; Washington, D.C.; southern Michigan; Mobile, Ala.; Wichita, Kan. and Pacific coast communities from Seattle to San Diego. Many of the war plants were located by federal authorities without benefit of the advice of local city planning commissions. In cases where the factories and housing projects were to be permanent, the war was expected to leave complicated problems for the local planning authorities to solve. In the case of temporary buildings there would be difficulties in clearing the ground and putting the land to some constructive use.

The year 1942 in the United States was expected to be remembered in city planning annals for the proposals for urban redevelopment. The *Handbook on Urban Redevelopment for Cities in the U.S.*, issued late in 1941 by the Federal Housing administration, was discussed and was succeeded during 1942 by a pamphlet on *Urban Redevelopment and Housing,* published by the National Planning association and containing the plan of Messrs. Greer and Hansen of the Federal Reserve system; and by *A Proposal for Rebuilding Blighted Areas,* put out by the Urban Land institute. Charles T. Stewart, director of the Urban Land institute, described all of these plans in the October *Planning and Civic Comment.* Practically every city in the U.S. had permitted blighted areas to grow up in the central districts. These areas were served with streets and utilities and should have been contributing to the comfort and convenience of the citizens. There was some difference of opinion about the methods to be employed in assembling the land, replatting it and putting it again into use. It was a question whether the land should remain in public ownership and be leased to private developers or whether it should be resold with restrictions which would prevent a recurrence of the blight process in the future. But the recommendation that cities undertake, possibly with federal and state aid, to provide better planned neighbourhoods which would give all citizens sanitary living quarters served with educational and recreational facilities, definitely appealed to the imagination of the American people, especially as they considered projects to be undertaken in the postwar period when the war industries and the armed forces would be demobilizing the millions employed in the war effort.

The National Conference on Planning, sponsored by the four planning organizations, met in May of 1942 at Indianapolis, Ind., where there were more than a thousand delegates in attendance. The newly organized Indiana Civic association stimulated a wide popular interest in the conference and in planning.

In England three official reports were issued on national planning with recommendations which definitely would affect local planning and the pattern of living. The Barlow, Scott and Uthwatt reports recommended the establishment of a central planning agency which would bring about a distribution of the population through decentralization and limitation of the size of cities and towns, possibly through surrounding country belts. The large urban areas destroyed by war operations must be rebuilt and British authorities were looking toward the replacement of former crowded areas with neighbourhoods where families might live in sanitary houses surrounded by gardens. (*See* also HOUSING.)

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Track and Field Sports.

Track and field competition of 1942 was a tale of two nations —the United States and Sweden. The United States contributed Cornelius Warmerdam, No. 1 in a long line of fine California pole-vaulters, and J. Gregory Rice, ex-Notre Dame distance runner, as the western hemisphere's two standouts. Warmerdam picked up his record-breaking trail of 1941 to establish world pole-vault records for both indoor and outdoor competition. Rice, foremost U.S. trackman of the previous two years, marked his 1942 performances with eight A.A.U. records at distances from two-and-a-quarter to three miles.

Sweden gave the world two of 1942's finest track performers—Gunder Haegg (or Hagg) and Arne Andersson. Haegg produced seven world distance records. His distance running-mate, Andersson, combined with Haegg to give Sweden the strongest two-man running strength in the history of track.

Warmerdam, having found a ceiling of 15 ft. $5\frac{3}{4}$ in. in 1941, raised it to 15 ft. $7\frac{3}{4}$ in. outdoors and 15 ft. $7\frac{1}{4}$ in. indoors. The California school teacher cleared 15 ft. on 16 different occasions during the winter indoor season. Rice easily stood out among the distance runners in the United States, both indoor and outdoor. He highlighted the A.A.U. indoor championship with a world record-shattering performance of 13:45.7 in the three-mile. It was the 48th straight victory for the former Notre Dame athlete.

CORNELIUS WARMERDAM making his record-breaking pole vault of 15 ft. $7\frac{1}{4}$ in. at Boston, Mass., Feb. 14, 1942

GILBERT DODDS, Boston divinity student, winning the 1,500-metre run at the National A.A.U. meet in Triborough stadium, New York city, June 20, 1942. His time was 3:50.2

Even more amazing, however, were the times recorded by Haegg during Sweden's outdoor season. The 25-year-old Swedish sensation set seven world records in 74 days and unofficially in 1942 held all records ranging from 1,500 m. to 5,000 m. Haegg ran the mile in 4:04.6, which was 1.8 sec. below the recognized world record of Great Britain's Sydney Wooderson, set in 1937. His other records, some of which lowered the previous world marks by as much as 10 sec., included: 1,500 m., 3:48.8; 2,000 m., 5:11.8; 3,000 m., 8:01.2; two miles, 8:47.8; three miles, 13:32.4; 5,000 m., 13:58.2.

Andersson's performances were generally obscured by those of Haegg, although the former recorded such outstanding times as 4:06.4 in the mile, equalling Wooderson's accepted world record. A move was made to bring the two Swedish runners to America during the summer, but the war prevented it. International hostility also forced cancellation of the Pan-American games, a modified Olympic games which would have involved North and South America trackmen in a meet at Buenos Aires, Argentina.

Harold Davis of the University of California was the year's most consistent "doubles" winner. He captured the 100- and 220-yd. dashes in the National Collegiate championships, and then followed with victories in the A.A.U. outdoor 100- and 200-m. dashes. Davis produced a world record-equalling 9.4 sec. in the 100-yd. dash, but the mark was not accepted because of questionable starting blocks. In winning the 200-m. dash, Davis became one of six repeaters in the A.A.U. outdoor championships. Others were: Rice, five straight in the 5,000-m.; Al Blozis, three straight in the shot; Warmerdam, four in the pole vault; Billy Brown, four straight in the broad and triple jumps, and Boyd Brown, four straight in the javelin. Warmerdam's vault of 15 ft. $2\frac{1}{2}$ in. set a new A.A.U. outdoor record, while Frank Berst of the New York Athletic club broke a 31-year-old mark in the 56-lb. weight throw with a toss of 39 ft. $3\frac{1}{4}$ in.

The University of Southern California again dominated the National Collegiate track and field meet to annex its eighth straight N.C.A.A. title. Only two N.C.A.A. defending champions repeated in 1942, Blozis of Georgetown winning the shot in 54 ft. $9\frac{5}{8}$ in. and Robert Wright of Ohio State taking both hurdle events, the highs in 14.2 sec. and the lows in 23.7 sec. Southern California continued its track reign of the Pacific coast with its seventh consecutive conference championship. Ohio State won the Western conference meet, and Penn State topped the East with team victories in both the I.C.4-A. indoor and outdoor championships.

Indoor Track.—Twelve world records were shattered. New indoor marks were established in the 440 yd., 400 m., 500 yd., 800 m., 880 yd., 1,000 m., three mi., pole vault, shot put, sprint medley relay, mile relay and two-mile relay.

Gilbert Dodds, a 23-year-old divinity student from Boston, in the National A.A.U. indoor championships outlasted Leslie MacMitchell, champion in 1941 and the 1941 Sullivan Award winner as America's outstanding amateur athlete, to win the mile in the fine time of 4:08.7. It was MacMitchell's first defeat in 20 starts.

Rice was at his best in the national indoor meet. Not only did he break the world record for the three-mile run at 13:45.7, but he recorded new marks at the 2, $2\frac{1}{4}$, $2\frac{1}{2}$ and $2\frac{3}{4}$ mi. enroute. Blozis, the 240-lb. Georgetown university giant, tossed the shot 57 ft. $\frac{3}{4}$ in., only a quarter of an inch behind Jack Torrance's world record. Blozis' bid for an indoor record, however, was disallowed when a checkup revealed the missile was slightly under the required 16-lb. weight.

New York A.C. won the National A.A.U. indoor team championship, which, with its outdoor title, gave it a sweep of the two senior A.A.U. championships. Penn State captured the intercollegiate indoor title with 21 7/10 points as compared to Fordham's 20 7/10.

Miscellaneous.—Joe McCluskey, a lieutenant (j.g.) in the U.S. navy reserve, returned to the cinders twice during 1942 to win the National A.A.U. 10,000- and 15,000-m. runs. The victories brought McCluskey's senior championships to 23, a new record. He started winning A.A.U. titles in 1930.

John Borican, after years of trying, finally won the A.A.U. outdoor 800-m. championship, defeating such strong competitors as William Lyda, the N.C.A.A. champion; Charles Beetham, a four-time winner, and Campbell Kane, Indiana's fine middle-distance runner. Six months later, on Dec. 22, Borican died of what physicians diagnosed as pernicious anaemia.

Outstanding high school performer of the year was Dwight Eddleman of Centralia, Ill. Eddleman's high jump mark of 6 ft. $6\frac{3}{4}$ in. placed him in a tie for third among the best performers of 1942. He jumped 6 ft. 6 in. in an exhibition during the Western Conference-Pacific Coast dual meet, while the best the collegians could do was 6 ft. 4 in. Eddleman enrolled at the University of Illinois after finishing high school.

Indiana university won the National Collegiate cross-country championship, while Oliver Hunter III, of Notre Dame, was crowned individual champion. Frank T. Dixon III, of New York, won the National A.A.U. cross-country title.

Women.—Completing a ten-year span of U.S. women's track and field supremacy, Stella Walsh topped a strong field in the National A.A.U. track and field championships with firsts in the 200-m. dash, discus and broad jump. The Polish-American athlete first rose to national prominence by dominating the sprint events of the 1932 Olympic games at Los Angeles. Tuskegee institute, an Alabama Negro school, won the team title for the sixth straight year with 80 points. Miss Walsh's Polish Olympic A.C. was second with 64½ points, 30 of which were contributed by the 32-year-old Cleveland woman.

Best U.S. Track and Field Performances (Outdoor), 1942

100 Yards

9.4 sec.—Davis, California (World record)
9.5—Hammond, Ohio State; Joggerst, Missouri; Smith, San Jose; Ewell, Penn State

220 Yards

20.4 sec.—Davis, California
20.6—Tarrant, Alabama State
20.8—O'Reilly, So. California
20.9—Kerns, So. California; Ewell, Penn State

440 Yards

46.9 sec.—Bourland, So. California
47.2—Short, Georgetown
47.6—Kaiser, Sacramento J.C.
48.0—Owen, Ohio State; Lyda, Oklahoma

880 Yards

1 min. 50.8 sec.—Lyda, Oklahoma
1:53.3—Radcliffe, Syracuse
1:53.7—Sickinger, N.Y. Sporting Club
1:53.8—Mathews, Michigan
1:53.9—Knowles, San Jose State

One Mile

4 min. 11.1 sec.—Ginn, Nebraska
4:12.2—MacMitchell, N.Y.U.
4:13.0—Dodds, Boston A.A.
4:14.0—Kane, Indiana
4:14.6—Burnham, New York A.C.

Two Miles

9 min. 02.5 sec.—Rice, New York A.C.
9:04.6—Weed, So. California
9:05.2—Cazares, Fresno State
9:13.1—Mitchell, Indiana
9:17.1—Hunter, Notre Dame

120-yd. High Hurdles

13.9 sec.—Hlad, Michigan Normal
14.0—Wright, Ohio State
14.1—Cummins, Rice; Owens, Howard Payne
14.2—Gilliland, Louisiana State

220-yd. Low Hurdles

22.9 sec.—Cummins, Rice; Stickel, Pittsburgh
23.0—Wright, Ohio State
23.3—Olsen, Illinois
23.4—Browning, So. California; Saunders, Miami

16-lb. Shot Put

55 ft. 4⅞ in.—Blozis, Georgetown
55.3 —Audet, unattached, California
52.5⅜—Merritt, So. California
52.2¾—Sisti, Boston College
51.8⅜—Delaney, Notre Dame

Discus Throw

173 ft. 10 in.—Blozis, Georgetown
166.10—Fitch, Minnesota
163.9—Fox, Olympic Club
163.5¾—Beierle, Wisconsin
161.10⅜—Harris, unattached, New Jersey

Javelin Throw

219 ft.—R. Biles, California
217.3—Marshall, Sheppard Field
216.10—M. Biles, Napier Field
216.7½—Brown, Olympic Club
213.7½—White, U.S. Military Academy

Pole Vault

15 ft. 7¾ in.—Warmerdam, Olympic Club (World record)
14.6—Sunseri, Olympic Club; Schaefer, So. California
14.4—Defield, Minnesota
14.3⅞—Smith, California

High Jump

6 ft. 8 in.—Watkins, Texas Aggies
6.7¾—Berry, Southern
6.7¼—Horn, unattached, Alabama
6.6¾—Eddleman, Centralia, Ill., H.S.; Greene, So. California; Tally, So. California

Broad Jump

25 ft. 7½ in.—Steele, San Jose State
25.0—Smith, San Jose State
24.11—Rice, East Texas
24.10⅞—O'Reilly, So. California
24.7—Dupre, Ohio State

Hammer Throw

173 ft. 8½ in.—Cruikshank, Fort Devens
170.10⅜—Styrna, New Hampshire
168.4¼—Dreyer, New York A.C.
168.7½—Folwartshny, New York A.C.
165.10—Wilcox, Rhode Island State

(M. P. W.)

Trade Agreements: *see* INTERNATIONAL TRADE.
Trade Unions: *see* LABOUR UNIONS.
Traffic Accidents: *see* ACCIDENTS.

Trailer Coaches.

Production of trailer coaches in 1942 probably exceeded by a substantial margin the output of any previous year. Practically all manufacturers were producing at full capacity, and many of them were on a 24-hour working schedule.

The augmented production was due largely to the demand for emergency housing of war workers. It had become generally recognized that the trailer coach was an ideal solution for temporary or semi-permanent homes.

Manufacturers were handicapped by shortages in some critical materials, a situation which made it necessary to revise specifications and to substitute materials. Such substitutions, in general, were effected without any sacrifice of quality, durability or good appearance. Another problem was encountered in the withdrawal of new tires as trailer equipment; ultimate deliveries were usually made without tires.

The trend in design and types of trailer coaches naturally was influenced by the fact that they were being used for housing purposes. The result was increasing emphasis on comfortable living, the maximum of convenience and utility, improved heating and insulation, etc. Extensive trailer parks were established in war plant areas, many under government ownership and administration, and others under private ownership and management.

A large percentage of the trailer production in 1942 also went to the armed forces for specialized purposes. Trailers were used by the army, air corps, navy and marine corps for mobile field units, offices and officers' headquarters, radio stations, field laboratories, field hospitals, radio stations, photographic laboratories and other needs.

Effective Oct. 1, 1942, a government order prohibited the sale of new trailer coaches by the manufacturers or dealers to the public. No builder could produce trailer coaches except those ordered by government departments or agencies, and conforming to rigid government specifications. (P. E.)

Transit Controller, Office of: *see* ELECTRIC TRANSPORTATION.

Trans-Jordan.

Trans-Jordan lies to the east of Palestine, bounded on the north by Syria, on the northeast by Iraq, on the southeast and south by Saudi Arabia.

It is an Arab principality which, under a local Arab administration, forms part of the British-mandated territory of Palestine (*q.v.*). Like the land west of the Jordan, it continued in 1942 under the supervision of the British high commissioner for Palestine and Trans-Jordan, Sir Harold Alfred MacMichael, represented in Trans-Jordan by a British resident, Alec S. Kirkbride. The prince of Trans-Jordan is Emir Abdullah ibn Hussein; the prime minister (1942), Tawfiq Abdul Huda. Area: 34,740 sq.mi.; pop. *c.* 350,000. Religion: Mohammedan, with about 30,000 native Christians. Capital, Amman, the ancient Rabbat Ammon. Chief cities: Amman (25,000), Es-Salt, Maan.

History.—During 1942 the country continued to be an important bulwark of the British efforts to consolidate the middle eastern front against any expansion of axis influences. Emir Abdullah adhered faithfully to all his treaty obligations, and under his influence the Arabic tribes of the country remained loyal to their alliance with Great Britain. The emir and his government expected that after the war and Allied victory the position of the Arabs would be strengthened and their aspirations for unity and independence fulfilled. The successful defense of Egypt by the British assured Trans-Jordan of the tranquillity needed for the development of its economic resources and for the consolidation of its administration.

Defense, Finance, Education, Communication.—The defense forces of the country were organized in the Arab legion with 47 officers and 1,577 men, and the Trans-Jordan Frontier Force consisting of some 700 men. For 1940–41 revenue amounted to £388,455, to which grants in aid of £95,110 were added. The expenditure of the country in the same year amounted to £465,807 on the ordinary and £44,766 on the extraordinary budget. The value of the local currency is identical with British currency. £27,874 was spent by the government on education, but there were in addition numerous private schools. The public debt amounting to £155,107 in 1942 was insignificant, but the economy of the country was still very primitive. The Hejaz railroad runs through the country from north to south, but it is of less importance than the 1,400 mi. of good motor roads, connecting the country with Palestine, Syria and Iraq. (H. Ko.)

Transylvania: *see* HUNGARY; RUMANIA.

Trap-shooting.

Marksmen from the state of Illinois gained the majority of men's trap-shooting titles during 1942. James F. Holderman, a 32-year-old farmer from Morris, Ill., won the Grand American handicap in a shoot-off with Arthur Finney of Mankato, Minn. He scored a possible 25 in the shoot-off to Finney's 23, after each had tied in regular competition with 193 out of a possible 200. Joe Moore of Kewanee, Ill., was crowned champion of champions with a perfect performance in a 50-target shoot-off. Homer Clark, of Alton, added further to Illinois' dominance by winning the professional championship. Still another title went to Illinois when William Drennan, of Utica, won the North American championship with 25 straight in a shoot-off after scoring 199 by 200 in the regulation test. Julius Petti of England, Ark., won the all-around championship with 910 out of a possible 950, while Rudy Etschen, Kansas City, won the doubles with 94 out of 100.

The south dominated clay-bird breakage in women's competition. Carolyn Elliott, 19-year-old Vanderbilt university coed of Nashville, Tenn., won the women's Grand American handicap in a shoot-off with Mrs. Donald McClain of Atlanta, Ga. After each broke 183 out of 200, Miss Elliott won the title with 24 to Mrs. McClain's 23 in the extra firing. Mrs. George Cameron of Houston, Tex., captured the North American women's championship with a perfect 25 in a shoot-off with Mrs. Lela Hall of Strasburg, Mo., 24, and Mrs. Isaac Andrew, Spartanburg, S.C., 22. Mrs. Hall won the champion of champions with 198 out of a possible 200.

Dr. LeRoy Childs of Lake Kerr, Fla., won the national all-gauge skeet shooting championship with a possible 250. H. L. Brown, San Antonio, Tex., topped the national 20-gauge skeet shoot with a possible 100, while L. S. Pratt, Indianapolis, 99 by 100, won the 28-gauge and Pvt. Dick Shaughnessy, Harlingen, Tex., 96 by 100, won the 410-gauge. Women's national skeet champions of 1942 were: High over all, Mrs. Harriet Behrend, Erie, Pa., 516 by 550; all-gauge, Mrs. M. S. Smythe, Aurora, O., 248 by 250; 20-gauge, Mrs. L. W. Childs, Lake Kerr, Fla., 97 by 100; 28-gauge, Mrs. S. E. Hardy, Peoria, Ill., 96 by 100; 410-gauge, Mrs. Harriet Behrend, Erie, Pa., 89 by 100. (M. P. W.)

Treasury, U.S. Department of: *see* GOVERNMENT DEPARTMENTS AND BUREAUS.
Trinidad: *see* WEST INDIES, BRITISH.
Tripoli: *see* ABRASIVES.
Trolley Buses: *see* ELECTRIC TRANSPORTATION.

Troy, John Weir (1868–1942), U.S. politician, was born Oct. 31 in Dungeness, Wash. He started as a reporter at the age of 18 and rotated his newspaper experience with jobs as county clerk and auditor. Caught in the Klondike gold rush, Troy landed a job as manager of a pack train. He stayed on in Alaska as editor of an Alaskan newspaper, later founded a short-lived magazine, and in 1913 became editor of the *Daily Alaska Empire* in Juneau, a newspaper which he purchased the following year. Six times Alaskan delegate to the National Democratic convention, he was chairman of the Democratic Alaska Territorial committee, 1932–34. He served as governor of Alaska, 1933–39. Troy died in Juneau, May 2.

Truck Farming. The 11 principal truck crops grown in the United States for processing yielded 5,760,000 tons in 1942. This was 13% above the 1941 production and resulted in a record pack of canned vegetables, with the exception of canned beans and soups. The larger crop, however, did not depress prices, because large military and lend-lease requirements, plus domestic buying power, created a demand that raised prices to growers about 35% over those of 1941. The acreage harvested in 1942 was 1,945,000 ac. compared with 1,643,000 ac. in 1941. Tin conservation limited soups to 50% of the 1941 pack and spinach to 80%. Tin conservation order M-81, as amended Dec. 9, 1942, permitted unlimited packs of green asparagus, snap beans, lima beans, sweet corn, green peas, tomatoes, tomato juice, pulp, paste and sauce. By War Production board order M-86e, the government reserved 40% to 100% of the 1942 pack, and canners were ordered to set aside about half as much of the 1943 pack. The Office of Price Administration announced in Dec. 1942, that preparations were being made to ration all canned vegetables to assure equal distribution of civilian supplies. (*See* also AGRICULTURE; LETTUCE; MARKET GARDENING; POTATOES; TOMATOES.) (S. O. R.)

Table I.—*Government Requirements from 1943 and 1942 Packs, and Average Annual Canned Pack (1937-41) of Six Major Canned Vegetables*

Commodity	1943 Requirements* Cases of 24 No. 2 cans	1942 Requirements† Cases of 24 No. 2 cans	Average 1937–41 pack, Cases of 24 No. 2 cans
Asparagus	2,000,000	4,100,000	2,900,000
Beans, green and wax	10,000,000	17,500,000	7,700,000
Corn, sweet	13,000,000	31,000,000	20,000,000
Peas, green	17,000,000	35,500,000	23,800,000
Spinach	4,300,000	9,000,000	4,600,000
Tomatoes, whole	15,000,000	33,000,000	27,000,000
Pulp and puree	2,100,000	3,000,000	3,100,000
Juice	9,900,000	23,000,000	16,100,000
Total	73,300,000	156,100,000	106,200,000

*Based on War Production board order M-86e. †Preliminary estimates.

Table II.—*U.S. Production, Acreage and Price per Ton of 11 Truck Crops for Commercial Processing, 1942 and 1941*

	Acres		Production		Price per Ton	
	1942	1941	1942 tons	1941 tons	1942	1941
Asparagus	48,460	39,550	51,820	37,970	$118.15	$106.55
Beans, lima (shelled)	69,160	62,650	39,280	38,090	80.24	71.25
Beans, snap	131,060	87,800	227,400	144,320	75.38	53.40
Beets	16,710	17,790	119,500	133,000	14.00	13.11
Cabbage (sauerkraut)	14,770	23,480	159,100	211,000	7.89	9.70
Corn, sweet (corn in the husk)	467,510	444,270	1,243,900	1,135,700	13.50	9.68
Cucumbers (pickles)	108,020	112,800	201,552	202,536	33.34	28.76
Peas, green (shelled)	438,070	361,390	426,980	345,620	63.93	48.67
Pimentos	14,060	12,740	20,580	11,140	41.84	33.75
Spinach	46,240	19,940	114,400	44,900	38.72	24.03
Tomatoes	590,070	460,450	3,152,700	2,802,200	19.37	15.06

Table III.—*U.S. Cold-Storage Holdings of Frozen Vegetables, Dec. 1, 1942 and Dec. 1, 1941*

Commodity	Dec. 1, 1942 lb.	Dec. 1, 1941 lb.
Asparagus	5,928,000	6,545,000
Beans, lima	15,171,000	19,691,000
Beans, snap	5,905,000	7,059,000
Broccoli, green	839,000	976,000
Corn, sweet	6,836,000	9,168,000
Peas, green	34,866,000	44,991,000
Spinach	5,424,000	5,471,000
Other vegetables	8,252,000	5,965,000
Classification not reported	32,120,000	10,332,000

Trucks: *see* AUTOMOBILE INDUSTRY IN THE WAR; MOTOR TRANSPORTATION.
Tsaritsyn: *see* STALINGRAD.

Tuberculosis. **Diagnosis.**—The making of diagnoses from a single phase of an examination was discouraged and emphasis was placed on the necessity of complete examination before labelling any individual as tuberculous. In evaluating the different methods of making X-ray inspections of the chest the Industrial Hygiene Foundation of America, Edwards of New York city, and others, found the standard-sized celluloid film best; the standard-sized paper film a close second and fully as valuable in finding cases of tuberculosis; the 4 x 5-in. photoroentgenogram was in third place; and the least valuable method was the 35-mm. photofluorogram.

Treatment.—The treatment of tuberculous animals with promin (sodium p,p′-diaminodiphenylsulphone-N,N′-didextrose sulphonate) was found to have a marked deterrent effect on the disease. This drug was administered to a sizeable number of tuberculous persons but not enough time has elapsed to justify conclusions concerning final results.

Prevalence and Attempts to Control in Various Nations.—In Great Britain there was an increase in deaths from tuberculosis after World War II began. The age groups most affected were children, young women and older men. The increase in tuberculous meningitis was alarming. It was recommended that mass X-ray inspections of the chest be made of all persons employed in or entering the various industries as well as those entering the military service. Periodic examinations of these persons was also recommended as well as examinations of students of nursing and medicine. In many thousand examinations in the royal navy, 0.3% was found to have active pulmonary tuberculosis; in the air force, 0.2%; and in the army, 0.1%. Examinations made of men prior to entering the service revealed about 1% with pulmonary tuberculosis.

In Paris after the war began the mortality from tuberculosis increased approximately 10%; in children, 28%. In countries such as Belgium, Holland, Poland, Greece and China, the increases in tuberculosis were alarming; indeed, in some of these countries it was said to have reached epidemic proportions.

Leitner stated that in Basel, Switzerland, approximately one-third of the adolescents and young adults were nonreactors to tuberculin.

In Argentina all the applicants to and employees in positions in which there is frequent contact with the public were periodically examined. All applicants for government positions had tuberculin tests, X-ray inspection and clinical examinations as indicated. Thus, those who had clinical tuberculosis at the moment were found as well as those who subsequently developed it. In Paraguay an antituberculosis campaign was well organized, with the aim of having one and one-half beds for tuberculous patients for each death from this disease.

Approximately a 5% increase in tuberculosis mortality occurred in Canada, which was the first increase in 15 years. Among 400,000 men examined for entrance into the Canadian army between Sept. 1939 and March 1942, approximately 1% was rejected because of tuberculosis. It is significant that only 114 cases of clinical tuberculosis developed in the Canadian army up to March 1, 1942. The entire population of 3,000 of Geraldton, Ont., was examined for tuberculosis.

There was evidence that in the United States the mortality from tuberculosis was lower during 1942 than in the immediately preceding years. Tuberculosis should not increase during the war if the sanatoriums and hospitals are kept operating so as to isolate contagious cases and seek out such cases from the general public for isolation and treatment.

Large numbers of tuberculosis surveys were conducted among industrial workers in such places as Akron, O. Attention was called to the great danger of associating tuberculosis with industry, that is, blaming working hours, dust inhalation, etc., for the disease when, in reality, its true cause is often unrecognized contagious cases among the individual's other associates.

Edwards reported that the entire tuberculosis facilities of the New York city health department previously used in mass surveys were diverted in 1942 to examine rejectees from the local induction station. This represented a mass survey of approximately 700,000 individuals from whom all with evidence of lung disease were referred to the health department.

Special Organizations and Projects.—The tuberculosis committee of the American Student Health association reported that n the school year 1940–41, 255 colleges had administered the tuberculin test to 149,744 students. In 108 colleges, all food handlers, and in 92, faculty members and administrative personnel were adequately examined. From 1936 to 1941, among those colleges with no program of finding cases of tuberculosis, 984 students among a student enrolment of 668,895 were reported to have tuberculosis, whereas, among those colleges with a case-finding program 3,523 new cases of tuberculosis were discovered from a total enrolment of 1,850,755. Thus, approximately seven cases were found in the institutions with the program, to one in those without.

In Minnesota, Meeker county was continued as a demonstration area by the state medical association. All citizens, regardless of age, were being tested with tuberculin; all reactors were having X-ray film inspections of their chests and all with X-ray shadows were being examined to determine whether the shadows were cast by tuberculosis or other diseases. This project was being supported financially by local and state organizations, by the American Medical association and the National Tuberculosis association.

The gross sale of Christmas seals in the United States amounted to approximately $7,000,000 in 1941, and $8,000,000 was the goal in 1942.

Tuberculosis Among Animals.—The bovine type of tuberculosis constituted a serious problem in Great Britain. Much of the tuberculosis in man was contracted from animals; indeed 40% of the cattle were infected and 40% of those slaughtered in the abattoirs had areas of disease plainly visible to the naked eye. Since it was impossible to control tuberculosis in cattle it was strongly recommended that milk be pasteurized in towns and cities and that housewives in rural communities bring all milk to the boiling point before it was consumed.

In December the United States bureau of animal industry reported that between 1917 and 1942, 252,926,608 tuberculin tests were administered to the cattle of the U.S. The 3,836,911 reactors were slaughtered and their carcasses were carefully examined for tuberculosis. Of the 10,983,086 cattle tested in 1942, only 0.26% reacted to tuberculin. The entire nation was by 1942 a modified accredited area. At points of federal meat inspection the carcasses of 14,413 swine were sterilized and those of 13,357 were condemned because of tuberculosis. Between 1925 and 1942, 131,522 fowls were found to react to the tuberculin test.

Prevention.—Methods of immunization were in the same controversial state as they had been for a quarter of a century. Activities centred on the only well established preventive measure, namely, the isolation of persons with contagious tuberculosis.

(J. A. My.)

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Tufts, James Hayden (1862–1942), U.S. educator, was born July 9 in Monson, Mass. He studied at Amherst college, and at Yale university's divinity school and received his Ph.D. degree from Freiburg, Germany. He joined the University of Chicago as assistant professor of philosophy in 1892, later becoming chairman of that department. He was vice-president, 1924–26, and acting president in 1925. Among Dr. Tufts' most important contributions to contemporary philosophy were his historical analysis of the anthropological and social history of ethics and his application of the principles of ethics to contemporary problems. Dr. Tufts, who was an associate of Jane Addams during her early days at the Hull House, also helped organize the Institute of Juvenile Research at the University of Chicago. In collaboration with John Dewey, he wrote *Ethics* (1908). Following his retirement in 1930, he taught a seminar course in philosophy at the University of California. He died in Berkeley, Calif., Aug. 6.

Tung Oil: *see* VEGETABLE OILS AND ANIMAL FATS.

Tungsten. Although data were far from complete, such as were available indicated that the world production of tungsten concentrates (60% WO_3 basis) increased from 44,600 metric tons in 1940 to 47,000 tons in 1941. Of this amount, 6,500 tons was produced in the United States, and the equivalent of 8,500 tons was imported in the first nine months of 1941; there was then in the country a known supply of 15,000 metric tons, to which there was still to be added such imports as were received in the fourth quarter of the year, and the reserve stocks on hand, neither of which amounts was known. This known supply is of about the same magnitude as the estimated consumption during the year, so that the fourth quarter imports were available as additions to the reserve stocks. If we assume that the last quarter imports were maintained at the average level of the previous quarters, the total made available in the United States during the year would have been 17,800 tons, or 38% of the world production.

Turning to the other side, we find that of the 1941 production capacity, 26% was in 1942 under Japanese control, and the 20% produced in China was pretty well isolated from access to the United Nations, though not available to Japan. However, in view of the rapidly increasing output of the United States itself, as well as of Bolivia and Argentina, the prospects for maintaining an adequate supply in the United States was not at all unfavourable. In fact, some felt that the United States was in a fair way of becoming not only self-sufficient, but of becoming an exporting nation, though results attained up to the close of 1942 hardly seemed to justify so optimistic a view of the situation.

The United States output of 1941 was not only a record for recent years, but for all time, exceeding by a considerable margin the peak production of World War I, and the same was also true of Bolivia and Argentina; furthermore, material increases in output were expected from all three.

British requirements were apparently being largely supplied from Portugal and Spain, where production increased by twenty fold in a decade, and was in 1942 almost as great as in the United States. (*See* also MINERAL AND METAL PRICES AND PRODUCTION.) (G. A. RO.)

Tunisia: *see* FRENCH COLONIAL EMPIRE.

Tunnels. Work on the Brooklyn-Battery tunnels and the Continental Divide tunnel was ordered halted by the War Production board.

The great Chicago underground railroad system of tunnels, estimated to cost $64,000,000, was more than 90% complete.

The aqueduct of deep level tunnels of New York city's Delaware water supply system was rapidly approaching completion. In the face of rigid specifications, the work of lining these tunnels was carried out most effectively and at great speed in handling concrete by concrete pumps and concrete pneumatic ejectors. The methods followed by the contractors in placing of the concrete varied in accordance with each contractor's particular ideas of procedure. In all cases, however, extraordinary progress was made in tunnels varying from 13½ ft. to 19 ft. internal diameter, and in general exceeded 30 ft. per day of completed tunnel.

The construction and completion by the United States army engineers of a railroad tunnel 13,000 ft. long as a cut-off on the Seward-Fairbanks railroad, gave more southerly access by William sound to the Gulf of Alaska than by the terminus at Seward.

News in Nov. 1942 came from Japan that the major construction of a single track railroad tunnel under Shimonoseki straits, separating the main island of Honshu from the island of Kyushu, had been completed and opened to traffic after six years of construction. This tunnel superseded a train ferry in the rapid tidal flow of the straits and reduced the time between Tokyo and Kagoshima, in the island of Kyushu, from about 40 to 32 hr. Since the island of Kyushu is the main local source of Japan's coal supply and industry allied thereto, this became an accomplishment of some importance in the serious matter of World War II logistics.

In London, engineers continued to prepare for the possibility of large-scale air raids and were strategically constructing tunnels at the deep level of the tube railways for new shelters from air raids. (J. FE.)

Turkestan, Chinese: *see* SIN KIANG.

Turkey. A republic in southeastern Europe and western Asia. Area 296,500 sq.mi.; pop. (Oct. 20, 1940) 17,869,901. Capital, Ankara. Chief cities: Istanbul (789,346); Izmir (184,362); Ankara (155,544); Seyhan (89,990); Bursa (77,348); Eskişehir (60,614); Gazi Antep (57,314). Religion: Mohammedan. President (1942), General Ismet Inonu; premier, Shukru Saracoglu.

History.—During 1942 Turkey maintained its non-belligerent attitude, but with a shifting emphasis which reflected the change in the development of the war. While in 1941, with Germany's victories in the Balkans and in western U.S.S.R., there had been a certain cooling off in Turkey's relations with her British ally and a certain rapprochement with Germany, the growing strength of the United Nations in 1942, inclined Turkey again to the side of the democracies. While following a prudent policy of neutrality and of building up her army to greater strength, Turkey became ready by the end of 1942 to resist a German thrust through her territory into the middle east and thus fulfilled her important function of protecting the British position in Iraq and Syria. The appointment of Laurence A. Steinhardt, former United States ambassador to the soviet union, as ambassador to Ankara in Jan. 1942, showed the great importance which the United States placed on Turkey's position. Ambassador Steinhardt was instrumental in bringing about a rapprochement between Turkey and the soviet union.

On July 7 Premier Dr. Refik Saydam died suddenly of a heart attack. His successor became the foreign minister Shukru Saracoglu (*q.v.*). When Dr. Ahmet Fikri Tuzer, the minister of the interior, died, he was replaced by Receb Peker.

At the beginning of 1942 the relations between Turkey and the soviet union were rather strained. It was then believed that in case of an Allied victory the soviet union might claim the Bosporus. The British ambassador, Sir Hughe Knatchbull-Hugessen, who had been to the soviet union and the middle east, tried to dispel these apprehensions by his reports of Anglo-Soviet plans, which denied any intention on Turkish or Iranian territory. Yet a short while later, in March, it was alleged that an attempt at bombing the German ambassador to Turkey, Franz von Papen, had originated in the soviet consulate in Istanbul. Ambassador von Papen was not injured, but soviet offices were searched, and suspicion against communist influences were openly voiced. It was only by the end of the year that the tension in the relations with the soviet union subsided. The visit of Wendell Willkie to Turkey and the U.S.S.R. and Ambassador Steinhardt's mediation were credited with this improvement. At the same time the minor

TURKISH GIRLS in a mass calisthenics drill at Ankara stadium on Youth day, April 23, 1942

Soviet officials who had been thought involved in the attempt at the assassination of Ambassador von Papen were found innocent.

In the spring Germany failed to deliver the important heavy goods which she was pledged to deliver under the German-Turkish trade agreement, while Great Britain continued to supply Turkey on schedule with locomotives, freight cars, war equipment, and even small warships, and in addition had helped to offset a bad Turkish harvest by supplying wheat. An important concession gained by Germany was Turkey's promise of sending 45,000 tons, or half of her annual output, of chrome to the Krupp armament factories in exchange for German arms. In spite of this deal Turkey came closer and closer to the Allied side, which was of great importance in view of her most strategic position. Numan Menemencioglu, who in the fall became Turkish foreign minister, was regarded as definitely pro-democratic as the prime minister. On Nov. 1 a special session of parliament was opened by a declaration of the president of Turkey in which he warned that "Turkey is closer to war today than at any time since the present world conflict started." He pointed out that "with the war spread over every quarter of the globe, one begins to understand that political institutions founded on domination by a single power cannot be maintained."

The war necessarily produced a growing scarcity of goods and a rise of prices. With the beginning of 1942, the government introduced for the first time strict measures of rationing. A newly revised law of national protection was to help in the fight against wartime profiteering and waste, especially against the hoarding of staple foods. Shortages were especially felt in bread, sugar, cigarettes and matches. The bread ration was fixed at 375 grams per day and person.

Education.—Education is compulsory, yet among the older people there are many who are still unable to read and to write, especially in the Latin characters, introduced in 1928. The number of schools in 1939 was 8,169, with 23,663 teachers (7,458 women), and 904,453 students, of whom 301,987 were girls. The total expenditure on education by the government was in 1939 £T. 29,785,240. There are 2 universities, one in Istanbul, reorganized on modern lines in 1933, and one in Ankara.

Defense.—There is compulsory military service for all men from 20 to 46. Starting in 1942 every man had to serve for three years. The army in 1942 consisted of 11 army corps of a possible strength of 2,000,000 men in wartime. During 1941 and 1942, strenuous efforts were made to modernize the army, the small navy and the air force.

Finance.—Revenue for 1941–42 was estimated 309,743,000, expenditure at 309,740,396 Turkish pounds. The public debt amounted on May 31, 1939 to £T. 619,385,681. The monetary unit is the Turkish pound, valued at approximately 76c U.S. early in 1942.

Trade and Communication.—Imports in 1940 amounted to £T. 68,900,000 and exports to £T. 11,400,000. The imports in 1940 came from Italy, with Great Britain as the close second, followed closely by Germany and the United States, while the Turkish exports went to Italy, United States, Great Britain and Germany. The principal articles of import in 1940 were mineral oils and coal, machinery, iron and steel manufactures, cotton piece goods, paper and paper manufactures, chemicals, tea, coffee and cocoa, and rubber manufactures. The principal exports were tobacco, cotton, hazelnuts, mohair, olive oil, raisins, wool, opium, chrome, barley and figs.

Turkey had on July 1, 1940 a merchant marine of 290 ships of 217,381 gross tons. The length of the railway lines on Dec. 31, 1940 was 4,609 mi., of which 4,339 mi. were owned by the state.

Agriculture.—Agriculture, the main industry of the country, was now being modernized with the help of the government. Cereals, tobacco, opium, figs, nuts and almonds were being grown. Silk, mohair, skins and hides and olive oil are important products. The breeding of sheep, goats and cattle is of great importance. In 1940 the wool clip was 33,000,000 and the mohair clip 7,700,000 kilos. (H. Ko.)

Turnbull, Margaret (? –1942), U.S. author, was born in Glasgow, Scotland, and was taken to the United States while a child. She attended public schools in

Arlington, N.J. Her first novel, *W.A.G.'s Tale,* was published in 1913. Among her other works are *Looking After Sandy* (1914), *Handle With Care* (1916), *A Monkey in Silk* (1931), *The Return of Jenny Weaver* (1932) and *The Coast Road Murder* (1934). Miss Turnbull also wrote a number of plays, the most successful of which, *Classmates,* was written in collaboration with William C. DeMille and appeared on Broadway in 1907. She died at Yarmouth Port, Mass., on June 12.

Turner, Sir Ben (1863–1942), British labour leader, became a cotton mill boy at the age of 10. From weaver's apprentice, he rose to rank of president of the National Union of Textile Workers. He was knighted in 1931. Sir Ben served in parliament as Labourite from Batley and Morley from 1922 to 1924 and from 1929 to 1931, and was mayor of Batley, 1913–16 and 1934–35. In 1928 he co-authored the Mond-Turner agreement by which trade unions and employers agreed to collaborate in avoiding strikes and assisting British industry. He was secretary of mines, 1929–30. He died at his home in Yorkshire, Sept. 30.

TVA: *see* TENNESSEE VALLEY AUTHORITY.
U-Boats: *see* SUBMARINE WARFARE.
Uganda: *see* BRITISH EAST AFRICA.
Ulster: *see* IRELAND, NORTHERN.

Unemployment. Unemployment fell to the lowest levels after 1929, in 1941–42. This was the characteristic picture in the various nations, although various localities and industries in many of the nations did not exhibit the expansion of employment typical of the general situation. The steady spread of war and the increased significance of industrial production of almost all kinds in the "total war" beginning in 1939 resulted in an increasing tempo of economic activity throughout 1940–42.

The writer has less confidence than formerly in the employment statistics of many nations. War diverts attention and funds from such activities as gathering statistics. Probably the general picture derived from the data reported by the nations to the International Labour Office is correct but one would not be justified in basing precise calculations and comparisons upon the available data. The published figures are of two principal kinds, each gathered in several different ways: statistics of employment; *i.e.,* of the number of people at work, and statistics of the number of people in need of work. Employment statistics are derived from "establishment" reports collected by mail or through field agents or labour inspectors. Unemployment statistics are furnished by the employment exchanges (applications for work), unemployment insurance systems (applications for benefits), unemployment relief records, reports of trade union secretaries and censuses of unemployment.

The various types of statistics agree reasonably well in their picture of what happened in the different countries, but not always upon the extent of the changes which occurred.

Great Britain and Northern Ireland have three-fourths or more of their wage earners (about 15,000,000) under unemployment insurance. These constitute about 90% of the British labour supply. In 1939 the employment exchange statistics showed an average of 1,297,801 wholly out of work. In 1940 the average number was 802,921; in 1941, 292,402; and in 1942 (8 months), 126,073. If the 4,750,000 not covered by the insurance act were included in the figures, the unemployment percentage would be more apt to fall than to increase, since military service, the police, civil service, teaching and other relatively stable occupations were in this group.

Registrations of unemployed persons at the employment offices of Eire increased fivefold from the pre-depression years to 1935. There was an average of 119,148 unemployed persons registered in 1935. The registration averaged 74,656 in 1941 and 81,648 per month through Aug. 1942. That was high unemployment for Ireland in 1941–42 and reflects the adverse effect of the war upon that country.

Unemployment remained at high levels in France from 1935 to Oct. 1940. In Oct. 1940 there were nearly twice as many unemployed receiving relief (750,000) as the average for the preceding ten years. The average number of applicants for work at the employment offices was 404,604 in 1939. The figure was 1,059,000 in Oct. 1940. No reliable figures were published after Oct. 1940.

High unemployment figures obtained in the Netherlands from 1933 continued until March 1939. The winter of 1938–39 was very bad. From April improvement was rapid. There was an average of 253,261 registered at the employment exchanges in 1939 and 205,003 in 1940, then the registrations fell to a low of 126,920 in 1941. Reliable figures for 1942 could not be obtained. The percentage of insured workers drawing unemployment insurance benefits averaged 21.8% in 1939. In 1940 it approximated 21.7% and in 1941, was 22.8%. Belgium experienced marked improvement in 1937, but with worse conditions in 1938. The average number unemployed increased from 125,929 in 1937 to 203,000 in 1938; then dropped to 173,000 in 1939 and 151,000 in 1940. Unemployment was much worse from Oct. 1940 through Feb. 1941 (more than 200,000); the subsequent figures were not reliable. In 1937 the insured workers of Belgium lost 13.1% of their possible working time; in 1938, 17.6%; in 1939, 18.8%. Figures for 1941–42 are not available.

Denmark, Norway and Sweden all experienced moderate improvement during the first eight months of 1939 following slightly worse unemployment in 1938 than in 1937. Denmark's percentage of trade unionists unemployed was 21.4% for 1938 and 18.4% for 1939. It was 23.9% in 1940; 7.6% in 1941; and 10.6% during the first 8 months of 1942. Obviously, providing Germany with war supplies was benefiting Denmark. Norway's in 1938 was 22%; in 1939, 18.3% and in 1940, 23.1%. There were no figures available subsequent to 1940. Sweden's percentage of unemployed union workers in 1938 was 10.9%; in 1939, 9.2%; in 1940, 11.8% and in 1941, 11.3%. During the first 6 months of 1942 the figures changed little from those of 1941.

The German figures are of questionable value, partly because of changes in the bases of computation, partly because of the war situation and its effects upon the statistics. The average number of applicants at employment exchanges dropped from 912,312 in 1937 to an average of 429,461 in 1939. No figures have been available since 1939. Unemployment probably stood at the lowest figures in German history. Unemployment is not permitted.

Switzerland's employment exchange figures are unusually reliable measures of unemployment because both the relief act of 1919 and the unemployment insurance law require applicants to register at the employment exchanges. From 1927 to 1929, 2.2% of the employable population were wholly unemployed and 1.6% partially. For practical purposes, this is zero unemployment in any country. In 1929 an average of 8,131 applicants registered at the employment offices (out of about 2,000,000 employables). In 1939 the average was 40,324. In 1940 it was 16,374 and in 1941, 10,550. In the first 8 months of 1942 the average was 11,515. These figures represent absolute minimums for unemployment—from 1.4% to 1.6% of the insured employable population.

The Italian index of employment (1929 = 100) was down to 78.5 in 1932 and back to 94.9 in 1936, 104.5 in 1937, 110.7 in 1938 and 113.3 in 1939. Statistics for Italy since 1939 are not available.

General Indexes of Factory Employment and Pay Rolls U.S.A.

Source: *Monthly Labor Review*
(1923–25=100)
Employment

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1929	101.7	104.1	105.4	106.7	106.5	106.8	107.3	109.2	110.3	109.0	104.6	100.7	106.0
1932	70.0	71.2	70.1	67.8	65.2	63.2	61.0	62.7	66.1	67.2	66.3	65.1	66.3
1936	92.1	92.2	93.4	94.7	95.4	95.9	97.1	99.9	101.9	103.2	103.3	104.4	97.8
1937	102.7	105.3	107.7	108.8	108.9	107.5	108.0	109.1	109.0	107.2	101.1	94.5	105.8
1938	87.8	88.2	87.7	85.7	83.4	81.6	81.9	85.7	88.8	88.5	90.5	91.2	86.8
1939	92.3	93.6	94.3	94.1	93.0	93.4	93.5	96.3	100.3	103.7	103.9	104.2	96.9
1940	101.5	101.5	100.9	99.7	99.1	99.6	99.7	103.8	107.7	113.8	114.7	116.2	104.9
1941	115.4	117.8	119.9	122.6	124.9	127.9	130.7	133.1	135.2	135.4	134.8	134.2	127.6
1942	132.5	133.8	135.1	136.6	137.8	139.4	142.4	145.9	154.2	154.8	.	..	.

Pay Rolls

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1929	103.8	110.8	113.0	114.1	114.3	112.7	108.6	113.5	114.4	113.7	104.9	101.2	110.4
1932	54.0	55.4	53.6	49.6	46.8	43.7	40.4	41.4	44.0	45.8	43.6	42.4	46.7
1936	76.7	76.6	80.3	82.3	83.9	84.1	83.4	87.1	86.9	92.5	94.0	98.8	85.6
1937	94.4	99.7	105.5	109.3	109.7	107.0	104.6	108.2	104.4	104.5	92.9	84.2	102.0
1938	75.0	76.9	77.1	74.6	72.9	70.8	70.6	76.8	81.0	84.1	84.1	86.6	77.5
1939	83.7	86.0	87.6	85.5	85.0	86.5	84.4	89.8	93.9	101.7	101.7	103.9	90.8
1940	98.4	97.9	98.4	96.5	96.4	98.1	96.8	104.0	110.1	116.2	116.4	122.4	105.4
1941	120.7	126.8	131.2	134.7	144.1	152.2	152.7	158.1	162.6	167.0	165.4	169.9	148.7
1942	173.5	178.3	182.9	188.0	193.5	198.2	204.6	214.7	252.1	261.0	..	..	..

Czechoslovakia had very low unemployment in 1939. Their employment office average registrations dropped from 335,518 in 1938 to 44,080 in 1939. No figures were available after that date.

Finland publishes only employment exchange statistics. Their registrations reached a peak of 17,351 in 1933. For 1939 they averaged 3,300; 1940, 3,955; in 1941, 3,384; and in 1942 averaged below 2,000 per month through August.

Yugoslavian employment exchange statistics record an average of 22,517 registrants for work in 1938; 24,223 in 1939 and 26,724 in 1940. In 1941 the figure was 26,724.

The only Mexican figures on unemployment are "official estimates." The figure given for 1930 was 75,695; 1932, 339,378; 1938, 209,332; 1939, 198,593; 1940, 184,274. No figures were available after 1940.

The general trend of employment in the United States and Canada was downward in the first half of 1938, with severe unemployment, particularly in the United States, until the spring of 1939. There was then steady improvement the balance of the year.

The Canadian employment index (1929=100) averaged 94.8 for 1938; 95.7 for 1939 and 112.1 for 1940. In 1941 it was 147.0 and during the first 7 months of 1942, 172.8. The employment exchanges carried average registrations of 103,739 during 1939 and 100,417 in 1940.

The United States took a special census of unemployment, Nov. 20, 1937, which recorded 7,822,912 as unemployed (2,001,877 of whom were employed on government relief work). This census was a voluntary report of individual citizens on forms left at all homes by the postal service. Sample tests made on 1,455 mail routes indicated that a 100% return might have shown as many as 10,800,000 idle on Nov. 20. A half million workers were laid off in Nov.–Dec. 1937. Comparing these figures with the 13,500,000 to 14,500,000 idle in 1932–33, the 1937 unemployment figure was discouragingly large. But in 1939–42 the trend of unemployment was continuously downward and by Sept. 1942 approximated 1,700,000.

Previous to 1930 the United States economic system expanded each decade rapidly enough to absorb the growth of population. During the '30s economic growth failed to keep pace with the growth of labour supply. The unemployment of 1937 was in considerable measure due to this factor. The expansion of 1939–41 practically absorbed the growth in labour supply of the 1930s. If large numbers became unemployed in some subsequent year it would be because of other factors than retarded economic development.

The factory employment index of the U.S. stood in the census month (Nov. 1937) at 101.1 (1923–25 base). A year later it was 90.5 and from Jan. to Aug. 1939 ranged between 92.3 and 96.3. The low point for the '30s was in 1932, 66.3. The index rose rapidly after July 1940, and in Jan. 1942 stood at 132.5 (*see* Table) from which figure it rose steadily and rapidly to 154.8 in Oct. The rise in employment continued throughout the balance of the year but the later figures were not available.

Pay rolls always fluctuate more violently than employment be-

MANY THOUSANDS OF UNEMPLOYED NEW YORKERS answered the call of Henry J. Kaiser for workers in his Oregon shipbuilding yards in Sept. 1939. Through the U.S. Employment Service in New York city, Kaiser's agents quickly hired two trainloads of workers

cause of overtime and part-time work. The monthly average of pay rolls (1923–25=100) was 110.4 in 1929; but 46.7 in 1932; 85.6 in 1936; 102.0 in 1937; 77.5 in 1938; 90.8 in 1939 and 105.4 in 1940. Starting at 173.5 in Jan. 1942, the index rose to 261.0 by Oct. The more rapid rise of the pay roll than of the employment index in 1941–42 was due in part to increases in wage rates and in part to the large amount of overtime paid for at time and a half and double time.

While employment exchange statistics are available for the U.S., the figures have been so profoundly influenced by relief, public works and other governmental policies that they cannot be used in comparisons with other nations. It should be noted that the 2,400,417 persons registered with the U.S. Employment service in Sept. 1942 included a considerable number of people who had jobs. It is not an unemployment figure.

Japan was one of the nations with high employment in 1937, a by-product, of course, of war. The employment index (1929=100) was 123.8 in 1937 and 131.2 in 1938. In 1939 it rose to 135.9. The government's official estimates of unemployment in 1932 estimated that but 6.8% of their employable population was idle, a figure hard to reconcile with an employment index of 82 that year. For 1938 their unemployment estimate was 237,371. The estimates were about 60,000 lower during 1939 than for the corresponding months of 1937. Japanese unemployment was low, 1937–39. No figures were available after 1939.

The only unemployment figures for Australia are compiled from reports sent in by union secretaries—a not very satisfactory type of unemployment statistics. The Australian trade union returns showed 45,775 or 9.7% of the union workers unemployed (monthly average) in 1939; 39,116, or 8% in 1940; 27,289, 5.3% in Feb. 1941 and 3.6% in May 1941. The figure for Feb. 1942 was 10,767 and for May, 10,353. But unemployment in Australia was at a low figure throughout 1942, as the country was geared to wartime production efforts.

The employment exchange registrations in Chile jumped from an average of 29,345 in 1931 to 107,295 in 1932, and then gradually dropped to 30,055 in 1934. Since then, applications for work have been at low levels. Registrations averaged only 10,672 per month in 1935; 6,474 in 1936; 3,215 in 1937; 4,578 in 1938; 9,415 in 1939; 8,550 in 1940, to 4,117 in 1941. They averaged below 3,000 per month in 1942. (*See* also CENSUS, 1940; SOCIAL SECURITY; UNITED STATES; WAGES AND HOURS.) (D. D. L.)

Unemployment Insurance: *see* SOCIAL SECURITY.

Unfederated Malay States.

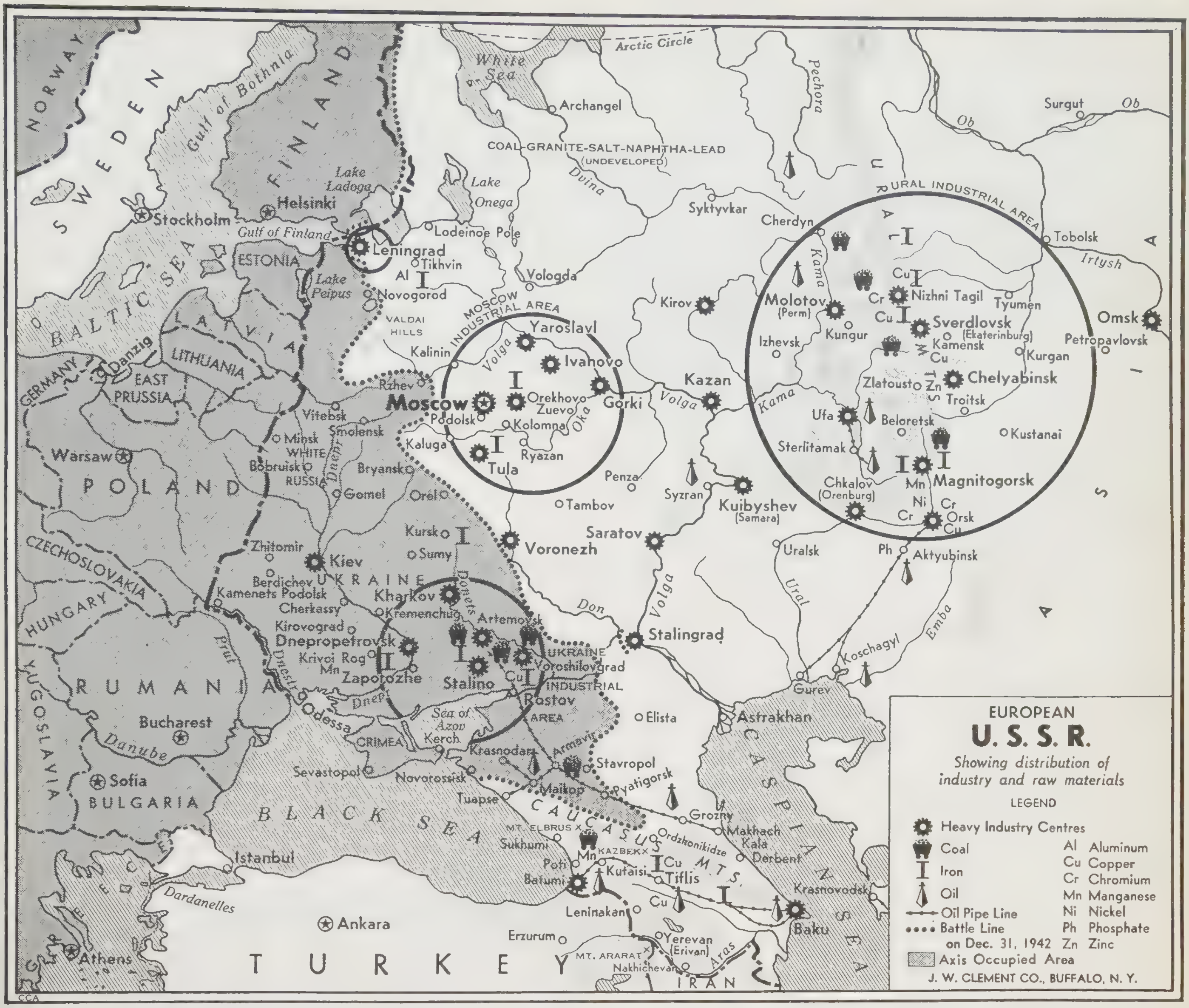
One of the three principal subdivisions of British Malaya (*See* also STRAITS SETTLEMENTS and FEDERATED MALAY STATES). Area, 24,728 sq.mi.; pop. (excluding Brunei) in 1940, 1,912,497. These principalities, all under Japanese military occupation in 1942, are ruled in normal times by native sultans who accept advice as to policy and administration from British residents. The largest, richest and most populous of these states is Johore, at the extreme southern end of the Malay peninsula. Its revenue in 1940 was 24,737,590 Straits dollars, its expenditure 23,548,568 dollars. Its exports were 138,214,062 Straits dollars, its re-exports 1,933,979 dollars, its imports 57,275,959 dollars. The area, population and capitals of the land states in 1940 were as follows: Johore, 7,330 sq.mi., pop. 737,590, capital Johore City; Kedah, 3,660 sq.mi., pop. 515,758, capital Alor Star; Kelantan, 5,750 sq.mi., pop. 390,332, capital Kota Bharu; Trengganu, 5,050 sq.mi., pop. 211,041, capital Kuala Trengganu; Perlis, 310 sq.mi., pop. 57,776, capital, Kangan. The inhabitants of these states are mostly Malays, except in Johore, where the Chinese outnumber the Malays. After rubber the most important products are rice and coco-nuts. (*See* also JAPAN; WORLD WAR II.)
(W. H. CH.)

Union of South Africa: *see* SOUTH AFRICA, THE UNION OF.

Union of Soviet Socialist Republics.

A state of eastern Europe and northern and central Asia. Area (Aug. 1939) 8,175,500 sq.mi., over one-fifth of which lies within the polar circle; pop. (Jan. 17, 1939 census), 170,467,186. The general increase in the population of the U.S.S.R. for the period of 12 years to Jan. 1939 amounted to 23,439,271, or 15.9%, the rate of increase varying throughout the period. Sixty-four per cent of the population of the soviet union lived in the Russian Soviet Federated Socialist Republic (78% of the U.S.S.R. territory), the remaining 36% of the population being distributed almost in equal halves between the Ukrainian S.S.R. (2% of the territory) and the nine other union republics (total territory 20%). In Jan. 1939, Great Russians constituted 58.4% of the population (as against 53% at the end of 1926); Ukrainians 16.6% (21.2%); White Russians, 3.1% (3.2%); Uzbeks, 2.9% (2.7%); Kazaks, 1.8% (2.7%); Tatars, 2.5% (2%); Jews, 1.8% (1.8%); Azerbaijanis, 1.3% (1.2%); Georgians, 1.3% (1.2%); Armenians, 1.3% (1.1%). Altogether some 60 different ethnic groups are comprised in the union. The 140-odd languages and dialects spoken in the U.S.S.R. belong to the following groups: Indo-European, Caucasian, Semitic, Ural-Altaic (Finno-Ugrian, Samoyede, Turkic, Mongolic, Tungusic), Palaeo-Asiatic and Far Eastern. Capital: Moscow (4,137,018). Ten other cities had a population of more than 500,000 in 1939: Leningrad (3,191,304), Kiev (846,293), Kharkov (833,432), Baku (809,347), Gorki (644,116), Odessa (604,223), Tashkent (585,005), Tiflis (519,175), Rostov-on-Don (510,253), Dnepropetrovsk (500,253). Premier: Joseph Stalin (*q.v.*).

History.—The winter of 1941–2 in the U.S.S.R. was chiefly occupied, at the front by the counter offensive of the Red army, which it was clear (from the admission of German official statements themselves as well as from the statement of Lord Beaverbrook) came within an ace of involving the German army in a serious disaster; and behind the front in a rapid development of industry in the new centres beyond the Volga. It was a winter of grave sacrifices for the civilian population, especially in cities in or near the front line like Moscow and Leningrad and Sevastopol: sacrifices borne with heroic fortitude. It was a winter of enormous efforts on the production front by workers in the key industries, both those near and those distant from the battle zone. The blow which the German advance aimed at some of the most important industrial centres of the country was to a large extent parried by the evacuation of key factories from the threatened areas to new sites in the new industrial districts round Kuibyshev on the Volga, in the Urals, or farther east still in Siberia. This was an evacuation of both the personnel (with their families) and the equipment of whole factories by a railway journey of sometimes a thousand miles or more. The huge proportions of this movement and the strain it must have placed on the transport system can be gathered from the fact that in some cases it took a thousand railway wagons to transport a single factory, and that probably about 1,000,000 persons were evacuated from the two cities of Kharkov and Kiev alone. In its planning and organization as well as in its dimensions this evacuation was extraordinarily impressive, as was also the speed and efficiency with which new sites were prepared for the "leap-frog" factories, as these were called (often temporary structures of timber, to economize in steel). The buildings to house them in some cases were already completed by the time the evacuated plant and personnel had arrived. Naturally, there were delays in many cases in getting pro-



duction started in its new home, owing to difficulties of construction and procuring raw material supplies and accessories in the new areas. But already by April 1942 most of the evacuated plants were operating at something approaching normal capacity, and many of them were even exceeding their former output on the old sites.

Economic Situation.—The economic losses suffered from the German advance, especially from the occupation of the Ukraine, were very serious, and not to be underestimated. The loss was specially severe in the raw materials of heavy industry and in basic products. With the loss of the Ukraine went between a half and two-thirds of the soviet union's prewar output of coal and iron ore and pig iron, and nearly half of her prewar steel output. The Dnieper region was an important centre of aluminum production, of ferro-alloys and of rolled steel. Kharkov specialized in aircraft and heavy engineering. Voroshilovgrad contained one of the largest locomotive-building works in the country. Melitopol on the sea of Azov had several Diesel-engine works. As regards agriculture, the most serious loss was in sugar-beet, some nine-tenths of which was in the occupied regions. With the German advance to the Don and into the North Caucasus in their summer offensive of 1942, more than half of the former wheat production and about 40% of rye production was lost to the U.S.S.R. More than half the pigs and more than a third of all cattle were formerly in territory that was overrun by the invaders. Much of this cattle, at any rate that belonging to collective farms, was driven eastward for hundreds of miles in face of the German advance; but what proportion reached safety was unknown.

As regards engineering, the position was considerably better: probably not more than a fifth of the prewar soviet capacity lay in areas occupied by the Germans. Moreover, engineering plants, even heavy engineering, are generally easier to evacuate than blast furnaces; so that a larger proportion of equipment was probably capable in this case of being salvaged and removed. The same is true of the non-ferrous metal industry and of the most modern armament plants, most of which were located in the newer industrial centres east of the Volga. More than two-thirds of soviet lead, zinc and nickel, and nearly all the chrome, copper and cotton come from the eastern part; and even in the case of aluminum a new plant in the Urals was under development at the outbreak of war, based on newly exploited bauxite deposits on the eastern slopes of the Urals. By the end of 1942 this plant might have been capable of producing as much as the combined previous outputs of the two main aluminum plants on the Dnieper and on the Volkhov near Leningrad. Large tungsten and tin deposits had recently been discovered and opened up in eastern Siberia, and synthetic rubber plants were in the unoccupied zone. Even in the case of oil, although in 1940 the Caucasus region accounted for

WOMEN OF STALINGRAD evacuating the besieged city during the fall of 1942

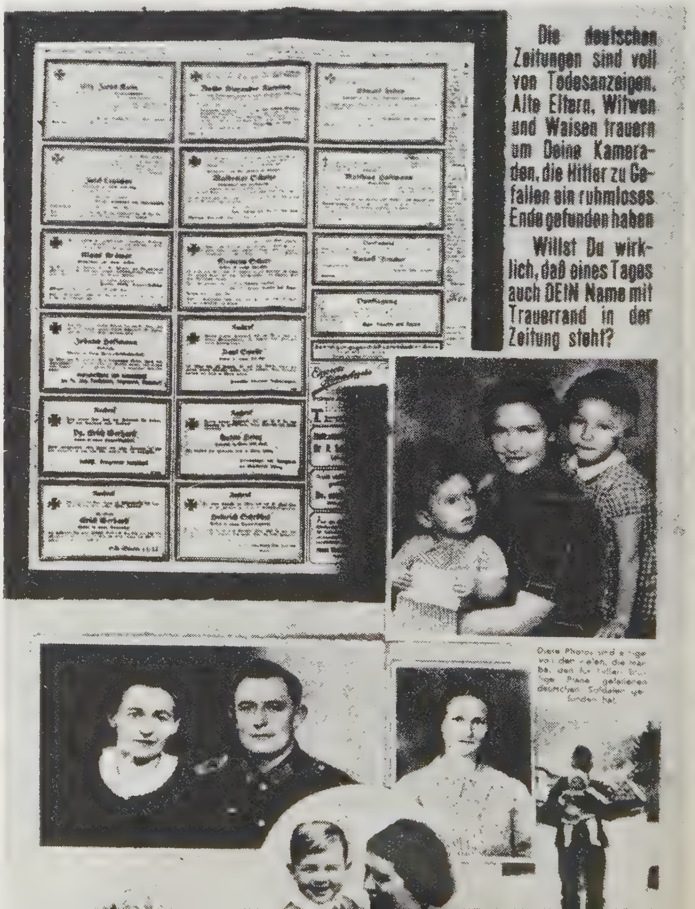
about 30,000,000 out of 34,000,000 metric tons, there was a rapidly developing and rich new area between the Urals and the Volga called "the second Baku" which was scheduled to produce 7,000,000 tons by 1942 and might have exceeded this figure. In addition it was planned to mine more than 14,000,000 tons of shale in 1942. Both in the case of oil and metals there were presumably appreciable stocks in the Volga and Ural regions, sufficient at least to meet a short-term deficiency. There were no doubt possibilities of some increased utilization of scrap; and considerable efforts were made to develop local supplies of coal and other fuels in the new industrial regions. The Urals are especially rich in minerals, which had been rapidly developed. Kusbas, 1,000 mi. farther east, had iron-ore, manganese and coal.

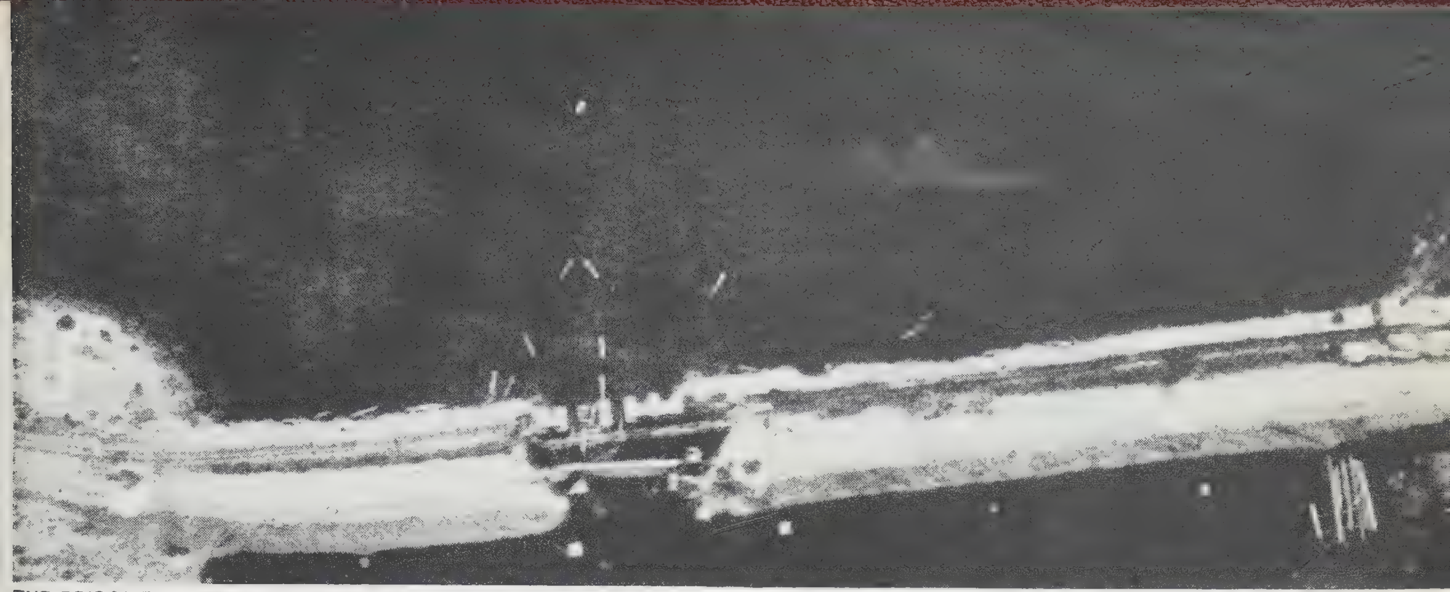
The main reception areas for evacuated plants were in the Volga industrial area based on Kuibyshev, the Urals, Kusbas and eastern Siberia. Light industries seem mostly to have gone to the Volga region and also factories making grenades and shells: for example, this was apparently the destination of most Moscow factories, some of which were evacuated completely, while others evacuated part of their machinery and staff to form the nucleus of new "daughter" factories. The Urals became a centre of tank, artillery and aircraft manufacture; and Kusnetsk of machine tools and the production of high-grade steels. This latter centre at the end of 1942 was in a position to meet three-quarters or more of its ore requirements from adjacent mines; while the Urals were able to overcome their previous coal deficiency by drawing supplies from the rich anthracite region of Karaganda along the newly built railway from Karaganda to Magnitogorsk. There was a good deal of rationalization carried out both in the old and the evacuated armament plants in these centres. A new wave of the "Stakhanovite" movement known as the "thousand per-centers"—of workers who themselves took the initiative in multiplying their normal output standards many times by improved methods of working—did a great deal to augment the capacity of plants. Strenuous efforts were made to train new labour supplies, especially women, by training courses in the factory and by a system of "patronage" by "Stakhanovites" and skilled workers over newcomers. Already by May 1942 M. Ustinov, the commissar for armaments, made the remarkable statement that "artillery plants of our country last month turned out as many guns as in six months of last year"; and on July 19 *Pravda*, the organ of the Communist party, stated that "at the beginning of the second year of war our industries are able to produce a larger quantity of arms and ammunition than before the war, despite the difficulties brought about by the war."

To repair the deficiencies in the food supply, campaigns were launched to increase grain production in Siberia and in the fertile north Kazakstan steppe-region; to plant sugar-beet in Central Asia and in the Saratov province, and to increase the herds on the Kirghisian pastures, in Turkmenistan and in the Altai region. Fortunately most of the equipment of the sugar refining factories was evacuated from the Ukraine in time. Measures were planned to increase the head of cattle on collective farms by more than 25% between Jan. 1942 and Jan. 1943. The slaughter or sale of cattle under one year old was forbidden and the slaughter of grown cattle required the permission of the local agricultural department. On Sept. 8, 1942, an agreement in London was signed between Soviet Ambassador Maisky and the Canadian high commissioner for a Russian purchase of 9,000,000 bu. of Canadian wheat under a credit agreement. A return was made to a system of self-supply by individual factories which was characteristic of the earlier rationing period during the first five-year plan. Each factory was instructed to institute a special supplies department, under the joint control of the factory committee and the area trade union committee, to operate farms and allotments for the supply of employees and their families, so as to make each factory as self-sufficient as possible. Many factory supply departments had not only pig and poultry farms and vegetable gardens, but orchards, vineyards and processing plants as well. In the same way schools and communal feeding trusts run by town soviets were encouraged to organize their own food production.

In order to secure an effective distribution of labour, a decree of Feb. 14, 1942 declared all able-bodied men between 16 and 65,

PROPAGANDA PAMPHLETS such as this one, showing death notices from German papers and photographs found on dead German soldiers, were dropped by Russian pilots behind the German lines in 1942


Die deutschen Zeitungen sind voll von Todesanzeigen. Alte Eltern, Witwen und Waisen trauern um Deine Kameraden, die Hitler zu Gefallen ein ruhmloses Ende gefunden haben
Willst Du wirklich, daß eines Tages auch DEIN Name mit Trauerrand in der Zeitung steht?



THE BRIDGE TO MURMANSK at Taibola, 40 mi. south, was severely damaged by German bombers in 1942. Russia worked feverishly during the year to keep the Murmansk supply route open. Repair crews were stationed every 15 mi. along the Murmansk railway

who were not already mobilized or engaged on government work, to be liable to be called up for war work. Women between the ages of 16 and 50, with the exception of mothers of children under 8, were made liable for calling-up for work in industry or building. The basic labour days which a collective farm member was required to put in to the work of the collective farm was at the same time raised from 100 to 150 per year.

Living Conditions.—About a third of the population of the U.S.S.R. lived in the occupied regions at the end of 1942. Of the town population a large proportion, probably more than half, was evacuated eastwards; but the proportion of the rural population evacuated must have been much smaller. Somewhere between 30,000,000 and 50,000,000 persons must, therefore, have been living in the occupied zones, many of them serving as guerrillas, harassing the German lines of communication. The plight of this population was even more grim than that of other German-occupied countries of eastern Europe. Not only were they subject to pillage and starvation on a scale quite unprecedented in modern warfare, but they were victims of a concerted campaign of terrorism and extermination to which it is hard to find a parallel since the middle ages. Virtual serfdom to German overlords was introduced into the villages on the ruins of collective farming; thousands of men, women and girls were compulsorily transported to Germany as slave labour. On Sept. 13, 1941, the German high command itself had announced that Russian prisoners would receive food inferior to that given to prisoners of war of other nationalities; and in November Foreign Commissar Molotov, on behalf of the soviet government, issued his first note to the powers, protesting against the barbaric treatment of Russian prisoners by the Germans. The note stated that the soviet government was in possession of numerous facts concerning "the systematic brutalities and atrocities inflicted by the Germans on the Red army men and officers"; that these atrocities "have taken on a particularly glaring character . . . which exposes the German military authorities and the German government as a gang of cutthroats who ignore all international rights and laws of human morality"; and spoke of "disgusting insults and torture and bestial atrocities," including torture and mutilation of war prisoners, doctors and nurses, women and even children. On April 27, 1942, this was followed by an announcement by the Moscow radio of a new note by Molotov to the powers, charging the German government with a premeditated policy of atrocity, which included the wholesale plunder of occupied territories, complete destruction of whole villages with their populations, the introduction of slave labour and serfdom for workers and peasants, the forcible transfer of civilians to Germany and their treatment as prisoners of war; extermination of prisoners by torture and starvation, and mass execution of soviet citizens regardless of position, age or sex. The note declared that the soviet government had documentary proof that these were not merely isolated cases of brutality by individuals or undisciplined units, but acts committed on instructions from the German high command. On Oct. 12, 1942, Molotov in reply to a collective note from the other Allied powers, stated that "the soviet government approve and share the desire expressed in the collective note received by them to hand over to justice and put on trial those guilty of the aforesaid crimes," and were prepared "to support any practical steps taken by the Allied and friendly governments to this end." A fortnight later *Pravda* was editorially suggesting that a beginning might be made by placing Rudolf Hess, who was in the hands of the British government, on trial immediately. On Nov. 4 it was announced that the soviet government had instituted a special commission to investigate the damage to life and property resulting from the German occupation and to identify the guilty persons wherever possible. The chairman of this commission was to be the trade union leader, Nikolai Shvernik; and among its members were Professor Tarle, Professor Burdenko, Alexei Tolstoy the writer, M. Krainin, an authority on constitutional law, and the metropolitan (bishop) of Kiev and Galitsk.

Foreign Relations.—In the sphere of external relations with other powers, the final weeks of 1941 had witnessed the visit of the British foreign secretary, Anthony Eden, to Moscow, where in a series of meetings with Stalin and Molotov there took place an "exhaustive exchange of views on questions relating to the conduct of the war and postwar organization of peace and security in Europe," in the course of which "identity of views" was reached between both parties. On his return to England, Eden was accompanied by the soviet trade union leader, Nikolai Shvernik, with a soviet trade union delegation, to pay a return visit following that of Sir Walter Citrine and British trade unionists to Moscow a few months before. Six months later, Eden was able to inform the house of commons of the signature of a new treaty of alliance, collaboration and mutual assistance between Great Britain and the U.S.S.R., extending over a period of 20 years. This was signed in London on May 26, 1942, following the arrival of Foreign Commissar Molotov in England five days previously and a series of what Eden described as "long and friendly exchanges of views with M. Molotov," in the course of which "complete mutual confidence was established." Three days after the signature of the treaty, Molotov arrived in Washington, where he stayed at the White House as guest of Mr. Roosevelt. The first fruit of these Washington conversations was the signature on June 11 of a "master lend-lease" agreement between Cordell Hull and Maxim

ANOTHER WINTER WITH AN UNCONQUERED RUSSIA?
?
RUSSIAN BEARSKIN
ORR
Copyright, 1942, by The Chicago Tribune.

PROSPECT OF A SECOND WINTER for Hitler's troops in Russia in 1942-43, as envisaged by Orr in the *Chicago Tribune*, in his cartoon entitled "Still No Fur Coat"

Litvinov, the soviet ambassador. On the same date General Sikorski, the head of the Polish government in London, issued a statement welcoming the British-soviet treaty.

The chief clauses of this historic Anglo-soviet treaty provided that the two countries should "undertake to afford one another military and other assistance and support of all kinds in the war against Germany and all those states which are associated with her in acts of aggression in Europe"; affirmed that "the High Contracting Parties undertake not to enter into any negotiations with the Hitlerite government or any other government in Germany that does not clearly renounce all aggressive intentions, and not to negotiate or conclude except by mutual consent any armistice or peace treaty with Germany or any other state associated with her in acts of aggression in Europe"; and declared the desire of both countries "to unite with other like-minded states in adopting proposals for common action to preserve peace and resist aggression in the postwar period," . . . "to work together in close and friendly collaboration after the re-establishment of peace for the organization of security and economic prosperity in Europe," and "to render one another all possible economic assistance after the war." The foreign office statement which accompanied the announcement of the treaty stated that "full understanding was reached between the two parties with regard to the urgent tasks of creating a second front in Europe in 1942."

It soon became clear that in the U.S.S.R. very high hopes were placed on the immediate opening of a second front in Europe as the most important immediate fruit of the treaty. As far back as Feb. 1942 Litvinov (who in the previous November had been appointed ambassador to the United States and deputy-commissar for foreign affairs) made a statement in New York city that "only by simultaneous offensive operations on two or more fronts can Hitler's armed forces be disposed of," and promising that if a second front were opened soviet armies would "continue to strike at Hitler's armies to the limit of their strength and beyond that limit." *Pravda,* in welcoming the new treaty, declared that "the soviet people welcomed with tremendous approval the news of the full understanding with regard to the urgent tasks of opening a second front in Europe in 1942," and declared that "this year of 1942 must be the year of the final defeat of Hitler's hordes." In the course of the summer, when the German offensive made new inroads into soviet territory, and for a time seemed to threaten both the Volga region and the Caucasus, anxiety and impatience grew in the U.S.S.R., and turned to evident disappointment that the second front in the west had not yet appeared. In August Mr. Churchill paid a visit to Moscow to confer with Stalin himself, and in the words of the official statement "discussions were carried on in an atmosphere of cordiality and complete sincerity," and "a number of decisions were reached covering the field of war against Hitlerite Germany and her associates in Europe." On Oct. 3, in a written reply to Henry Cassidy, the representative in the U.S.S.R. of the Associated Press, who had asked what place the possibility of a second front occupied in soviet estimates of the current situation, Stalin stated: "A very important place: one might say a place of first rank." To a further question regarding Allied help to the U.S.S.R., Stalin said: "As compared with the aid which the soviet union is giving to the Allies by drawing upon itself the main forces of the German fascist armies, the aid of the Allies to the U.S.S.R. has so far been little effective. In order to amplify and improve this aid only one thing is required: that the Allies fulfil their obligations fully and on time." As regards soviet military strength, Stalin went on to strike a note of sober confidence: "I think that the soviet capacity to resist the German brigands is in strength not less, if not greater, than the capacity of fascist Germany or any other aggressive power to secure for itself world domination."

After the combined U.S.-British operations in North Africa were launched Nov. 8, Stalin addressed another letter to Cassidy in which he declared that the effect of the new campaign "will not be a small one and that a certain relief in pressure on the soviet union will result in the nearest future. . . . The campaign changes radically the political and war situation in favour of the Anglo-Soviet-American coalition. . . . There need be no doubt that the Red army will fulfil its task with honour. . . ."

With regard to Japan, 1942 saw the maintenance of the soviet treaty of neutrality of the previous year, and in March a renewal for a further year of the 1928 fisheries convention between the two countries; Japan agreeing to a 20% increase of rentals and to abstain from submitting tenders in respect of five out of the 19 fishing districts in which leases expired in 1941. At the close of 1941, Maxim Litvinov, at a press conference, had felt no hesitation in classing Japan as "a common enemy," at the same time stating that "complete understanding exists or will be arrived at" between the Allied powers, that "we are all in the same boat and will perish or triumph together," and that the axis powers as a whole were "a bunch of international gangsters, with Hitler the chief inspirer and culprit." On April 13, 1942, the anniversary of the soviet-Japanese neutrality pact, *Pravda* made an important editorial declaration. While declaring that the pact had been useful, it proceeded to give the warning that "it is necessary that the Japanese military fascist clique, dizzy with military successes, should understand that their blabbering about war and invasion in the north might damage Japan herself most of all." The pact, it said, had been put to "severe tests" by Japan's renewal of the anti-comintern agreement, "openly directed against the U.S.S.R., and by her attack on Britain and America" . . . "If the pact has held hitherto, it is because of the strict observance of all obligations by the U.S.S.R. If it is to be maintained in the future, it is essential that Japan should act similarly."

Among government changes and appointments in the U.S.S.R.

in the course of the year: in May, Y. A. Malik was appointed ambassador to Tokyo in succession to Constantin Smetanin; in February Lazar Kaganovitch, commissar for railways, was added to the State Defense council; in August General Zhukov, commander-in-chief on the central front, was appointed first-deputy to Stalin as commissar for defense. On Feb. 5 an agreement was signed in London between Ambassador Maisky and Vincent Massey for an exchange of consular representatives between Canada and the U.S.S.R.; and on June 12 a further agreement for an exchange of ministers was concluded. On Sept. 9 it was announced that the representatives in Moscow of the emigré Norwegian, Czech and Yugoslav governments would assume ambassadorial rank; and on Oct. 10 the U.S.S.R. extended formal recognition to the Fighting French. (*See* also WORLD WAR II.) (M. Do.)

Education.—Elementary and secondary school children in the educational year 1941–42 were estimated to reach a total of approximately 36,200,000 (an increase of 3.4% over the 1940–41 total); the number of university students was estimated at 657,000 for 1941–42 (an increase of 13%); libraries (1940), 75,000 with 160,000,000 books; newspapers, 9,000 (in 70 languages), with a circulation of 38,000,000; printed books, 700,000,000 copies. Theatres, 790; cinemas, 30,461 in towns and 18,991 in villages.

Finance, Banking, Trade.—Estimates for 1940: Capital investments in industry, agriculture and transport from the all-union budget and other sources, 36.1 milliard roubles (15% increase over 1939). State revenue, 182,600,000,000 roubles (17.1% increase over 1939); state expenditure, 179,700,000,000 roubles (including defense services, 57,066,200,000; national economy 57,117,500,000; cultural services, 42,875,400,000, of which education, 23,195,000,000). Banks: 37,120 branch banks and agencies; deposits in savings banks, *c.* 7,000,000,000 roubles. Subscription to third five-year plan loan, 9,310,800,000 roubles. Gross retail trade turnover in 1939, 163,456,000,000 roubles. Foreign trade figures were not available for 1939, 1940, 1941 and 1942. Merchant marine (vessels of 100 tons and over) (1939) 1,316,000 gross tons.

Agriculture, Manufacturing and Mineral Production.—(Metric tons) Grain crops (1938): wheat 40,880,000; rye 20,930,000; oats 16,990,000; barley 8,200,000; maize 2,690,000; rice 317,000; potatoes (1938) 41,960,000; beet sugar (1940) 2,145,800; tea (1940) 12,900; cotton (1940) 800,000; cotton seed (1940) 1,720,000; wool (1938) 137,400; flax (1939) 633,000; hemp (1939) 110,000; raw silk (1940) 1,700; rayon (1940) 7,700; wood pulp (1938) 10,800,000; crude petroleum (1940) 29,700,000; natural gas (1938) 2,600,000,000 cu.ft.; coal (1940) 146,800,000; iron ore (metal content) (1940) 14,000,000; pig iron and ferro-alloys (1940) 14,950,000; steel ingots and castings (1940) 19,100,000; manganese ore (metal content) (1940) 1,300,000; bauxite (1938) 250,000; aluminum (1940) 55,000; chrome ore (1940) 96,000; silver (1938) 218,000; gold (1937) *c.* 150,000 kilograms.

Industry and Labour.—While the total population of the U.S.S.R. increased by 16% between 1926 and 1939, skilled workers and intellectuals increased by the following number of times: mechanics 3.7, turners 6.8, millwrights 13.0, locomotive drivers 4.4, plasterers, 7.0, tractor drivers 215.0, engineers 7.7, agronomists 5.0, scientists 7.1, teachers 3.5, physicians 2.3.

The social composition according to the 1939 census returns was: workers and employees 49.7%; peasants on collective farms and handicraftsmen in producers' co-operatives, 46.9%; independent peasants and handicraftsmen, 2.6%; nonworkers, 0.04%; groups not shown, 0.7%.

Unitarian Church.

A major event in the gradual integration of denominational machinery and program was the significant action by the Laymen's league in taking responsibility for the United Unitarian appeal, and the appointment of Frederick T. McGill to be both executive director of the league, and head of the appeal.

Significant as a movement within the Unitarian body was a "Statement of Faith," drawn up by ministers of the Middle Atlantic states, to define the faith needed for these times: faith in man, exemplars and prophetic leadership, freedom, the validity of moral choice, free churches and God. A study course was prepared for use in Unitarian churches and it was expected that there would be general consideration of the statement throughout the denomination.

During 1942 the Unitarian War Service council was organized and it embarked upon extensive service in three directions—to Unitarian chaplains with the armed forces, to men and women in the service who sought religious inspiration and guidance, and to the churches in their effort to serve more effectively in the present crisis. The council published a series of leaflets which had very wide distribution among the men in the service.

The work of the Unitarian Service committee continued in France and Portugal with growing effectiveness. The invasion of Unoccupied France compelled the removal of U.S. representatives to Geneva, but apparently the work in Marseilles, at least, continued. Dr. and Mrs. Robert Dexter went to Portugal late in the summer, and were in charge there at the close of the year. On the home front, the work of the Unitarian Service squads grew, and a committee inaugurated a program to mobilize churches in co-operation with the child care project of the Office of Civilian Defense. A branch office of the service committee was opened in New York city.

Two significant books were published by the association: *American Destiny*, by A. Powell Davies; and *Realistic Courage*, by Walton E. Cole. The latter was given originally as the first series under the Minns lectureship established in Boston for an annual series of lectures by Unitarian ministers, under the charge of the First Church in Boston and King's Chapel. Also, several new volumes were added to curriculum material of the department of church schools. (*See* also CHURCH MEMBERSHIP.) (J. H. L.)

United Church of Canada.

The United Church of Canada, which in 1925 united the Presbyterian Church in Canada, the Methodist Church (Canada) and the Congregational Churches of Canada, reported for 1941 a membership of 716,920 with 1,737,893 persons under pastoral oversight; a Sunday school enrolment of 510,602 and 7,109 preaching places. The Church owned property worth over $85,548,413 and raised a total of $11,991,680 for all purposes. In foreign missionary fields, where work was interrupted, it appeared improbable that work could be resumed in the exact forms in which it was carried on before the war. The missionary and maintenance givings of the church showed an increase of $33,000 over those of 1940. To date in gifts and pledges of war savings certificates given over to the church, $1,119,000 was received which would have a maturity value of $1,398,750.

Among the important features in the life of the United Church during the year were the creation of a board of colleges and secondary schools to take over and administer an important phase of educational work formerly under the board of Christian education, leaving the latter to deal exclusively with the oversight of Sunday schools and young peoples' societies; the setting up of a board of finance under a federated type of constitution embracing the department of the treasury, the missionary and maintenance department and the department of pensions; the setting up of a committee to outline a plan to secure support for the pension fund by a system of assessments upon pastoral charges instead of by an annual grant from the missionary and maintenance fund; the acceleration of the theological course as a war measure in order to keep home mission charges better supplied with ministers, and the adoption of a plan in a few areas adjacent to theological colleges to form collective pastoral charges by combining two or more rural or suburban charges which would be served by an ordained minister assisted by students pursuing their theological training.

About 155 ministers were serving as chaplains to the Canadian armed forces. About 20 ministers served in the auxiliary services of the Canadian Legion and the Y.M.C.A.; 16 were listed as combatants, making a total of 191. There was a serious shortage of ministers for the normal work of the church.

The Rev. Victor T. Mooney was elected treasurer of the United Church to fill the place made vacant by the death of Rev. Robert Laird. Rev. J. C. Cochrane was appointed secretary of the department of pensions as successor to Rev. S. W. Dean who retired. The Rev. J. R. P. Sclater of Toronto was elected moderator of the church by action of the general council which met in September. (G. A. Si.)

United Kingdom: *see* Great Britain and Northern Ireland, United Kingdom of.

United Nations: *see* Australia, Commonwealth of; Belgium; Brazil; Canada, Dominion of; China; Costa Rica; Cuba; Czechoslovakia; Dominican Republic; Dutch East Indies; Ethiopia; Great Britain and Northern Ireland, United Kingdom of; Greece; Guatemala; Haiti; Honduras; India; Luxembourg; Mexico; Netherlands; New Zealand, Dominion of; Nicaragua; Norway; Panama; Philippines, Commonwealth of the; Poland; Salvador, El; South Africa, The Union of; Union of Soviet Socialist Republics; United States; Yugoslavia.

United Service Organizations.

United Service Organizations, Inc. was formed in Feb. 1941 to provide recreational, spiritual and welfare services to the armed forces outside military and naval reservations, and to certain war production workers specified by the government. With the approval of the president and the war and navy departments, six national welfare agencies pooled their resources to form U.S.O.: The Young Men's Christian associations, the National Catholic Community service, the Salvation Army, the Young Women's Christian associations, the Jewish Welfare board and the National Travelers Aid association.

Actual development of U.S.O. quickly outstripped the original plan; 201 buildings were eventually provided by the government, but by Dec. 7, 1941, U.S.O. had 496 operations, and a year later, 1,127. Additional buildings were rented, borrowed and accepted as gifts. Operations fell into the following principal classifications (figures as of Dec. 7, 1942):

U.S.O. Clubs, numbering 673, supplying recreation facilities outside military camps and naval stations for the armed forces in their off-duty hours. Supplementing the clubs in communities in which need for full U.S.O. service was limited or delayed were 213 U.S.O. centres and area services.

Travelers Aid Service, operating 95 stations to supply information or emergency aid and counsel to troops-in-transit in railroad and bus terminals and supplementing the facilities provided by 88 U.S.O. lounges for reading, writing, resting and obtaining various needed personal services.

Mobile Service Units carrying U.S.O. comforts and entertainment to soldiers and sailors on detached duty at outposts remote from regular U.S.O. service and to troops on manoeuvres.

The Overseas Division in 1942 operated 57 U.S.O. clubs, 21 U.S.O. centres and area services and 10 mobile service units, in 56 cities and towns and 16 territories, possessions and off-shore bases in the western hemisphere.

U.S.O.-Camp Shows, Inc., one of the largest theatrical enterprises in history, with 86 units touring three separate circuits. In 1942 they strove to produce at least one performance every fortnight in every camp or base in the United States.

Nationally financed operations of U.S.O. in the continental United States were conducted in 476 cities and towns in 47 states and the District of Columbia in 1942. Affiliated local operations co-operating with U.S.O. were also conducted in more than 500 other communities.

U.S.O. in 1942 employed upwards of 6,000 paid workers on its professional staff; their work was supplemented by the efforts of more than 600,000 volunteers. U.S.O. was financed entirely by public subscription: $14,353,666 was raised in the 1941 campaign, and more than $31,000,000 had been raised in the 1942 War Fund campaign up to Jan. 1, 1943.

U.S.O. War fund officers in 1942 included John D. Rockefeller, Jr., honorary chairman, and Prescott S. Bush, national campaign chairman. Walter Hoving was chairman of the board, and Chester I. Barnard, president of the U.S.O. national administration. National headquarters were located in the Empire State building, New York city. (C. I. B.)

United States.

The population of the United States in 1940, by the federal census, was 131,669,275. This figure represented an increase of 8,894,229 over the census of 1930. With possessions included, the population was 150,621,231 in 1940. On Jan. 1, 1942, the census bureau estimated the population of the U.S. proper at 133,965,237. The area of continental U.S.A. is 3,022,387 sq.mi. For population figures of the states, *see* the articles on the separate states. *See* also Birth Statistics; Census, 1940; Church Membership; Death Statistics; Indians, American; Negroes (American). (X.)

History.—On the first day of 1942 there was signed at Washington a Declaration of the United Nations, by which 26 nations (later increased to 30), representing a population of more than 1,000,000,000, joined in the pledge to fight together until the overthrow of the tyrannical regimes of Hitler, Mussolini and Hirohito was accomplished. For the winning of the war the whole machinery of the United States was increasingly geared: industries, agriculture, labour relations, transportation, military and naval establishments, shipbuilding, taxation, investments, and hundreds of adjustments and sacrifices in the private lives of U.S. citizens, like the rationing of food, gasoline and fuel, the deprivation of household conveniences and various consumers' goods, in order that the factories might concentrate on war production, and the pressure to put every spare dollar into the purchase of bonds and stamps to help the treasury meet the fabulous expenses of the war.

Congress.—The second session of the 77th congress, with a Democratic majority of 104 in the house and 38 in the senate, convened on Jan. 5, 1942, and adjourned on Dec. 16, after a continuous session (barring a brief recess at the end of April) of 344 days—the longest in U.S. history. On the 6th of January it listened to the president's message which called for the production of 60,000 planes, 45,000 tanks and 8,000,000 tons of shipping for the year 1942, with those figures stepped up to 125,000, 75,000 and 10,000,000 respectively for the year 1943. The president declared that the war would take more than half the estimated national income for 1942 and that American armed forces would operate in every theatre of war where their help was needed. It would obviously be impossible in the space of this article to give a detailed account of the legislation of the session, since the proceedings of the 77th congress fill 32 volumes in the *Congressional Record.* But the following acts may be cited as outstanding. A Price Control act of January conferred on Leon Henderson's Office of Price Administration wide powers of ceiling fixing to check inflation, but failed to deal with wages or agricultural prices, until the latter were brought under the law by an eleventh hour amendment after the president had threatened in his Labor day message to act on his own authority if congress did not take action before Oct. 1. As a result of 10 months of struggle congress enacted a tax bill designed to raise $9,000,000,000 in new levies, thereby increasing the total federal tax burden to some $27,000,000,000, a figure in excess of the public debt at the close of World War I. At the same time the debt limit, which had been set at $65,000,000,000 in 1941, was raised to $125,000,000,000, with the certainty that even this enormous figure would have to be revised upward before long. A navy bill of $26,500,000,000 in February and an army bill of $32,000,000,000 in March, together with supplementary demands of $11,000,000,000 for the air corps, $8,000,000,000 for additional fighting ships below the battleship class, 500,000 tons of aircraft carriers, and constantly increasing sums for the equipment and service of the rapidly growing armed forces, carried the total appropriations and authorizations of congress above the $220,000,000,000 mark before the close of the session. Under the Selective Service act of 1940 some 17,500,000 men between the ages of 21 and 35 had been registered. The act was extended in Feb. 1942 to include 9,000,000 in the age limits 36–45; in April to register 13,000,000 more between the ages of 46 and 65; and in June to include 3,000,000 boys of the "teen age" (18–20). Thus a grand total of more than 42,000,000 males had been registered for service in the fighting forces or in war production. This compared with a total of 24,234,000 men between the ages of 18 and 45 enrolled in the four drafts of World War I, of whom only 4,335,000 were mobilized and 2,800,000 drafted for combat. In addition, congress authorized the establishment of uniformed women's auxiliary corps in the army (WAAC), the navy (WAVES) and the coast guard (SPARS), to replace the tens of thousands of men called from clerical and other noncombatant work to serve in the ranks. (*See* also SELECTIVE SERVICE.)

In general, congress responded willingly to the president's requests for the authorization and support of the multifarious boards and commissions which he was setting up for the coordination of the war effort, though a senate committee under Chairman Harry Truman of Missouri found much to complain of in the matter of dilatoriness and red tape in the management of the war. There were more than 50 federal agencies in June 1942, of which perhaps the most important were the National War Labor board (William H. Davis), the Office of Price Administration (Leon Henderson, resigned in December), the War Manpower commission (Paul V. McNutt) and the War Production board (Donald M. Nelson). Later in the year many of these half a hundred agencies were either discontinued (the CCC, the NYA, the WPA, for example) or were merged with a new and more comprehensive agency like the Office of War Information (Elmer Davis), while still other agencies were created, like the Food administration under the wide authority of Secretary of Agriculture Claude R. Wickard, the Office of Economic Stabilization, to head which Justice James F. Byrnes resigned from the supreme court, and an agency for foreign relief and rehabilitation, similar to that of Herbert Hoover in World War I, under the chairmanship of ex-Governor Herbert H. Lehman of New York. Two war powers bills had been passed by congress, giving the president authority (as in the Overman act of 1918) to shift departmental agencies as he saw fit, to control alien property, manage war production contracts, censor communications and exert a large control over raw materials. Congress, however, balked at the third war powers bill, which would have given the president control over the tariff and immigration, and adjourned without action thereon.

THE ALL-AMERICAN GIRL REVUE toured U.S. camps in 1942 to entertain soldiers, often in conjunction with the United Service organizations. Here Shirley Lloyd, a member of the company, sings at Fort Benning, Ga.

There was a great deal of criticism of congress during the year, directed at the alleged subserviency of that body to powerful groups like the farm associations and the labour lobbies demanding privileges for their respective interests; and public indignation was so prompt when congressmen voted pensions for themselves in Nov. 1941 that the "Bundles for Congress" act was repealed in the spring of 1942 by large majorities in both houses. Another complaint against congress was the filibuster conducted by a group of southern senators against the abolition of the poll tax as a requisite for voting in the eight southern states in which it was still in force. In the last days of the session congress increased the pay of the soldiers from $21 to $50 a month and granted substantial pay raises to more than 1,000,000 employees in the federal service. Early in June congress declared war on three Balkan satellites of the axis, Hungary, Rumania and Bulgaria.

The Budget.—On Jan. 7 the president presented his budget message to congress. He called for a budget of $59,000,000,000 for the fiscal year 1942–43, of which $53,000,000,000 (89%) was for war expenses, against estimated receipts of $17,852,000,000. "Bonds and taxes, taxes and bonds," was his slogan. By the end of the fiscal year the U.S. government was spending at the rate of $150,000,000 a day, but taxes were bringing in only $49,000,000 a day. It was estimated that the fiscal year 1943 would see expenditures of $73,000,000,000 against receipts of approximately $27,000,000,000, leaving a deficit of $50,000,000,000. After Pearl Harbor the daily rate of war expenditure rose from $70,000,000 to $150,000,000, or $1.15 for every man, woman and child. The total $220,000,000,000 earmarked for war expenses after 1940 exceeded the whole cost of the government (including its five major wars) since 1789 by $66,000,000,000. In the peak year of World War I, the war expenses were 9.5% of the national income of $56,750,000,000; in 1942 they were 45% of the income of $116,000,000,000. It was evident that the major part of the enormous expense of the war (far more than the two-thirds to which congress tried to hold it down in World War I) would have to be met by borrowing, despite the heaviest tax bill ever levied in U.S. history. According to this 1942 tax bill 16 persons would be liable to income taxes as against 1 person in 1917, and the rate for a single man's income of $2,000 would be $287.50 as against $20 in 1917. From the higher brackets the government expected to take approximately one-half of a $50,000 income and so on up to 90% of a $1,000,000 income. President Roosevelt urged that no one be allowed to have an income of over $25,000 after all taxes were paid.

The Problem of Inflation.—No problem of domestic concern received more serious and constant consideration during the entire year than that of inflation. It was the subject of repeated warnings by the president, the Office of Price Administration, congress, economists, editorial writers and cartoonists. In brief, it is the problem of keeping the cost of living (prices) as fairly as possible adjusted to the situation created by an unprecedented amount of purchasing power (money, credit) in the hands of the people, together with a constant diminution of the consumers' goods available for them to buy. The government was issuing billions of new currency in the form of bonds to finance the war, and this money, paid out in wages, salaries and profits, was increasing the national income by leaps and bounds. At the same time the government was taking more and more of the products of mills, factories and farms for war purposes, and restricting or completely stopping the production and sale of articles that the public would like to buy, such as automobiles, refrigerators, vacuum cleaners, typewriters, coffee, sugar, fuel oil, and a hundred other commodities. Out of an estimated $116,000,000,000 of national income in 1942, taxes will take some $27,000,000,000, leaving $89,000,000,000 of purchasing power in the hands of the people; while the amount of goods available for purchase will not exceed $69,000,000,000. This discrepancy of some $20,000,000,000 (which is constantly growing wider) is the "inflationary gap" which the administration was striving to close.

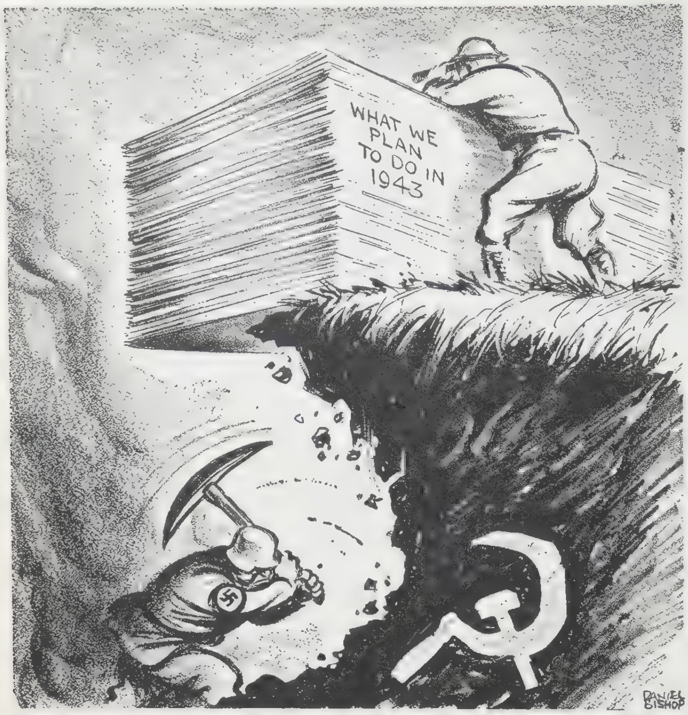
Many remedies were proposed during the year 1942 to check inflation. The Price Control act of January, already mentioned, put ceilings on the prices of some 30,000 articles, but failed to touch wages or to limit farm prices to a figure below 110% of parity. Administrator Henderson declared that the act was inadequate to prevent the cracking of the ceilings. And while no such runaway inflation as that of World War I resulted, the cost of living rose 17%, of wages 57%, and of farm products 72%. On April 27 President Roosevelt presented a seven-point program to close the inflationary gap. His principal recommendations were: (1) higher taxes to siphon off some of the excess purchasing power of the public; (2) increased investment in war bonds (which are savings, not spendings); (3) the rationing of scarce commodities, to prevent a competitive scramble for them; (4) stabilization of wages; and (5) a curb on rising farm prices. The following evening, in a fireside chat to the American people, the president asked them to co-operate by ceasing to buy on credit, paying off their debts, multiplying their subscriptions to war bonds, and accepting the deprivation of customary conveniences and comforts with good grace. "The price of civilization," he warned, "must be paid in hard work, sorrow and tears"—echoing Winston Churchill's famous formula of the spring of 1940.

Industry.—At the beginning of the year President Roosevelt announced that half of the industrial production of the country would be needed for war purposes (as against one-sixth in 1941). The $56,000,000,000 budget for the war meant a production program of more than $1,000,000,000 a week and "the conversion of the world's greatest peacetime industrial machine into the mightiest wartime arsenal." The efficiency with which this enormous task was tackled is shown by the output achieved in the 12 months after Pearl Harbor. A labour force increased from 7,000,000 to 17,500,000 war workers produced $47,000,000,000 of war material, including 49,000 planes, 32,000 tanks, vast quantities of guns and ammunition, 8,000,000 tons of merchant shipping, and great additions to naval equipment. By midsummer of 1942 the United States was manufacturing 4,000 planes a month, as compared with 200 a month in 1939, and the output of machine tools had grown from $200,000,000 to $1,200,000,000. Before entrance into the war and the rapid successes of Japan which followed, many manufacturers had been reluctant to convert their plants for war production, believing that they could still make automobiles and other consumers' goods while devoting a part of their facilities to war work as a side line. They were anxious to keep their regular business going, against the day when normal production would return with the peace. But the growing realization that the U.S. might lose the war unless the total resources of the country were enlisted in the effort brought a change of heart. The Truman committee's report of Jan. 1942 revealed the seriousness of the situation. The new War Production board under Donald M. Nelson was given wide powers of control over the raw materials, processes and allocations of manufactured products. As the tempo of war increased and millions of men were withdrawn from the normal working population to serve in the armed forces, the problem of manpower became acute. A War Manpower commission was set up in April under the chairmanship of the Federal Security Administrator Paul V. McNutt. The commission, which consisted of representatives from the War Production board, the Selective Service system, the Civil Service commission, and the departments of war, navy, labor and agriculture, was charged with the tremendous task of finding among the 70,000,000 men and women who can be recruited for war work able bodied workers to furnish the rapidly mounting volume of materials demanded by the War Labor board, as well as to supply labourers for the 6,000,000 farms of the country.

Meanwhile, the accomplishments of industry in the first year of war were little short of miraculous. To take the production of planes alone, the tonnage of aircraft output after Pearl Harbor tripled and a greater number of planes were built than in all the 23 years preceding 1942. Man-hours worked in the production of planes, engines and propellers increased 155%, and the value of aircraft turned out in the year was $4,250,000,000, as compared with $1,650,000,000 in 1941. The number of women employed in the industry rose from 4,300 to 115,000. An analysis of other industries, like agriculture, transportation and shipping, would tell a like story.

CRATER made by a 5-in. "dud" shell from a Japanese submarine which bombarded the oil fields at Ellwood, Calif., Feb. 23, 1942

Labour.—One of the most striking testimonies to the spirit of unity which pervaded the nation after the disaster at Pearl Harbor was the change in the attitude of organized labour. Early n the new year labour-manager conferences agreed that there should be no strikes or lock-outs for the duration of the war and hat all labour disputes should be settled by peaceful means. To mplement this policy the president appointed a War Labor board (to take the place of the National Defense Mediation board, which had broken down on the issue of the closed shop), consisting of four members from the ranks of labour, four industrialists, and four members representing the public. Under its chairman, William H. Davis, that board was to have jurisdiction over all labour disputes and to settle them either by mediation or arbitration (compulsory, if necessary). Owing to the co-operation between labour and management, the country was spared the disgraceful record of 1941, when strikes involving 1,300,000


WHAT WE PLAN TO DO IN 1943
DANIEL BISHOP

"THE RAMPARTS WE WATCH." A prophecy of 1942 by Bishop in the *St. Louis Star-Times* of what would befall U.S. "paper plans" in the event of Russia's defeat by the Germans

workers and costing the country 15,000,000 man days of labour affected electrical, steel, copper, aircraft and harvester plants, many of which had millions of dollars worth of government defense contracts. In the summer and autumn of that year United States troops had to take over the North American Aviation company's plant at Inglewood, Calif.; the navy took over the Federal Shipyards plant at Kearny, N.J.; and Colonel Jones of the army was put in charge of an aeroplane factory at Bendix, N.J. So serious was the situation that Representative Ford of Washington proposed a bill in congress to make strikes in defense industries punishable with imprisonment for 25 years. In contrast to this distressing record, the bureau of labor statistics reported in April 1942 that 99.97% of the workers in war industries had not lost an hour through strikes.

This does not mean that the War Labor board was free from criticism by both labour and management, or that harmony prevailed in the ranks of organized labour. John L. Lewis, who had resigned from the presidency of the C.I.O., but was still the head of the powerful United Mine Workers, proposed in January that both William Green and Philip Murray should resign from the presidency of the A.F. of L. and the C.I.O. respectively, to be replaced by George Meany, the Secretary of the A.F. of L., while he himself should be vice-president of the new consolidated organization. Naturally, both Green and Murray turned down the proposition, and President Roosevelt provided the compromise of a "labour cabinet" consisting of three members of the A.F. of L. and three of the C.I.O. (not including Lewis) to consult with him on questions relating to labour's part in the war effort. The threat of Lewis to take the U.M.W. out of the C.I.O. as the nucleus of a third labour group probably influenced the older organizations to come closer together. For in April, before a gathering of 5,000 at Pittsburgh, Green and Murray gave a joint pledge of uninterrupted war production by the workers of the A.F. of L. and the C.I.O. At the same time the United Automobile, Aircraft and Agricultural Implement Workers (representing 700,000 men) agreed to refrain from strikes, to waive double pay for Sunday and holiday work, and to accept war bonds for overtime pay if profits were restricted. But these offers were coupled with demands that there be no war millionaires and no inflation, that security for dependents of men in the services be assured, and that there be a moratorium on the debts of these men and of the unemployed.

A heartening sign of harmony between the two great labour organizations was the meeting on Dec. 2 of peace commissioners of the A.F. of L. and the C.I.O. who agreed to submit all jurisdictional disputes to arbitration and to cease mutual raiding of labour—at least for the duration of the war. It was the first peace document formulated by the two organizations since the split caused by the secession of the C.I.O. in Nov. 1935. More harmonious relations between capital and labour were signalized by a remarkable meeting which occurred late in July. At the invitation of Eric Johnston, the new president of the United States Chamber of Commerce (regarded as the citadel of big business), Messrs. Green, Murray and Meany met Johnston and William Witherow, president of the National Association of Manufacturers at Washington, and after a conference with President Roosevelt they agreed to work together for increased production and sustained employment.

A crisis was threatened, however, in this same month of July by the demands of the 157,000 workers in "Little Steel" (the Republic, Bethlehem, Inland and Youngstown plants) for a dollar a day increase in wages. When the War Labor board granted these men a raise of 44 cents a day, as an offset to the 15% rise in the cost of living, it was widely criticized, not because the amount involved was large, but because the decision might serve as a precedent for demands from the millions of steel workers in the automobile and aircraft factories. On the subject of hours, too, there was a good deal of agitation through the entire year. It was argued that adherence to the basic 40-hr. week established by the Wagner legislation of the New Deal was costing the government billions of dollars; and there were proposals to abolish it in war industries for the duration of the war, to limit profits to 6% on all war contracts over $10,000, and to outlaw the closed shop. The Wagner Wages and Hours act did not, as a matter of fact, limit the hours of labour to 40 a week, but only provided that work beyond these hours should be paid at a 50% higher rate. Actually, men in the machine tool and plane engine plants were working about 55 hrs. a week, and in the aircraft factories 49 hrs. The average working week in 70% of the war industries in 1942 was 48 hrs. It was not really a question of hours but of pay that concerned the workers. To abolish the basic 40-hr. week would mean for them the loss of overtime wages, and this seemed grossly unfair to them at a time when the managers were reaping large profits and corporations were paying huge bonuses and salaries in order to avoid taxation on excess profits. Neither the president nor Mr. Nelson was in favour of abolishing the 40-hr. week, believing that the nation could better afford to pay the cost of overtime labour than to impair the morale of the workers by going back on the privileges granted to them in the Wagner act. A compulsory 48-hr. week, they believed, would smack too much of "industrial conscription." (*See* also Strikes and Lock-outs.)

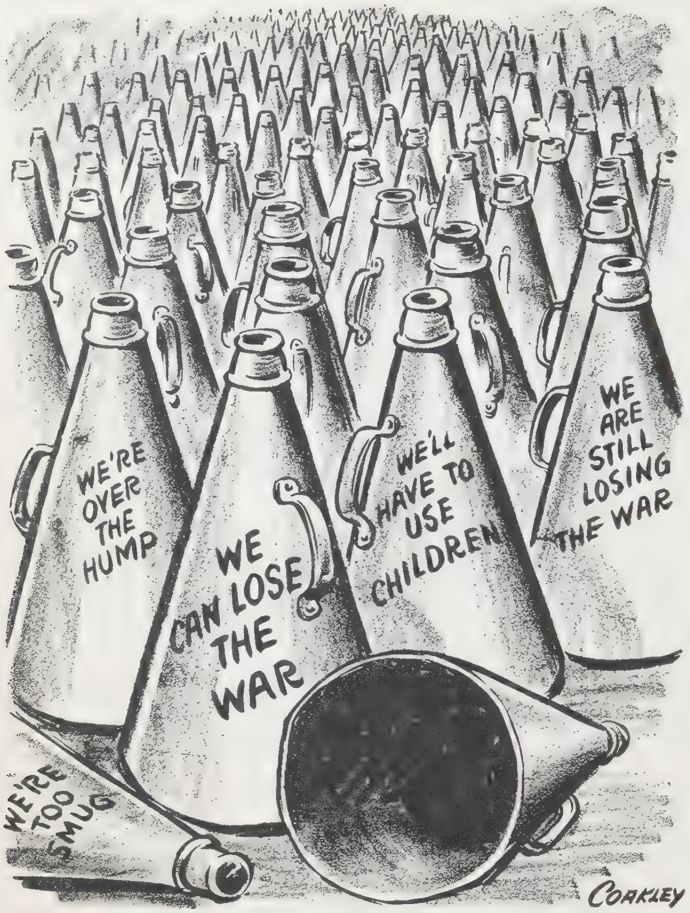
Agriculture.—The year 1942 was a banner year for American agriculture. Bumper crops of wheat (985,000,000 bu.) and corn (3,100,000,000 bu.) filled granaries. Green peas, potatoes, poultry, eggs, milk, pork, beef reached all time high levels. The total farm production was reported on Dec. 1 as 12% higher than in 1941, and the gross farm income had risen from $4,500,000,000 in 1932, $8,700,000,000 in 1939, and $11,700,000,000 in 1941 to over $14,000,000,000. In view of these figures it would seem that there was no cause to worry over food supplies; and indeed headlines in the newspapers spoke of "Plenty of Food for the United States," as a result of "the biggest, most diversified, most healthful, most vitamin-rich crop ever harvested anywhere by any people," while grocery stores advertised "Victory Food Specials" to dispose of surpluses of potatoes, onions, lettuce and fruits. But in spite of this optimistic picture, grave difficulties confronted the agricultural situation. By the close of 1942 the United States had shipped more than 6,500,000,000 lb. of foodstuffs to Great Britain, China and Russia, and the United States armed forces were consuming one-fourth of the U.S. meat supply. Already, by the end of the year, more than 2,000,000 people had left the farms to join the armed forces or to work in war industries, and it was thought that another million would go before the next harvest. This shortage of labour was partially met by the enlistment of women and school children, nevertheless a thousand acres of sugar beets, for example, were plowed under in California, fruit and berries were unpicked, vegetables left to rot on the ground and wheat lay unthreshed for lack of farm hands. Toward the end of the year Secretary of Agriculture Wickard was appointed National Food Administrator by President Roosevelt, "with full responsibility for and control over the nation's food problem"—a post ranking in importance with Nelson's War Production board, McNutt's War Manpower commission and Byrnes' Office of Economic Stability. On Dec. 27 Administrator Wickard announced over the radio that the rationing of canned fruits, soups and vegetables would begin in Feb. 1943, and that half of the U.S. production of these commodities would have to go to feed the men in the services. He assured the people that there would be no lack of dairy products, cereals, meat, poultry, fresh fruit and vegetables for civilian consumption, and warned against hoarding the rationed items since such hoardings would be deducted from the ration books. The selective service co-operated in the task of relieving the farm labour shortage by a liberal policy in deferring farm workers, and proposals were made for importing a large number of Mexicans to work in the fields. There was even talk, if conditions grew worse, of drafting agricultural labourers as men are drafted for military service.

"ALL TANGLED UP." The Laocoön of rubber and petroleum in 1942 as seen by Seibel of the *Richmond Times-Dispatch*

A third difficulty lay in the threatened shortage of the farm machinery on which the vast agricultural operation is dependent. The manufacture of new farm machinery was limited by the War Production board to 83% of the 1940 figure; and as the demand for steel became heavier and the current supply of machines and parts became exhausted it would be well nigh impossible to expand the agricultural program to keep pace with the mounting demands. Still other contingencies had to be faced, such as the possibility of adequate transportation to markets and storage centres and the continuance of the favourable weather conditions which spared the country the disasters of floods, droughts and dust storms which afflicted the country in the middle 1930s. (*See* also AGRICULTURE.)

Transportation.—*The Railroads.*—Ten days after U.S. entrance into the war President Roosevelt appointed Joseph B. Eastman of the Interstate Commerce commission as head of a new Office of Defense Transportation, with authority to "co-ordinate and direct domestic traffic movements . . . assuring the orderly and expeditious movement of men, material and supplies to points of need." Under Mr. Eastman's efficient management, with the hearty co-operation of their officials and train crews, the railroads did a magnificent job in 1942, despite serious handicaps. Although, owing to the depression years, they had 600,000 fewer freight cars, 15,000 fewer passenger cars, and 20,000 fewer locomotives at the beginning of 1942 than they had in 1918, they carried 30% more freight and 40% more passengers than in 1941. Besides sending more than 6,000 carloads of food and equipment a day to 150 government camps and war plants, and 1,000 carloads to ports for shipment to our Allies, they had to move an average of 1,000,000 troops a month, or more than four times the number moved in the first year of the last war. An additional burden was created by the shift from water to rail transportation of coal, oil and timber, due to the submarine toll of tankers and merchant ships along the Atlantic coast. For example, in Dec. 1941 the railroads were carrying only 70,000 barrels of oil a day to the eastern seaboard; but in Dec. 1942 they carried nearly 800,000 barrels daily. Rubber and gasoline shortage also threatened the bus and truck transportation, which had carried 60% as much as the railroads in freight and passengers during the year 1941. Many predicted that the railroads would not be able to overcome these handicaps and expected that the government would have to take them over as it did in 1918; but by constructing more powerful locomotives, doubling the speed and capacity of freight trains, eliminating cross haulings, requiring full carloadings and prompt unloadings, cutting down duplicating passenger service on competing lines, and urging the public to refrain from unnecessary travel, the railroads, in 1942, handled their tremendous job with marvelous efficiency and with little congestion at industrial plants or ports of shipment. (*See* also RAILROADS.)

Shipping.—An entirely different situation confronted the shipping effort. Indeed, it looked in the midsummer of 1942 as though the United Nations might lose the war through lack of the necessary ships to get American supplies to the far distant battle fronts. Whereas, in World War I there were hardly a score of German submarines operating at any one time in the Atlantic waters and from limited bases, in 1942 there were probably 500 submarines, some of them with a cruising range of 10,000 to 12,000 mi., and virtually the whole coast of western Eu-


WE'RE OVER THE HUMP
WE CAN LOSE THE WAR
WE'LL HAVE TO USE CHILDREN
WE ARE STILL LOSING THE WAR
WE'RE TOO SMUG
COAKLEY

"MEGAPHONY AMMUNITION." An incisive cartoon comment on certain political pronouncements of 1942, by Coakley of the *Washington Post*

rope was a submarine base. From February to June the U-boats took a toll of 313 ships, totalling nearly 3,000,000 tons off U.S. shores. They were sinking two or three vessels a day, while the nation had completed only 106 between January and April. The lag in building was due chiefly to the suspension of merchant ship construction from the end of World War I until 1938, when Admiral Emory S. Land was made head of a maritime commission (converted in 1942 into the War Shipping board). By the late spring of 1942 the program for a "Victory fleet" was showing encouraging results, with 66 ships of 732,000 tons constructed in June, as against 16 ships of 198,000 tons in January. National Marine day was celebrated in May by the launching in 24 hrs. of 27 ships. The 62 shipyards and 300 launching ways represented a five-fold increase over the year 1940, and the average time for the construction of a 10,000 ton Liberty cargo ship was reduced from the 234 days required in 1918 at the Hog Island yard to 105 days. The sensation of the year in shipbuilding was the achievement of Henry J. Kaiser, whose Oregon shipyard corporation produced a completed vessel in 3 days, assembling it from prefabricated parts instead of building it up from the keel. He claimed that he was also ready to undertake mass production of huge cargo planes.

The navy department was severely criticised during the year for not making more headway in curbing the submarine sinkings, which were responsible for the interruption of coastal transportation and the consequent shortages of coffee, cacao, sugar, oil, bananas and other commodities. It was argued that a stubborn adherence to established custom prevented the navy from using available small boats and private planes as auxiliaries to the blimps and craft on patrol duty. The demand was also made that more destroyers be used to combat the U-boats. But naval authorities were able to show the difficulties involved in the conversion of private craft for efficient service, and declared that destroyers could not be spared from convoy duty. It was distressing to lose merchant vessels, but it was less disastrous to have a tanker with a cargo of 10,000 tons of oil sunk on the way from the Gulf to New York than to have operations on the Asiatic or African fronts bogged down by failure to convoy the necessary equipment. The only answer to the problem was the construction of more and more ships, until the goal of 2,300 vessels with a tonnage of 23,000,000 set for 1942–43 was achieved. (*See* also SHIPPING, MERCHANT MARINE; SUBMARINE WARFARE.)

The Elections of 1942.—Politics were not "adjourned" in 1942, as President Wilson had advised in the spring of 1918. Beginning with Louisiana on Jan. 20, primary elections were held in all the states except Connecticut, Rhode Island and Delaware during the spring and summer, to select the candidates for the mid-term elections of Nov. 3, when the entire house of 435 members, 34 United States senators, 34 governors and many minor state officials were to be chosen. Since both Democrats and Republicans were agreed on the vigorous prosecution of the war, it seemed to many people that it would make little difference whether the Democrats retained their large majority in congress or not. But to the political leaders on both sides the contests appeared as one of the most important mid-term elections in U.S. history. Frank Gannett, the assistant chairman of the Republican National committee declared in a radio address that a Republican victory was necessary for clearing up the "mismanagement, bungling and confusion in Washington," where bureaus had been piled on bureaus and hundreds of thousands of government employees were falling over one another trying to unravel one another's red tape. A Republican congress would, he said, compel a house cleaning, drive out the incompetents and ensure the victory of the United Nations. On the other hand, Senator Thomas of Utah called attention to the sabotaging of President Wilson's program by a Republican congress in 1919 and predicted that a Republican victory in 1942 would impede the war effort and endanger the coming peace. Furthermore, since the new 78th congress would last until Jan. 1945, it would, argued the Democrats, have extremely important matters to decide should the war be over by that date. What, for example, would be its attitude toward the continuance of the international co-operation urged by President Roosevelt and Prime Minister Churchill? Would it support or seek to liquidate the measures of the New Deal? The vote on November 3 returned 222 Democrats and 209 Republicans to the House, a Republican gain of 47 seats; and the new Senate would count 57 Democrats and 38 Republicans, a gain of 9 seats for the latter, counting one Progressive. The Republicans also gained three governorships, the most notable being the victory in New York of District Attorney Thomas E. Dewey (who had nearly defeated Governor Herbert H. Lehman in 1940) over chairman Farley's candidate, Attorney General John J. Bennett. The veteran Senator George W. Norris of Nebraska was defeated after a continuous service of 39 years in congress.

The Army and Navy.—By the close of 1942 the armed forces of the United States numbered approximately 5,000,000 men, of whom 3,600,000 were in the army, close to 1,000,000 in the navy, together with the Marines and the Coast Guard. The technical structure of these forces is too complicated to be described in detail here. For example, in the army reorganization of March there were three great agencies under the overall command of General George C. Marshall, Chief of Staff. The Ground Forces (General L. J. McNair) comprised the armoured tank force, the field artillery, the engineers, the cavalry and the infantry. The air force (General H. H. Arnold) consisted of various types of bombing, pursuit, transport and observation planes. And the service of supply (General B. B. Somervell) included the quartermaster corps, the ordnance department, the medical department, the signal corps and the chemical warfare service. While the navy was naturally expected to be ready to serve on all seas, it was expected, and pledged by both the political parties in the 1940 campaign, that the army would not be sent abroad. But in the summer of 1941 the president gained the grudging consent of congress (the vote was 203 to 202 in the house) to extend the time of the draftees to two and a half years, and later announced that American expeditionary forces would be sent wherever they were needed. The first one landed in Northern Ireland on January 26, 1942. By the end of the year 1,000,000 U.S. troops were engaged in more than a score of battle areas in Europe, Asia, Africa and the islands of the Pacific. There was a lively controversy over the kind of naval forces best suited to the winning of the war. Aviation experts, like Major Alexander P. Seversky (*Victory Through Air Power*) and William B. Ziff (*The Coming Battle of Germany*), contended that the expensive battleship and aeroplane carrier should be relegated to second place, while major effort should be the production of hundreds of thousands of long range planes to give an overwhelming superiority in the air, where, they said, the war is to be won. The naval authorities, on the other hand, insisted that the day of the battleship and the carrier is not yet past.

U.S. and the Fighting.—America shared with her chief partners in the United Nations, Great Britain, Russia and China, the disastrous fortunes of the first half of 1942. In the four months after Pearl Harbor the Japanese conquered 1,000,000 sq.mi. in southeastern Asia and the Pacific islands, with a population of 100,000,000 and practically the whole world supply of rubber, tin, hemp, quinine, and rich sources of foodstuffs, oil and minerals. They drove the U.S. out of the Philippines, taking over 30,000 American and Filipino prisoners. The U.S. commanding general, Douglas MacArthur, was ordered to Australia, last bastion of the Allies in the southern Pacific. A daring air raid on Tokyo and Yokohama by Colonel "Jimmy" Doolittle on April 18 and the brave but futile resistance of the greatly outnumbered American troops on the Bataan peninsula and Corregidor in the Philippines, were the only heartening events in this dismal period. However, early in May the U.S. fleet inflicted a severe defeat on the Japanese in the four-day battle of the Coral sea off the northeast coast of Australia, and a month later, in the battle of Midway, prevented them from seizing Hawaii. On August 7 the marines took the offensive by landing on the island of Guadalcanal in the Solomons, and for the rest of the year the Americans made slow gains there and in New Guinea, while the fleet and air force inflicted a series of defeats on the Japanese in battles in the Solomons area. By the end of the year the tide of war in the Pacific had turned. The badly battered Japanese naval force was unable to protect the transports swarming with troops for landing in New Guinea and the Solomons. The Allies were keeping their lines of communication open. The prospect of regaining the areas seized by the Japanese in their amazing surge of victories in the early months of the year was brightening.

While the Pacific area was the main theatre of war for the Americans during most of the year, U.S. troops, ships and planes were engaged in many other parts of the world: battling against the submarine menace on U.S. coasts, attempting to dislodge the Japanese from their foothold in the Aleutian islands, joining the RAF in a Fourth of July raid on industrial centres in Germany, fighting with the Chinese to save the supply route to Chungking and with the British to halt General Rommel's drive to the Nile

WORKERS IN A U.S. AIRCRAFT FACTORY listening to a "pep talk" by an army officer during their lunch hour. Army and navy officers gave a number of such talks in U.S. war plants in 1942 to speed up production and the Suez canal. But the greatest of the U.S. achievements came in November. On June 18 Prime Minister Churchill arrived in Washington for conferences with President Roosevelt, following a visit a few weeks earlier of the soviet foreign minister, Molotov. The conversations were secret, but it was later believed that the president and Mr. Churchill were discussing a joint British and American expedition to the west coast of Africa, to open there the "second front" for which the hard-pressed Russians had been asking. The plans were carefully and secretly developed through the summer and autumn, and on Nov. 8 the greatest armada in all history, consisting of 500 transports and 350 warships landed on the Atlantic coast of Morocco. In 76 hours this huge expeditionary force under the command of General D. D. Eisenhower had gained possession of all French North Africa up to the border of Tunisia. Admiral Darlan, the high commissioner under the nominal authority of the Vichy government, went over to the Allies, ordering the French forces not to resist and thereby making U.S. occupation of Morocco and Algeria an easy task. The brilliant African exploit was hailed by President Roosevelt as the turning point of the war, coupled as it was with the relentless pursuit of Rommel's African corps westward across Libya by General B. L. Montgomery's British 8th army. Of all the 2,200 miles of North African coast in the hands of the axis a few months before, only Tunisia (for which the armies were desperately fighting as the year ended) was left to them. (*See* also WORLD WAR II.)

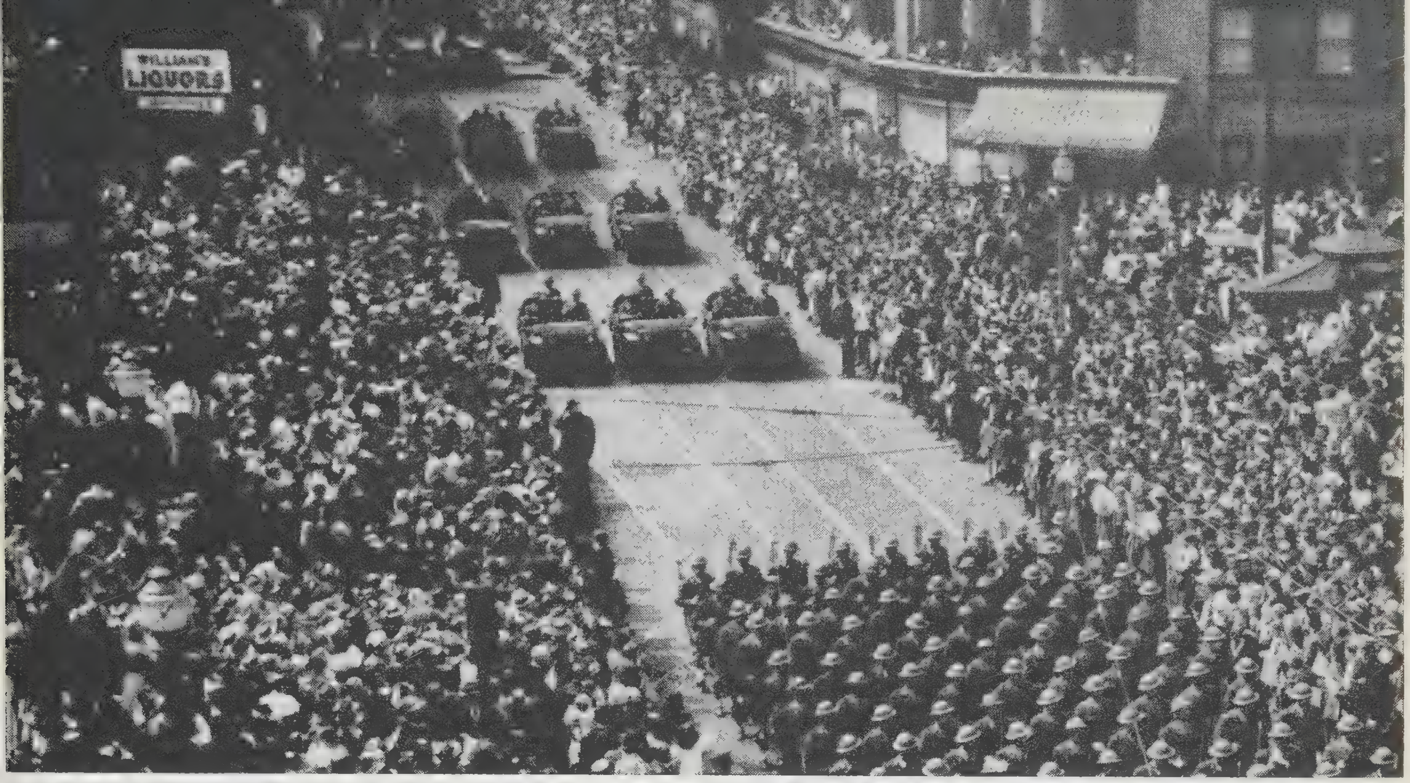
Foreign Relations.—Relations with Latin-America during 1942 were cordial. On Jan. 28 all the American republics except Argentina and Chile signed the anti-axis agreement which came out of the Pan-American conference at Rio de Janeiro, Brazil. Nine of the republics had already declared war on Japan, and on Aug. 22, Brazil, after losing 20 vessels by torpedo attacks, declared war on the axis. Mexico opened her ports and airports to American ships and planes, and to show her solidarity with the United States settled for $24,000,000 the claims of the American oil companies for property which had been expropriated in 1938. On May 19 the CBS opened a Latin-American network of 76 stations to bind the republics closer together and to the United States, and work was pushed on the Inter-American highway. Soon after the war opened some 500 Latin-Americans were in training for aviators in the United States. The war put an end to the precarious diplomatic relations of 1941 with Germany, Italy and Japan, and solidarity with the allied United Nations was so complete that no questions arose except as to the best methods of prosecuting the war to a successful close. The only serious problem was the relations of the United States with the Vichy government in France. Though it was realized that Vichy was only a puppet state under the control of Hitler, the U.S. government still, to the annoyance of General De Gaulle's Fighting French and of many of the American people, kept up the fiction that it was an independent state and maintained diplomatic relations with it. The reasons for this were partly in order that the American ambassador at Vichy, Admiral Leahy, might have a listening post near the heart of the political intrigues of the continent of Europe, and partly that he might be able to stiffen the resistance of Marshal Pétain to the increasing demands of the nazis. However, when the hold of Vichy on the French colonies was broken by Admiral Darlan's desertion to the Allies and the loss of North Africa, Hitler threw off the mask and ordered his soldiers to take possession of unoccupied France (Nov. 11). Ambassador Leahy returned to the United States to become a special adviser to President Roosevelt. Hitler's troops entered Toulon, where the major part of the French fleet (more than 60 warships) had long been lying at anchor, only to find that the French commander, Admiral de la Borde, had scuttled the ships to prevent them from falling into the nazis' hands (Nov. 27). Admiral Darlan, turncoat though he was, was accepted by President Roosevelt and General Eisenhower as the French representative in North Africa, as a "temporary expedient," the president making it clear that the United States would not interfere with the policy of French Africa after the war was over. (*See* also FRANCE; WAR PRODUCTION, U.S.) (D. S. MU.)

Education.—*See* the articles EDUCATION; UNIVERSITIES AND COLLEGES.

Defense.—For information about the armed forces of the United States in 1942, *see* AIR FORCES OF THE WORLD; MARINE CORPS; NATIONAL GUARD; NAVIES OF THE WORLD; WORLD WAR II. *See* also CIVILIAN DEFENSE.

Finance and Banking.—Statistics pertaining to the United States will be found in such articles as BANKING; BUDGETS, NATIONAL; BUSINESS REVIEW; NATIONAL DEBTS; NATIONAL IN-

A GREAT CONVOY OF U.S. TROOPS arrived at Australia in mid-March 1942. This column of anti-aircraft artillerymen is marching away from the transport docks



PARADE IN BALTIMORE marking the 25th anniversary of U.S. entrance into World War I. Similar parades were held throughout the nation April 6, 1942

COME AND NATIONAL PRODUCT; STOCKS AND BONDS; TAXATION; WEALTH AND INCOME, U.S. DISTRIBUTION OF.

Foreign Trade.—The U.S. department of commerce announced in Jan. 1942 that it would cease publication of its monthly summaries of U.S. foreign commerce, as of Oct. 31, 1941, in order to prevent giving vital information to the enemy. For such information as was available in 1942, *see* BUSINESS REVIEW; INTERNATIONAL TRADE; LEND-LEASE ADMINISTRATION, OFFICE OF.

Communication and Transportation.—For statistics, *see* the articles AVIATION, CIVIL; CANALS AND INLAND WATERWAYS; ELECTRIC TRANSPORTATION; MOTOR TRANSPORTATION; POST OFFICE; RADIO; RAILROADS; SHIPBUILDING; SHIPPING; MERCHANT MARINE; TELEPHONE.

Agriculture.—All major U.S. crops had banner harvests in 1942. The remarkable production was due not so much to increased acreage as it was to favourable weather. In no part of the country were there any serious crop failures. Even cotton and tobacco, which had declined in previous years, registered marked increases over the production of 1941. Soybeans continued to show the greatest relative increase, from 79,837,000 bu. in 1940 to 106,712,000 bu. in 1941 and an indicated 200,701,000 bu. in 1942. The average harvest of this crop during the 10-year period 1930–39 was only 35,506,000 bu. Table II shows the production of selected crops from 1932 through 1942, and Table III lists the average prices received by farmers for important crops on selected dates.

Shipments of cattle at public stockyards in the first eight months of 1942 were 4,176,000, as compared with 3,395,000 in the first eight months of 1941; calves 1,453,000 (1,329,000 in 1941); hogs 5,444,000 (5,161,000 in 1941); sheep and lambs 7,097,000 (6,273,000 in 1941).

(*See* also AGRICULTURE; LIVESTOCK; and the articles on separate crops and agricultural products.)

Manufacturing.—The report of the department of commerce biennial census of manufactures for 1939, issued Jan. 15, 1941, estimated the number of establishments at 184,244; salaries and wages at $11,631,967,995 and value of products at $56,828,807,223. The comparable figures for 1937 were: 166,794; $12,829,748,927; $60,712,871,737. The leading industrial groups were as follows: food, iron and steel, motor cars, textiles, chemicals, apparel, and machinery except electrical. (*See* also WAR PRODUCTION, U.S.)

Labour.—For data on labour in 1942, *see* the articles AMERICAN FEDERATION OF LABOR; CONGRESS OF INDUSTRIAL ORGANIZATIONS; LABOUR UNIONS; RELIEF; SOCIAL SECURITY; STRIKES AND

Table I.—*Total U.S. Imports and Exports of Merchandise, 1932–41*

(000s omitted)

Year	Export Total	% Increase	Import Total	% Increase
1932	$1,611,016	. .	$1,322,774	. .
1933	1,674,994	3.9	1,449,559	9.6
1934	2,132,800	26.5	1,655,055	14.2
1935	2,282,874	7.0	2,047,485	23.8
1936	2,455,978	7.6	2,422,592	18.3
1937	3,349,167	36.4	3,083,668	27.2
1938	3,094,440	−7.6	1,960,428	−36.4
1939	3,177,176	2.7	2,318,081	18.2
1940	4,021,146	26.6	2,625,379	13.3
1941*	3,317,596	9.6	2,417,307	24.5

*9 months; percentages of increase compared with 9 months of 1940. Because of World War II, no figures were issued after Oct. 31, 1941.

Table II.—*Production Figures of Selected U.S. Crops, 1932–42*

(000s omitted)

Year	Corn bu.	Oats bu.	Wheat bu.	Cotton bales	Tame Hay tons	Rice bu.	Tobacco lb.	Potatoes bu.
1932	2,931,281	1,250,955	756,927	13,003	71,827	41,619	1,017,317	376,425
1933	2,399,632	733,166	551,683	13,049	66,530	37,651	1,371,131	342,306
1934	1,461,123	542,306	526,393	9,636	55,270	39,047	1,081,629	406,105
1935	2,303,747	1,194,902	626,344	10,638	78,138	38,784	1,297,155	386,380
1936	1,507,089	785,506	626,766	12,399	63,536	49,002	1,154,131	331,918
1937	2,644,995	1,146,258	873,993	18,946	73,785	53,364	1,553,405	393,289
1938	2,542,238	1,053,839	930,801	11,943	80,299	52,303	1,378,534	371,617
1939	2,619,137	937,215	754,971	11,817	75,726	52,306	1,848,654	364,016
1940	2,449,200	1,235,628	816,698	12,566	86,312	52,754	1,451,966	397,722
1941	2,672,541	1,176,107	945,937	10,744	82,358	54,028	1,261,364	357,783
1942*	3,132,002	1,369,540	984,046	12,982	91,583	71,508	1,422,808	376,309

* Preliminary.

Table III.—*Farmers' Average Prices, Certain U.S. Crops, on Selected Dates*

(in cents per unit)

	Wheat per bu.	Corn per bu.	Oats per bu.	Barley per bu.	Rye per bu.	Buckwheat per bu.	Potatoes per bu.	Eggs per doz.	Cotton per lb.
Oct. average, 1909–13 . . .	88.1	64.8	38.4	60.5	72.0	71.1	65.0	23.8	12.10
Oct. 15, 1936 .	106.8	97.9	43.1	84.2	80.4	78.3	97.9	27.6	12.23
Oct. 15, 1937 .	88.7	58.9	28.8	52.0	63.8	62.4	48.5	25.2	8.10
Oct. 15, 1938 .	52.2	41.9	22.1	36.1	32.9	54.5	51.0	27.1	8.53
Oct. 15, 1939 .	70.3	47.6	30.3	42.2	45.1	62.7	66.4	22.9	8.73
Oct. 15, 1940 .	68.2	59.4	28.3	38.2	40.5	54.4	52.0	23.7	9.35
Oct. 15, 1941 .	91.0	64.9	38.9	49.1	51.3	64.3	67.2	31.8	16.55
Sept. 15, 1942 .	102.6	82.6	43.3	56.7	55.2	84.6	107.7	34.7	18.59

SEVERAL THOUSAND U.S. TROOPS, first contingent of the A.E.F. of World War II, arrived in Northern Ireland Jan. 26, 1942

Lock-outs; Unemployment; Wages and Hours.

Mineral Production.—The U.S. department of the interior, for reasons of military security, issued no statistics on U.S. mineral production in 1942. Such figures, had they been made public, would have been for the year 1941. Statistical information released in 1941 pertained to the calendar year 1940. According to the bureau's estimate, the total value of U.S. mineral production in the latter year was $5,582,500,000, an increase of $668,200,000 over the production of 1939. In only five other years—1920, 1923, 1925, 1926 and 1929—had the production of 1940 been exceeded in value. The record year was 1920: $6,981,340,000. (*See* also articles on individual minerals; also Mineral and Metal Prices and Production; Strategic Mineral Supplies.)

Table IV.—*Principal Mineral Products of the U.S., 1940 and 1939*

Mineral	Value, 1940	Value, 1939
Petroleum	$1,352,000,000	$1,294,470,000
Bituminous coal	861,166,000	728,234,000
Pig iron	840,442,032	626,824,690
Natural gas	591,509,000	534,240,000
Coke	273,832,410	212,884,050
Gold	210,108,700	196,391,000
Pennsylvania anthracite	205,490,000	187,175,000
Copper	205,453,000	148,236,000
Cement	193,464,869	184,254,932
Iron ore	189,086,799	158,537,696
Stone	160,044,115	158,461,515

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United States Government Departments and Bureaus: *see* Government Departments and Bureaus. Also *see* under specific name, *i.e.* Coast Guard, U.S., etc.

United States Housing Authority (USHA): *see* Municipal Government; National Housing Agency.

U.S. Investments Abroad.

Foreign investments of individuals and corporations domiciled in the United States had an estimated value of $11,000,000,000 at the end of 1940 and, except for war losses, probably did not change substantially in value after that date. These investments are usually grouped in three categories: direct, portfolio and short-term. Direct investments, valued at $7,000,000,000 or about 60% of the total, included all foreign business enterprises controlled by United States residents or in the management of which such residents had an important voice. Portfolio investments, valued at about $3,600,000,000 at the end of 1940, included foreign dollar bonds and miscellaneous holdings of various foreign securities. United States short-term assets abroad, which had been declining in importance, were placed at $410,000,000 on Dec. 31, 1940. There was probably a further decline after that date, since the need for maintaining working balances in foreign countries diminished considerably under wartime conditions.

Canada ranked first among the countries of the world as a foreign outlet for United States capital; indeed, investments in that country were larger by far than those in either Europe or South America. Besides being larger in amount, investments in Canada were, on the whole, among the most consistently remunerative of U.S. investments abroad, partly because of the extremely low default ratio on Canadian bonds held in the United States. Direct investments in the dominion were well diversified, with manufacturing, public utilities (including railroads), and paper and pulp the major industrial groups involved. It was estimated that income of about $190,000,000 was received by Americans from Canadian investments in 1940 and only a slightly smaller amount in 1941.

The year 1942 witnessed a rather extraordinary increase of U.S. portfolio investments in Canada. From January to September, according to official Canadian sources, residents of the United States were net purchasers of Canadian bonds in the amount of $70,300,000.

At the end of 1940, long-term investments in Latin America exceeded those in Canada by about $100,000,000, with direct investments comprising 73% of the total as compared with 56% in Canada. As a result of this high proportion of direct holdings, which included highly profitable mining and petroleum enterprises, the return on long-term investments in Latin-American countries compared favourably with that on investments in other areas despite numerous defaults on dollar bond obligations. Total income from investments in this area amounted to $180,000,000 in 1940 and probably increased somewhat in 1941 and 1942.

Direct investments also formed a large share of U.S. holdings in Europe, amounting to about 69% of the total in 1940. Over 60% of these direct investments were located in the United Kingdom and Germany, while U.S. holdings of the dollar obligations of the latter country were also substantial. At the end of 1940, 59% of the European dollar bonds held in the United States were in default, and remittances of income of all kinds from several European countries were effectively prohibited for several years. In spite of this, it was estimated that income of $90,000,000 was received from investments in Europe in 1940 for an over-all rate of return of 4.4% as compared with 5.0% for Canada and 4.8% for Latin America.

United States direct investments in Africa, Asia and Oceania of $706,000,000 greatly outweighed portfolio investments of $277,000,000. Japanese and Australian issues accounted for about $200,000,000 of the latter. Many direct investments in these areas were also very profitable, as indicated by an estimated total income of $95,000,000 in 1940.

United States Investments Abroad, December 31, 1940
(In millions of dollars)

Area	Long-Term Investments					Short-Term Investments
	Direct Investments	Portfolio Investments			Total Long-Term	
		Foreign Dollar Bonds	Miscellaneous Foreign Securities	Total		
Canada and Newfoundland	2,103	1,390	285	1,675	3,778	46
West Indies	674	74	5	79	753	129
Central America and Mexico	546	26	—	26	572	
South America	1,551	893	5	898	2,449	
Europe	1,420	506	130	636	2,056	109
Asia	422	155	5	160	582	120
Oceania	120	95	3	98	218	6
Africa	131	2	17	19	150	
International*	33	—	—	—	33	
Total	7,000	3,141	450	3,591	10,591	410

*Investments not geographically allocable.

Sources: *American Direct Investments in Foreign Countries*, U.S. Department of Commerce, 1942; *The Balance of International Payments of the United States in 1940*, U.S. Department of Commerce, 1941; "Status of United States Investments in Foreign Dollar Bonds, End of 1940," in *Foreign Commerce Weekly*, July 19, 1941, p. 3; "U.S. Investments in Foreign Dollar Bonds," in *Foreign Commerce Weekly*, Sept. 26, 1942, p. 8; *Bulletin* of the Treasury Department, March 1941.

The war, of course, greatly altered the status of U.S. investments abroad, and the outlook for the future was in many respects unpredictable. Income ceased from direct investments in enemy-controlled areas, but certain occupied countries in Europe were still making payments on their dollar obligations out of funds frozen in the United States. Aerial warfare and scorched-earth policies caused the physical destruction of some U.S.-owned properties in foreign countries and the final value of much of the investment depended on the future course of the war and the condition of peace. In the meantime, a special provision of the Revenue act of 1942 permitted Americans to consider worthless their holdings in enemy territory and to deduct the value thereof for income tax purposes.

It should be emphasized that only $1,000,000,000 of a total of $7,000,000,000 of U.S. direct investments was, at the end of 1942, located in territory under enemy control and that approximately 70% of the total was located in the western hemisphere. Although high taxes in Canada and the curtailment of gold mining there would probably serve to reduce income from investments in that country for the duration, U.S.-owned factories, in company with all Canadian industry, underwent a wartime expansion. To the south, the war resulted, on the whole, in a larger measure of prosperity to U.S.-controlled industry. Cuban sugar companies, for instance, reported for their 1942 fiscal years the largest profits in late years, and the abundant supply of dollars available to most Latin-American countries was facilitating the remittance of profits to the United States. It was possible also that measures would be taken to resume debt service on defaulted Latin-American obligations; the action of the government of Mexico in making an offer for settlement of certain long-defaulted bonds was a step in this direction. The increasing industrialization of Latin America and the close economic co-operation engendered by the war opened the prospect of broader opportunities for U.S. trade and capital in the region.

The problem of international investment presented itself as one of the most difficult of the postwar world. The determination of the status of foreign holdings in enemy and enemy-occupied countries was expected to be an immediate postwar issue. The urgent necessity of facilitating the transfer of capital from countries where it is relatively plentiful to those where it will be sorely needed must be faced in the light of the mistakes and excesses of past foreign lending. Indications were that the United States would play a key role in the restoration of international lending after the war and that its policy with respect to foreign investments would have a great influence in shaping the general character of postwar international economic relations. (R. L. Ss.)

Universities and Colleges.

The following seven pages carry a selected list of universities, colleges and junior colleges in the U.S. and Canada, with location, year founded, chief executive, enrolment, size of faculty, endowment and number of library volumes, for the academic year 1942–43. An asterisk denotes 1941–42 data; two asterisks denote 1940–41 data. (*See* also EDUCATION.)

Institution and Location	Year Founded	Chief Executive	Full Time Students	Full and Part Time Students	Faculty	Endowment	Library Volumes
A							
Abilene Christian College, Abilene, Tex.	1906	Don H. Morris	615	905	40	$ —	16,048
*Abraham Baldwin Agri. Col., Tifton, Ga.	1933	George H. King	288	—	16	—	8,500
Acadia University, Wolfville, Nova Scotia, Canada	1838	Frederic W. Patterson	499	647	45	1,442,059	83,500
Adams St. Tch. Col., Alamosa, Colo.	1921	Ira Richardson	183	471	26	—	18,000
Adelphi College, Garden City, N. Y.	1896	Paul Dawson Eddy	428	588	45	42,913	35,499
Adrian College, Adrian, Mich.	1845	Samuel J. Harrison	239	458	21	156,000	18,000
Agnes Scott College, Decatur, Ga.	1889	James R. McCain	515	535	61	2,110,000	38,500
Akron, University of, Akron, Ohio	1870	H. E. Simmons	1,179	2,890	124	160,411	61,653
Alabama Polytechnic Inst., Auburn, Ala.	1872	Luther N. Duncan	3,631	5,737	240	297,288	85,000
Alabama State College for Women, Montevallo, Ala.	1896	A. F. Harman	602	1,009	128	595,000	40,714
Ala. State Teachers College, Florence, Ala.	1872	J. A. Keller	726	1,963	40	—	50,000
Ala. State Teachers Col., Jacksonville, Ala.	1883	Houston Cole	809	1,263	51	—	30,000
*Ala. State Teachers Col., Livingston, Ala.	1883	N. F. Greenhill	332	529	25	—	25,000
**Ala. State Teachers Col., Montgomery, Ala.	1874	H. C. Trenholm	1,336	2,236	79	—	11,026
Alabama, University of, University, Ala.	1820	Raymond R. Paty	4,254	6,872	220	5,038,073	265,980
*Alaska, University of, College, Alaska	1922	Charles E. Bunnell	205	233	35	—	20,000
Alberta, Univ. of, Edmonton, Alta., Can.	1906	Robert Newton	1,696	2,045	244	705,167	75,000
Albertus Magnus Col., New Haven, Conn.	1925	Sister M. Uriel	159	316	38	—	18,000
Albion College, Albion, Mich.	1835	John L. Seaton	716	727	52	1,782,629	58,879
Albion State Normal School, Albion, Ida.	1893	Raymond H. Snyder	184	—	28	—	16,000
*Albright College, Reading, Pa.	1856	Harry V. Masters	405	539	32	820,000	24,750
*Alcorn Agri. & Mech. Col., Alcorn, Miss.	1871	William H. Bell	578	958	65	209,871	12,075
Alderson-Broaddus Col., Philippi, W. Va.	1871	John W. Elliott	172	196	16	45,000	6,700
Alfred University, Alfred, N. Y.	1836	J. Nelson Norwood	497	684	66	1,043,707	61,874
Allegheny College, Meadville, Pa.	1815	J. R. Schultz	28	789	62	1,516,000	138,000
*Allen University, Columbia, S. C.	1870	Samuel R. Higgins	365	—	23	48,000	4,365
Alma College, Alma, Mich.	1886	Roy W. Hamilton	272	272	26	565,207	51,000
Altoona Undergrad. Ctr. (Jr.), Pa. St. Col., Altoona, Pa.	1939	R. E. Eiche	88	500	27	—	2,000
American Inter. Col., Springfield, Mass.	1885	Chester S. McGown	545	963	42	—	9,600
*American University, Los Angeles, Calif.	1921	Frederick H. Clapp	180	—	9	—	3,800
American University, Washington, D. C.	1891	Paul F. Douglass	265	1,955	110	942,745	51,198
Amherst College, Amherst, Mass.	1821	Stanley King	805	805	74	11,925,000	236,500
*Anderson College, Anderson, S. C.	1911	Annie D. Denmark	361	—	31	—	6,103
Andrew College, Cuthbert, Ga.	1854	S. C. Olliff	85	105	15	43,200	4,500
Antioch College, Yellow Springs, Ohio	1853	A. D. Henderson	782	792	54	228,273	66,148
*Appalachian St. Teachers Col., Boone, N.C.	1903	B. B. Dougherty	966	—	54	232,000	24,000
Arizona, University of, Tucson, Ariz.	1885	Alfred Atkinson	?	3,410	220	64,988	160,000
Ark. Agri., Mech. & Norm. Col., Pine Bluff	1873	Lawrence A. Davis	517	846	59	—	5,593
Arkansas College, Batesville, Ark.	1872	John D. Spragins, Jr.	61	121	12	70,686	13,000
Arkansas Polytechnic Col., Russellville, Ark.	1910	J. W. Hull	271	365	30	—	14,000
Arkansas State College, Jonesboro, Ark.	1910	V. C. Kays	535	1,649	42	—	15,000
Arkansas, University of, Fayetteville, Ark.	1872	A. M. Harding	2,653	3,577	280	—	198,662
Aroostook St. Norm. Sch., Presque Isle, Me.	1903	Clifford O. T. Wieden	65	67	19	—	5,600
Asheville College, Asheville, N. C.	1887	Frank C. Foster	180	188	18	—	15,000
Ashland College, Ashland, Ohio	1878	Edward G. Mason	200	456	27	387,159	20,000
Assomption, College de l', L'Assomption, P. Q., Canada	1832	Hervé Lussier	300	302	24	61,691	17,000
**Athens College, Athens, Ala.	1843	E. R. Naylor	537	554	31	250,000	14,800
Atlanta University, Atlanta, Ga.	1865	Rufus E. Clement	45	760	33	3,871,000	70,000
Atlantic Christian College, Wilson, N. C.	1902	Howard S. Hilley	669	1,323	28	359,289	14,177
*Atlantic Union Col., So. Lancaster, Mass.	1882	G. Eric Jones	314	490	36	—	16,097
Augsburg College & Theological Seminary, Minneapolis, Minn.	1869	Bernhard Christensen	332	348	33	72,493	19,391
Augustana College & Theological Seminary, Rock Island, Ill.	1860	Conrad Bergendoff	643	1,092	50	1,303,317	100,000
*Aurora College, Aurora, Ill.	1893	Theodore P. Stephens	204	254	22	80,000	27,500
Austin Evening Jr. Col., Chicago, Ill	1937	Charles MacCallum	—	1,763	51	—	4,768
*Austin Peay Norm. Sch., Clarksville, Tenn.	1927	P. P. Claxton	293	356	33	—	12,000
*Averett College, Danville, Va.	1859	Curtis V. Bishop	328	393	24	72,000	12,000
*Avery Institute, Charleston, S. C.	1865	L. Howard Bennett	500	—	19	—	3,000
B							
Baker University, Baldwin City, Kan.	1858	Nelson P. Horn	298	313	36	1,325,000	66,713
*Baldwin-Wallace College, Berea, Ohio	1845	Louis C. Wright	629	806	54	1,813,000	32,000
Ball State Teachers College, Muncie, Ind.	1918	L. A. Pittenger	1,574	1,954	101	—	88,041
Bates College, Lewiston, Me.	1864	Clifton D. Gray	590	592	49	2,118,759	77,197
*Baylor University, Waco, Tex.	1845	Pat M. Neff	2,342	2,852	122	1,747,666	90,000
*Beaver College, Jenkintown, Pa.	1853	Raymon Kistler	522	593	65	—	20,000
*Beckley College, Beckley, W. Va.	1933	D. K. Shroyer	300	550	23	—	8,000
*Belhaven College, Jackson, Miss.	1894	G. T. Gillespie	260	330	30	115,000	15,000
*Beloit College, Beloit, Wis.	1846	Irving Maurer	544	—	54	2,256,209	125,219
*Benedict College, Columbia, S. C.	1870	J. J. Starks	525	—	25	140,000	19,000
Bennett College, Greensboro, N.C.	1873	David D. Jones	379	504	31	387,185	14,583
Bennington College, Bennington, Vt.	1932	Lewis Webster Jones	301	375	45	100,093	21,949
*Berea College, Berea, Ky.	1855	Francis S. Hutchins	866	916	78	10,285,533	93,000
Bergen Jr. Col., Teaneck, N. J.	1933	C. L. Littel	300	700	25	$ 1,000	8,000
Berry Schools, The, Mt. Berry, Ga.	1902	Gordon Keown	1,300	—	150	—	30,000
Bessie Tift College, Forsyth, Ga.	1847	C. L. McGinty	182	182	23	217,258	13,420
*Bethany College, Bethany, W. Va.	1840	W. H. Cramblet	407	416	33	2,351,264	34,000
Bethany College, Lindsborg, Kan.	1881	Emory Lindquist	210	275	28	383,678	21,476
*Bethany-Peniel College, Bethany, Okla.	1909	A. K. Bracken	450	477	22	—	8,000
*Bethel College, McKenzie, Tenn.	1842	Ewell K. Reagin	124	—	14	425,000	10,500
Bethel College, North Newton, Kan.	1887	Edmund G. Kaufman	238	358	32	410,000	21,500
*Bethel Woman's Col., Hopkinsville, Ky.	1854	Kenneth R. Patterson	115	140	16	11,000	6,800
Bethune-Cookman Col., Daytona Bch., Fla.	1904	Mary McL. Bethune	427	815	21	151,180	12,078
*Billings Polytechnic Institute, Billings, Mont.	1908	Ernest T. Eaton	500	1,101	35	400,000	25,000
Biltmore College, Asheville, N. C.	1927	J. J. Stevenson, Jr.	150	174	11	—	2,000
Birmingham-South. Col., Birmingham, Ala.	1856	George R. Stuart	638	1,101	60	580,824	55,000
*Bishop College, Marshall, Texas	1881	Joseph J. Rhoads	482	702	34	14,000	17,980
*Bishop's University, Lennoxville, Que., Can.	1843	R. A. E. Greenshields	128	141	18	1,187,644	18,000
Black Hills Teachers College, Spearfish, S.D.	1881	Russell E. Jonas	200	—	35	—	18,000
Blackstone Col. for Girls, Blackstone, Va.	1892	J. Paul Glick	122	127	20	—	3,825
*Blinn College, Brenham, Texas	1883	C. F. Schmidt	140	179	12	—	4,000
Bluefield St. Tch. Col., Bluefield, W. Va.	1895	Henry L. Dickason	375	585	23	—	—
*Blue Mountain Col., Blue Mountain, Miss.	1873	Lawrence T. Lowrey	278	490	26	296,000	14,040
*Blue Ridge College, New Windsor, Md.	1843	Homer E. Cooper	150	—	19	—	5,000
*Bluffton College, Bluffton, Ohio	1900	L. L. Ramseyer	165	219	25	200,000	14,338
Bob Jones College, Cleveland, Tenn.	1926	R. R. (Bob) Jones	625	—	42	—	12,000
Boise Jr. Col., Boise, Idaho	1932	Francis Haines	255	464	32	—	6,900
*Boston College, Chestnut Hill, Mass.	1863	Wm. J. Murphy	2,396	2,930	248	—	178,525
Boston University, Boston, Mass.	1839	Daniel L. Marsh	6,436	12,404	656	5,265,188	222,600
Bourget College, Rigaud, Que., Can.	1850	Father E. Martineau	449	—	65	—	35,800
Bowdoin College, Brunswick, Me.	1794	K. C. M. Sills	583	972	63	8,630,618	190,000
Bowling Green St. Univ., Bowling Green, O.	1910	Frank J. Prout	1,377	1,965	136	—	62,530
Bradley Polytechnic Inst., Peoria, Ill.	1897	Frederic R. Hamilton	677	1,143	52	2,366,574	55,973
Branch Agri. Col., (Jr.), Cedar City, Utah	1897	E. G. Peterson	182	335	25	—	11,888
Brenau College, Gainesville, Ga.	1878	H. J. Pearce, Sr.	367	426	47	544,153	19,012
Brevard College, Brevard, N. C.	1934	E. J. Coltrane	344	—	24	62,000	7,000
Bridgewater College, Bridgewater, Va.	1880	Paul H. Bowman	240	300	25	512,690	15,000
Brigham Young University, Provo, Utah.	1875	Franklin S. Harris	1,340	2,048	154	327,867	126,091
British Columbia, Univ. of, Vancouver, B.C.	1915	Leonard S. Klinck	2,529	2,849	98	109,568	130,000
*Brooklyn Polytechnic Inst., Brooklyn, N.Y.	1854	Harry S. Rogers	739	4,167	179	1,694,560	22,400
*Brown University, Providence, R. I.	1764	Henry M. Wriston	2,204	2,309	245	11,441,000	589,000
Bryn Mawr College, Bryn Mawr, Pa.	1880	Katharine E. McBride	576	638	87	7,160,332	180,000
*Bucknell University, Lewisburg, Pa.	1846	Arnaud C. Marts	1,298	1,643	89	1,342,896	100,000
*Buena Vista College, Storm Lake, Iowa	1891	Henry Olson	430	759	27	300,000	20,000
Buffalo, University of, Buffalo, N. Y.	1846	Samuel P. Capen	1,653	4,298	629	6,156,282	184,988
Butler University, Indianapolis, Ind.	1850	M. O. Ross	1,332	2,560	84	2,994,360	74,462
C							
California Inst. of Tech., Pasadena, Calif.	1891	R. A. Millikan	898	898	367	13,000,000	56,034
California, University of, Berkeley, Calif.	1868	Robert G. Sproul	25,652	30,430	2840	28,096,046	1,800,000
*Calvin College, Grand Rapids, Mich.	1876	Henry Schultze	509	655	25	210,000	26,000
*Campbell College, J. P., Jackson, Miss.	1890	S. L. Greene	169	—	13	—	680
Camrose Lutheran College, Camrose, Alberta, Canada	1911	Georg Moi	106	106	4	—	1,000
Canal Zone Jr. Col., Balboa Heights, C. Z.	1933	Roger C. Hackett	55	260	36	—	8,000
*Canisius College, Buffalo, N. Y.	1870	Timothy J. Coughlin	667	1,516	61	—	34,120
Capital University, Columbus, Ohio.	1850	Otto Mees	717	824	73	622,639	36,500
Carleton College, Northfield, Minn.	1866	Donald J. Cowling	886	897	75	3,552,903	133,503
Carnegie Inst. of Tech., Pittsburgh, Pa.	1900	Robert E. Doherty	2,261	3,906	400	17,031,983	34,000
Carroll College, Helena, Mont.	1910	E. J. Riley	150	220	20	500,000	17,000
Carroll College, Waukesha, Wis.	1846	G. T. Vander Lugt	450	550	29	842,248	23,000
*Carson-Newman Col., Jefferson City, Tenn.	1851	James T. Warren	460	—	33	541,000	21,500
Case School of Apld. Sc., Cleveland, Ohio.	1880	Wm. E. Wickenden	1,060	1,959	108	4,265,831	35,000
*Catawba College, Salisbury, N. C.	1851	Howard R. Omwake	427	536	37	386,520	18,000
Catholic Univ. of Amer., Washington, D. C.	1887	Patrick J. McCormick	1,402	4,059	248	—	298,994
Cedar Crest College, Allentown, Pa.	1868	Dale H. Moore	304	308	39	97,775	22,500
*Centenary College of La., Shreveport, La.	1825	Pierce Cline	547	629	43	491,849	24,520
Central College, McPherson, Kan.	1914	Orville S. Walters	90	95	15	—	8,980
*Central College, Fayette, Mo.	1855	Robert H. Ruff	592	727	43	1,153,765	59,000
Central College, Pella, Iowa	1853	Irwin J. Lubbers	281	390	28	317,000	20,000
Central Mich. Col. of Ed., Mt. Pleasant, Mich.	1892	C. L. Anspach	1,481	2,219	90	—	51,194
Central Mo. St. Tch. Col., Warrensburg, Mo.	1871	George W. Diemer	616	1,222	76	—	65,000
Central Normal College, Danville, Ind.	1876	Virgil Hunt	185	400	17	3,000	11,000
Central State College, Edmond, Okla.	1890	R. R. Robinson	787	2,029	66	—	16,821
Central St. Teachers Col., Stevens Point, Wisconsin	1894	William C. Hansen	424	917	48	—	36,773
Cent. Wash. Col. of Edu., Ellensburg, Wash.	1891	Robert E. McConnell	651	1,131	60	—	35,000
*Centre College, Danville, Ky.	1819	Robt. L. McLeod, Jr.	310	355	28	1,770,950	35,000
Chaffey Jr. Col., Ontario, Calif	1916	Gardiner W. Spring	540	562	42	—	34,998
Chapman College, Whittier, Calif.	1920	George N. Reeves	50	93	64	119,000	14,000
Charleston, College of, Charleston, S. C.	1770	George D. Grice	296	493	21	459,000	30,724
Chattanooga Univ. of, Chattanooga, Tenn.	1886	David A. Lockmiller	514	544	49	798,992	38,000

Institution and Location	Year Founded	Chief Executive	Full Time Students	Full and Part Time Students	Faculty	Endow-ment	Library Volumes
Chestnut Hill, Col. of, Philadelphia, Pa.	1871	Sister Maria Kostka	292	570	46	$ 300,000	27,025
Cheyney Training School for Teachers, Cheyney, Pa.	1837	Leslie Pinckney Hill	147	150	15	—	15,000
Chicago, University of, Chicago, Ill.	1891	Robert M. Hutchins	10,988	15,138	872	71,350,267	1,409,420
*Chico State College, Chico, Calif.	1887	Aymer Jay Hamilton	700	900	52	—	26,000
Christian College, Columbia, Mo.	1851	James C. Miller	300	300	35	100,000	12,000
Cincinnati, University of, Cincinnati, Ohio	1819	Raymond Walters	4,053	9,934	—	9,967,399	533,844
Citadel, The, Charleston, S. C.	1842	C. P. Summerall	1,951	1,951	102	—	28,850
*Claflin College, Orangeburg, S. C.	1869	Joseph B. Randolph	181	—	16	160,000	11,262
Clark University, Worcester, Mass.	1887	Wallace W. Atwood	360	375	37	5,000,000	166,000
*Clarke College, Dubuque, Iowa	1843	Mary Ambrose Mulholland	327	537	48	—	20,000
*Clarkson College of Tech., Potsdam, N. Y.	1896	John A. Ross, Jr.	600	—	39	1,427,437	10,466
Cleary College, Ypsilanti, Mich.	1883	Owen J. Cleary	509	—	15	—	7,000
Clemson Agri. Col., Clemson, S. C.	1889	Robert Franklin Poole	2,324	2,471	160	276,756	57,000
*Clinton Norm.& Indus.Col.,Rock Hill,S.C.	1894	E. W. Brice	161	201	11	—	10,000
*Coe College, Cedar Rapids, Iowa	1881	C. H. Geiger	710	738	65	1,676,505	55,000
Coffeyville Jr. Col., Coffeyville, Kansas	1923	Karl M. Wilson	333	367	18	—	4,450
Coker College, Hartsville, S. C.	1894	C. Sylvester Green	261	—	34	756,000	18,000
Colby College, Waterville, Me.	1813	J. S. Bixler	621	621	52	2,989,980	100,000
Colgate University, Hamilton, N. Y.	1819	Everett N. Case	876	—	100	5,900,000	125,000
College Catholique, Le, Gravelbourg, Sask., Can.	1918	Aimé Lizée	108	108	16	—	9,000
Colorado College, Colorado Springs, Colo.	1874	Thurston J. Davies	620	1,013	60	2,775,000	125,000
*Colorado School of Mines, Golden, Colo.	1874	M. F. Coolbaugh	839	—	73	—	50,300
Colorado State College of Agriculture and Mechanic Arts, Fort Collins, Colo.	1870	Roy M. Green	1,606	1,637	139	—	104,187
Colorado St. Col. of Edu., Greeley, Colo.	1889	George W. Frasier	881	2,718	106	—	103,146
Colorado, University of, Boulder, Colo.	1876	Robert L. Stearns	3,868	6,912	353	483,000	474,363
Colorado Woman's College, Denver, Colo.	1888	J. E. Huchingson	350	—	41	100,000	10,000
*Columbia College, Columbia, S. C.	1854	J. Caldwell Guilds	347	—	30	485,000	15,000
Columbia University, New York, N. Y.	1754	Nicholas M. Butler	?	21,922	3090	89,135,728	1,887,034
Compton Jr. Col., Compton, Calif.	1928	Scott Thompson	2,600	3,100	103	—	25,000
Concord State Tch. Col., Athens, W. Va.	1875	Joseph Franklin Marsh	450	735	35	—	19,750
Concordia College, Moorhead, Minn.	1891	J. N. Brown	508	566	45	577.283	27,700
Concordia Theol. Seminary, St. Louis, Mo.	1839	L. E. Fuerbringer	501	519	18	—	30,000
*Concordia Teachers Col., River Forest, Ill.	1864	Arthur W. Klinck	365	505	26	100,000	12,000
*Concordia Teachers Col., Seward, Neb.	1894	A. O. Fuerbringer	153	228	15	—	7,721
Connecticut, University of, Storrs, Conn.	1881	Albert N. Jorgensen	2,066	2,671	224	307,275	76,000
Connecticut College, New London, Conn.	1911	Katharine Blunt	747	860	97	1,509,691	97,431
Conn. Teachers Col., New Britain, Conn.	1849	Herbert D. Welte	375	455	74	—	23,000
Converse College, Spartanburg, S. C.	1889	Edw. M. Gwathmey	383	464	40	607,539	30,694
Cooper Union, New York, N. Y.	1859	Gano Dunn	2,426	2,426	165	7,407,897	103,751
Cornell College, Mount Vernon, Iowa	1853	John B. Magee	632	672	48	2,368,000	60,000
Cornell University, Ithaca, N. Y.	1865	Edmund Ezra Day	7,036	8,697	1264	32,599,873	1,120,967
*Cortland State Normal Sch., Cortland, N.Y.	1866	H. DeW. DeGroat	470	640	44	—	28,000
Creighton University, Omaha, Neb.	1878	Jos. P. Zuercher	1,468	1,819	286	4,000,000	135,115
Culver-Stockton Col., Canton, Mo.	1853	W. H. McDonald	284	388	23	945,870	27,000
D							
Dakota Wesleyan Univ., Mitchell, S. D.	1885	Joseph H. Edge	361	374	30	950,850	28,424
Dalhousie Univ., Halifax, N. S., Canada	1818	Carleton Stanley	698	712	139	2,687,466	63,984
*Dana Col.and Trinity Theol.Sem., Blair, Neb.	1884	Lawrence Siersbeck	164	212	19	172,000	11,000
*Danbury State Tch. Col., Danbury, Conn.	1904	Ralph C. Jenkins	225	425	40	—	18,000
*Daniel Baker College, Brownwood, Texas	1889	Thomas H. Hart	304	527	22	181,000	11,000
Dartmouth College, Hanover, N. H.	1769	Ernest M. Hopkins	2,071	2,071	241	20,374,754	543,973
Davidson College, Davidson, N. C.	1837	John R. Cunningham	680	752	44	3,000,000	50,000
Davis & Elkins College, Elkins, W. Va.	1903	R. T. L. Liston	109	254	16	167,000	13,100
Dayton, University of, Dayton, Ohio	1850	John A. Elbert	753	1,452	88	—	40,000
Defiance College, Defiance, Ohio	1885	John Wilbert Claxton	290	890	31	300,000	25,000
Delaware, University of, Newark, Del.	1833	Walter Hullihen	786	1,071	164	721,797	93,420
Delta State Tch. Col., Cleveland, Miss.	1924	William M. Kethley	194	204	32	—	25,000
Denison University, Granville, Ohio	1831	Kenneth I. Brown	915	925	71	3,198,639	150,000
Denver, Univ. of, Denver, Colo.	1864	Caleb F. Gates, Jr.	1,418	2,276	284	2,687,540	158,000
DePaul University, Chicago, Ill.	1898	M. J. O'Connell	2,095	8,035	198	—	72,484
DePauw University, Greencastle, Ind.	1837	Clyde E. Wildman	1,346	1,397	96	6,284,435	99,310
Detroit Inst. of Tech., Detroit, Mich.	1891	Paul Hickey	900	2,000	111	2,000	11,000
Detroit, University of, Detroit, Mich.	1877	Charles H. Cloud	1,880	4,142	187	1,640,000	111,874
Dickinson College, Carlisle, Pa.	1773	Fred P. Corson	472	488	33	1,357,682	69,887
*Dillard University, New Orleans, La.	1930	A. W. Dent	240	292	23	—	23,375
*Doane College, Crete, Neb.	1872	Bryan S. Stoffer	236	239	28	908,276	29,055
Drake University, Des Moines, Iowa	1881	Henry Gadd Harmon	1,023	1,947	87	1,600,000	95,975
*Drew University, Madison, N. J.	1867	Arlo Ayres Brown	—	472	41	5,933,685	186,620
Drexel Inst. of Tech., Philadelphia, Pa.	1891	George Peters Rea	1,950	3,872	113	3,000,000	77,848
Dropsie College, Philadelphia, Pa.	1907	Abraham A. Neuman	52	—	8	1,298,264	48,860
Drury College, Springfield, Mo.	1873	J. F. Findlay	405	460	39	1,009,843	60,282
Dubuque, University of, Dubuque, Iowa	1852	Dale D. Welch	393	633	35	713,000	13,263
Duchesne College, Omaha, Neb.	1881	Mother Helen Casey	121	126	18	—	16,000
Duke University, Durham, N. C.	1838	Robert Lee Flowers	3,647	5,121	511	38,963,698	650,044
Duluth State Tch. Col., Duluth, Minn.	1895	Herbert Sorenson	387	689	48	$ —	24,940
*Duquesne University, Pittsburgh, Pa.	1878	Raymond V. Kirk	1,052	1,689	197	—	54,650
D'Youville College, Buffalo, N. Y.	1908	Sister Grace	300	—	30	—	22,000
E							
Earlham College, Richmond, Ind.	1847	Wm. C. Dennis	376	402	40	1,342,745	64,000
East Carolina Tch. Col., Greenville, N.C.	1907	Leon R. Meadows	1,022	1,819	88	—	41,599
East Central State College, Ada, Okla.	1909	A. Linscheid	1,204	1,998	65	—	30,000
*Eastern Ill. St. Tch. Col., Charleston, Ill.	1895	Robert G. Buzzard	915	1,585	91	—	58,520
*Eastern Ky. St. Tch. Col., Richmond, Ky.	1906	W. F. O'Donnell	—	981	82	—	65,000
Eastern Mont. St. Norm.Sch., Billings, Mont.	1927	L. B. McMullen	120	306	16	—	12,300
Eastern Nazarene Col., Wollaston, Mass.	1918	G. B. Williamson	218	237	20	—	12,000
E. Okla. Agri. & Mech. Col., (Jr.), Wilburton, Okla.	1909	C. C. Dunlap	160	—	14	—	4,975
Eastern Oregon College of Education, La Grande, Ore.	1929	Roben J. Maaske	228	246	32	—	18,701
Eastern Wash. Col. of Ed., Cheney, Wash.	1890	Ralph E. Tieje	1,075	1,155	58	—	47,500
E. Tenn. St. Tch. Col., Johnson City, Tenn.	1911	Charles C. Sherrod	800	1,350	50	—	30,000
*Edmonton Jesuit Col., Edmonton, Alta., Can.	1913	Joseph Fortier	108	—	16	—	10,600
*Elizabethtown Col., Elizabethtown, Pa.	1899	A. C. Baugher	150	250	18	180,000	13,000
*Elmhurst College, Elmhurst, Ill.	1871	Timothy Lehmann	344	366	30	—	36,600
Elmira College, Elmira, N. Y.	1855	William S. A. Pott	263	306	45	867,195	52,444
Elon College, Elon College, N. C.	1889	Leon E. Smith	521	531	30	481,902	27,321
Emerson College, Boston, Mass.	1880	Harry Seymour Ross	145	233	24	—	12,153
*Emmanuel College, Boston, Mass.	1919	Sister Teresa Patricia	530	—	54	—	26,000
*Emmanuel Miss.Col., Berrien Spgs., Mich.	1901	Henry J. Klooster	342	570	29	300,000	26,433
Emory and Henry College, Emory, Va.	1836	Foye G. Gibson	203	263	23	352,908	22,000
Emory University, Atlanta, Ga.	1836	Goodrich C. White	1,445	1,996	265	7,699,345	204,109
Emporia, College of, Emporia, Kan.	1882	D. A. Hirschler	150	217	28	185,000	32,000
Erie Ctr. (Jr.), Univ. of Pittsburgh, Erie, Pa.	1928	J. Lloyd Mahony	71	433	12	—	1,800
*Erskine College, Due West, S. C.	1839	Robert C. Grier	264	285	28	362,393	26,000
Evangelical Theological Seminary, Naperville, Ill.	1873	H. R. Heininger	84	87	7	575,281	10,000
Evansville College, Evansville, Ind.	1854	Lincoln B. Hale	390	747	41	400,000	20,999
F							
Fairmont St. Tch. Col., Fairmont, W. Va.	1865	Oliver Shurtleff	330	824	43	—	24,138
Farmington St. Nor. Sch., Farmington, Me.	1864	Lorey C. Day	235	515	20	—	10,000
Fayetteville State Tch. Col., Fayetteville, N. C.	1877	J. W. Seabrook	576	—	27	—	16,770
Fenn College, Cleveland, Ohio	1881	Cecil V. Thomas	760	3,871	196	789,060	19,000
Ferris Institute, Big Rapids, Mich.	1884	Merle S. Ward	579	628	25	—	12,000
*Findlay College, Findlay, Ohio	1882	H. R. Dunathan	286	345	22	458,035	21,000
Fisk University, Nashville, Tenn.	1866	Thomas E. Jones	461	—	49	3,194,948	76,000
*Fletcher Col., John, Univ. Pk., Ia.	1905	Charles W. Butler	151	—	16	15,000	15,000
Fla. Agri. & Mech. Col. for Negroes, Tallahassee, Fla.	1887	J. R. E. Lee	933	1,766	126	—	16,022
*Florida Southern College, Lakeland, Fla.	1885	Ludd M. Spivey	780	1,180	64	528,000	24,000
Fla. State Col. for Women, Tallahassee, Fla.	1905	Doak S. Campbell	1,797	2,887	185	206,000	94 950
Florida, University of, Gainesville, Fla.	1853	John J. Tigert	2,700	—	180	—	160,000
Fordham University, New York, N. Y.	1841	Robert I. Gannon	2,744	5,587	250	715,000	220,850
Fort Hays Kansas State College, Hays, Kansas	1902	Lyman Dwight Wooster	1,900	2,000	82	—	30,000
Franklin & Marshall Col., Lancaster, Pa.	1787	Theodore August Distler	668	1,052	41	1,374,645	85,000
Franklin College, Franklin, Ind.	1834	William G. Spencer	289	290	31	835,000	31,881
Fresno State College, Fresno, Calif.	1911	Frank W. Thomas	1,320	1,817	93	—	43,570
*Friends University, Wichita, Kan.	1898	W. A. Young	385	565	26	560,000	21,475
Furman University, Greenville, S. C.	1826	John Laney Plyler	889	1,398	61	2,835,607	53,000
G							
Gallaudet Col. for deaf, Washington, D. C.	1864	Percival Hall	128	128	20	—	10,000
Geneva College, Beaver Falls, Pa.	1848	M. M. Pearce	402	418	32	793,000	35,000
Geo. Peabody Col. for Tch., Nashville, Tenn.	1875	Sidney C. Garrison	1,482	3,791	94	5,100,000	540,000
Georgetown College, Georgetown, Ky.	1829	Samuel S. Hill	165	175	22	500,000	16,000
**Georgetown Univ., Washington, D. C.	1789	Arthur A. O'Leary	2,505	—	670	—	200,000
Geo. Washington Univ., The, Washington, D. C.	1821	Cloyd H. Marvin	1,455	7,612	525	2,426,730	145,000
George Williams College, Chicago, Ill.	1890	Harold Coe Coffman	142	246	21	200,000	17,300
George Williams Col., Sir, Montreal, Can.	1873	K. E. Norris	500	3,600	110	—	12,000
Georgia Sch. of Technology, Atlanta, Ga.	1865	Marion L. Brittain	2,830	—	185	525,000	52,000
Georgia State Col., Industrial College, Ga.	1892	Benjamin F. Hubert	473	1,328	35	—	12,000
Ga. State Col. for Women, Milledgeville, Ga.	1889	Guy H. Wells	948	—	100	—	31,893
*Ga. State Womans Col., Valdosta, Ga.	1906	Frank R. Reade	316	—	25	—	16,905
Georgia, University of, Athens, Ga.	1785	Harmon W. Caldwell	2,127	4,009	256	760,998	160,000
*Gettysburg College, Gettysburg, Pa.	1832	Henry W. A. Hanson	650	715	45	815,000	59,000
Glenville St. Tch. Col., Glenville, W. Va.	1872	D. L. Haught	174	422	25	—	19,752

Institution and Location	Year Founded	Chief Executive	Full Time Students	Full and Part Time Students	Faculty	Endowment	Library Volumes
Gonzaga University, Spokane, Wash.	1883	Francis J. Altman	1,005	1,305	48	$ 57,843	45,131
*Gorham Normal School, Gorham, Me.	1879	Francis L. Bailey	308	—	34	—	9,000
*Goshen College, Goshen, Ind.	1894	Ernest Edgar Miller	255	338	28	123,188	20,500
Goucher College, Baltimore, Md.	1885	David A. Robertson	484	492	84	2,162,216	78,832
Graceland College, Lamoni, Iowa	1895	G. N. Briggs	371	371	24	254,000	18,300
Grand Rapids, University of, Grand Rapids, Mich.	1936	Paul F. Voelker	500	525	25	—	6,000
Grand Séminaire Mazenod, Gravelbourg, Saskatchewan, Canada	1931	Rev. Wilfrid Piedalue	13	—	5	—	1,000
Great Falls, Col. of, Great Falls, Mont.	1932	J. J. Donovan	400	450	34	—	30,000
Greensboro College, Greensboro, N. C.	1838	Luther L. Gobbel	340	365	44	509,982	22,724
*Greenville College, Greenville, Ill.	1892	H. J. Long	220	310	20	125,000	13,000
*Grinnell College, Grinnell, Iowa	1846	Samuel N. Stevens	651	—	72	—	111,144
Grove City College, Grove City, Pa.	1876	Weir C. Ketler	952	—	56	850,511	40,000
Guilford College, Guilford College, N. C.	1837	Clyde A. Milner	300	322	28	661,000	24,500
Gustavus Adolphus Col., St. Peter, Minn.	1862	Walter A. Lunden	476	505	34	564,587	30,621
H							
Hamilton College, Clinton, N. Y.	1812	W. H. Cowley	417	—	49	4,143,902	197,484
*Hamline University, St. Paul, Minn.	1854	Charles Nelson Pace	600	—	45	1,962,283	41,600
*Hampden-Sydney Col., Hamp.-Sydney, Va.	1775	E. G. Gammon	380	—	22	378,784	18,000
*Hampton Institute, Hampton, Va.	1868	Malcolm S. MacLean	1,006	1,628	140	9,828,553	62,000
*Hannibal-LaGrange Col., Hannibal, Mo.	1857	A. E. Prince	143	151	20	50,000	6,985
Hanover College, Hanover, Ind.	1827	Albert G. Parker, Jr.	280	285	21	1,600,000	40,000
*Harding College, Searcy, Ark.	1924	George S. Benson	523	574	36	25,500	18,000
*Hardin-Simmons Univ., Abilene, Tex.	1891	W. R. White	800	1,250	52	1,500,000	27,000
Harris Teachers College, St. Louis, Mo.	1905	William N. Sellman	590	—	36	—	2,673
*Hartwick College, Oneonta, N. Y.	1928	H. J. Arnold	257	336	28	114,890	20,000
Harvard University, Cambridge, Mass.	1636	James B. Conant	5,938	8,864	2069	154,000,000	4,400,000
*Hastings College, Hastings, Neb.	1882	John W. Creighton	408	675	38	722,431	30,200
Haverford College, Haverford, Pa.	1833	Felix Morley	328	328	56	4,325,000	157,000
*Hawaii, University of, Honolulu, Hawaii	1907	David L. Crawford	1,881	2,420	197	34,923	142,847
Hebrew Union College, Cincinnati, Ohio	1875	Julian Morgenstern	64	67	20	2,300,000	100,000
*Heidelberg College, Tiffin, Ohio	1850	Clarence E. Josephson	412	444	37	975,686	32,775
*Henderson St. Tch. Col., Arkadelphia, Ark.	1890	Matt L. Ellis	430	906	45	—	19,491
*Hendrix College, Conway, Ark.	1884	John Hugh Reynolds	358	—	40	1,046,837	42,500
*Hesston Col. & Bible Sch., Hesston, Kan.	1908	Milo F. Kauffman	185	190	12	35,000	5,500
Hibbing Junior College, Hibbing, Minn	1916	H. A. Drescher	341	350	29	—	5,384
Highland Park Jr. Col., Highland Park, Mich.	1918	George I. Altenburg	266	310	18	—	7,000
High Point College, High Point, N. C.	1924	Gideon I. Humphreys	405	575	27	2,000	14,411
*Hillsdale College, Hillsdale, Mich.	1844	Willfred O. Mauck	310	337	40	786,498	27,500
Hillyer Jr. Col., Hartford, Conn	1883	Alan S. Wilson	160	855	69	100,000	5,000
Hiram College, Hiram, Ohio	1850	Paul H. Fall	262	275	26	1,100,000	36,304
Hiwassee College, Madisonville, Tenn.	1849	D. R. Youell	103	—	12	65,000	3,000
Hobart and William Smith Colleges, Geneva, New York	1822	John Milton Potter	314	411	54	1,402,882	110,375
*Hollins College, Hollins College, Va.	1842	Bessie C. Randolph	335	339	41	—	34,034
Holy Cross, Col. of the, Worcester, Mass.	1843	Joseph R. N. Maxwell	1,200	1,200	106	250,000	160,000
Holy Heart Seminary, Halifax, N.S., Can.	1895	Julien Deville	68	68	8	68,000	8,600
Holy Names, Col. of the, Oakland, Calif.	1868	Sister Mary Loyola	253	400	45	—	22,407
*Holy Names College, Spokane, Wash.	1907	M. Elizabeth Clare	150	268	27	—	13,000
Hood College, Frederick, Md.	1893	Henry I. Stahr	392	—	53	—	25,000
*Hope College, Holland, Mich.	1866	W. Wichers	549	—	40	1,960,000	36,000
Houghton College, Houghton, N. Y.	1883	Stephen W. Paine	391	444	35	273,162	17,000
*Houston, University of, Houston, Texas	1927	Edison E. Oberholtzer	652	2,809	83	—	17,428
*Howard College, Birmingham, Ala.	1842	Harwell G. Davis	648	1,076	54	750,000	32,000
Howard Payne College, Brownwood, Tex.	1889	Thomas H. Taylor	563	873	35	601,000	23,000
Howard University, Washington, D.C.	1867	M. W. Johnson	1,432	3,236	259	1,008,643	147,185
*Hunter College, New York, N. Y.	1870	George N. Shuster	7,000	13,770	713	—	132,445
*Huntingdon College, Montgomery, Ala.	1854	Hubert Searcy	408	558	45	400,000	17,500
Huntington College, Huntington, Ind.	1897	Elmer Becker	101	144	18	100,000	13,833
*Huron College, Huron, S. D.	1883	George F. McDougall	269	301	26	802,453	23,034
I							
*Idaho, The College of, Caldwell, Ida.	1891	William W. Hall, Jr.	300	431	29	525,000	18,000
Ida., So. Brnch. of the Univ. of, P'c'tello, Ida.	1927	John R. Nichols	687	786	60	—	21,000
*Idaho, University of, Moscow, Ida.	1889	Harrison C. Dale	2,360	2,981	176	3,191,415	100,000
Illinois College, Jacksonville, Ill.	1829	H. Gary Hudson	302	347	28	1,142,695	37,723
Illinois Institute of Technology, Chicago, Ill. (formerly Armour Institute [1892] and Lewis Institute [1896])	1940	H. T. Heald	2,573	5,363	215	1,850,000	90,000
Illinois State Normal Univ., Normal, Ill.	1857	R. W. Fairchild	3,021	3,021	195	—	81,000
Illinois, University of, Urbana, Ill.	1868	Arthur C. Willard	11,294	?	2819	1,454,644	1,306,561
Ill. Wesleyan Univ., Bloomington, Ill.	1850	William E. Shaw	621	641	47	1,263,885	44,000
*ImmaculateConc.Sem.Huntington,L.I.N.Y.	1926	Patrick J. Barry	192	—	19	—	25,000
Incarnate Word Col., San Antonio, Tex.	1900	Sister M. Columkille	384	897	51	—	32,341
*Indiana Central Col., Indianapolis, Ind.	1902	I. J. Good	418	—	25	64,681	13,375
*Indiana State Tch. Col., Indiana, Pa.	1875	LeRoy A. King	1,240	1,992	120	$ —	22,000
*Ind. State Tch. Col., Terre Haute, Ind.	1870	Ralph Noble Tirey	1,342	1,764	126	—	141,702
Indiana University, Bloomington, Ind.	1820	Herman B. Wells	6,054	9,487	400	2,638,425	400,000
*Int.Y.M.C.A.Col., Springfield, Mass.	1885	Ernest M. Best	588	925	56	1,081,103	27,324
*Iowa State College, Ames, Iowa	1858	Charles E. Friley	6,099	7,357	665	—	310,000
Iowa State Tch. Col., Cedar Falls, Iowa	1876	Malcolm Price	3,030	3,110	129	—	94,442
Iowa, State University of, Iowa City, Ia.	1847	Virgil Hancher	?	5,380	600	997,315	596,234
Iowa Wesleyan Col., Mt. Pleasant, Ia.	1842	Stanley B. Niles	302	302	26	574,738	27,500
Ithaca College, Ithaca, N. Y.	1892	Leonard B. Job	500	750	60	—	7,000
J							
James Millikin University, Decatur, Ill.	1901	John C. Hessler	518	736	52	1,010,152	35,153
JamesOrmondWilsonTch.Col.,Wash.,D.C.	1873	Walter E. Hager	246	302	47	—	21,612
Jamestown College, Jamestown, N. D.	1883	B. H. Kroeze	434	—	31	1,095,000	15,000
Jean-de-Brébeuf, Collège, Montreal, Que., Can.	1928	Antonio Dragon	560	—	52	—	16,200
Jesuit College, Edmonton, Can.	1913	Joseph Fortier	102	—	15	20,000	11,000
*John B. Stetson University, De Land, Fla.	1883	William S. Allen	798	852	70	850,000	45,000
*John Brown Univ., Siloam Springs, Ark.	1919	John E. Brown	314	494	32	—	10,000
John Carroll University, Cleveland, Ohio	1886	Thomas J. Donnelly	536	878	52	2,500,000	35,064
John Tarleton Agri. Col., (Jr.), Stephenville, Texas	1917	T. O. Walton	887	1,319	82	133,000	27,161
*Johns Hopkins Univ., Baltimore, Md.	1876	Isaiah Bowman	2,510	4,860	798	30,907,474	448,070
*Johnson C. Smith Univ., Charlotte, N. C.	1867	Henry L. McCrorey	458	744	34	1,721,700	23,648
*Judson College, Marion, Ala.	1838	Leroy R. Priest	193	—	26	523,269	16,284
Juniata College, Huntingdon, Pa.	1876	Charles C. Ellis	360	500	38	642,587	50,000
K							
Kalamazoo College, Kalamazoo, Mich.	1833	Paul L. Thompson	384	384	40	1,269,605	33,525
*Kan. State Col., Manhattan, Kan.	1863	Francis D. Farrell	4,100	4,600	350	505,509	129,555
*Kan. St. Tch. Col., Emporia, Kan.	1863	Thomas W. Butcher	1,226	—	125	250,000	82,766
*Kan. State Teachers Col., Pittsburg, Kan.	1903	Rees H. Hughes	1,538	2,766	118	—	48,141
Kansas, University of, Lawrence, Kan.	1865	Deane W. Malott	4,000	4,500	242	246,000	340,000
Kansas Wesleyan University, Salina, Kan.	1886	Edgar K. Morrow	316	413	32	515,367	20,000
*Keene Teachers College, Keene, N. H.	1909	L. P. Young	362	588	50	—	18,000
*Kemptville Agricultural School, Kemptville, Ont., Can.	1917	M. C. McPhail	70	150	11	—	800
Kent State University, Kent, Ohio	1910	K. C. Leebrick	1,465	2,875	150	—	77,715
Ky. State Col. for Negroes, Frankfort, Ky.	1886	Rufus B. Atwood	351	476	51	—	15,500
*Kentucky, Univ. of, Lexington, Ky.	1865	Herman Lee Donovan	3,250	4,847	339	184,075	302,889
Kentucky Wesleyan Col., Winchester, Ky.	1866	Paul Shell Powell	128	168	19	88,805	17,392
Kenyon College, Gambier, Ohio	1824	Gordon K. Chalmers	300	306	39	1,674,390	68,000
Keuka College, Keuka Park, N. Y.	1890	Henry E. Allen	201	204	33	325,084	22,070
King College, Bristol, Tenn.	1867	Thomas P. Johnston	200	250	15	140,000	12,500
King's College, Univ. of, Halifax, N.S., Can.	1789	A. S. Walker	36	—	10	300,000	27,000
Kletzing College, University Park, Iowa	1905	C. W. Butler	109	139	13	—	15,000
Knox College, Galesburg, Ill.	1837	Carter Davidson	547	633	57	2,605,099	64,240
*Knoxville College, Knoxville, Tenn.	1875	John A. Cotton	370	376	22	600,000	12,000
L							
*La Crosse State College, La Crosse, Wis.	1909	Rexford S. Mitchell	665	1,037	59	—	30,222
Lafayette College, Easton, Pa.	1826	William M. Lewis	870	—	96	4,000,000	112,000
LaGrange College, LaGrange, Ga.	1831	Hubert T. Quillian	151	185	20	325,000	12,000
Lake Erie College, Painesville, Ohio	1856	Helen D. Bragdon	150	152	26	811,212	30,000
Lake Forest College, Lake Forest, Ill.	1857	Ernest A. Johnson	318	420	26	1,354,933	52,338
Lamar College, Beaumont, Tex.	1922	John E. Gray	400	700	31	—	4,500
*Lambuth College, Jackson, Tenn.	1924	R. E. Womack	155	—	19	—	6,000
Lander College, Greenwood, S. C.	1872	John Marvin Rast	271	118	34	350,000	15,000
Lane College, Jackson, Tenn.	1882	James F. Lane	427	478	28	25,000	12,100
*Langston University, Langston, Okla.	1897	G. L. Harrison	562	700	76	—	8,892
Lassen Jr. Col., Susanville, Calif.	1925	G. A. Collyer	44	54	21	—	4,954
Laval University, Quebec, Canada	1852	Camille Roy	3,379	4,012	630	2,500,000	535,000
LaVerne College, LaVerne, Calif.	1891	C. Ernest Davis	128	139	25	53,587	11,000
Lawrence College, Appleton, Wis.	1847	Thomas N. Barrows	692	703	56	1,515,000	67,233
Lebanon Valley College, Annville, Pa.	1866	Clyde A. Lynch	352	507	34	919,670	28,359
*Lehigh University, Bethlehem, Pa.	1865	Clement C. Williams	1,748	2,348	195	6,901,207	248,165
*Leland College, Baker, La.	1870	John A. Bacoats	325	505	22	120,000	48,050
*LeMoyne College, Memphis, Tenn.	1870	Fred L. Brownlee	319	471	29	—	14,793
Lenoir-Rhyne College, Hickory, N. C.	1891	P. E. Monroe	484	—	32	712,300	19,078
Lesley School, Cambridge, Mass.	1909	Gertrude Mallock	79	79	14	—	4,600
*Lévis, Collège de, Lévis, Province de Quebec, Canada	1853	Léopold Roberge	750	—	70	—	30,000
Lewiston State Norm. Sch., Lewiston, Ida.	1896	Glenn W. Todd	350	386	35	—	16,000
Limestone College, Gaffney, S. C.	1845	R. C. Granberry	340	352	33	516,000	19,469
Lincoln College, Lincoln, Ill.	1865	William D. Copeland	80	108	13	216,730	11,700
*Lincoln Institute, Lincoln Ridge, Ky.	1910	Walter K. Belknap	267	—	14	221,548	5,030
Lincoln Memorial Univ., Harrogate, Tenn.	1890	S. W. McClelland	252	252	26	800,000	22,000
Lincoln University, Jefferson City, Mo.	1866	Sherman D. Scruggs	509	739	67	—	22,050
Lincoln University, Lincoln Univ., Pa.	1854	Walter L. Wright	304	304	25	1,044,634	37,000

Institution and Location	Year Founded	Chief Executive	Full Time Students	Full and Part Time Students	Faculty	Endowment	Library Volumes
Lindenwood College, St. Charles, Mo.	1827	Harry Morehouse Gage	461	—	45	$ 2,278,740	25,944
Linfield College, McMinnville, Ore.	1858	Wm. G. Everson	368	—	34	929,282	28,742
Livingstone College, Salisbury, N. C.	1879	William J. Trent	192	—	20	45,000	18,330
Long Beach Jr. Col., Long Beach, Calif.	1927	George E. Dotson	1,100	2,200	52	—	31,767
Long Island University, Brooklyn, N. Y.	1926	Tristram W. Metcalfe	1,150	1,565	157	500,000	26,575
Loras College, Dubuque, Iowa	1839	M. J. Martin	550	602	71	1,340,000	91,000
Loretto Heights College, Loretto, Colo.	1891	Paul J. Ketrick	141	334	34	—	15,465
Los Angeles City College, (Jr.), Los Angeles, Calif.	1929	Rosco C. Ingalls	3,364	4,975	177	—	55,000
*Louisburg College, Louisburg, N. C.	1779	Walter Patten	296	301	23	61,000	6,578
Louisiana College, Pineville, La.	1906	Edgar Godbold	274	428	21	309,000	12,723
Louisiana Polytechnic Inst., Ruston, La.	1894	Claybrook Cottingham	1,356	1,643	105	—	27,910
La. State Norm. Col., Natchitoches, La.	1884	Joe Farrar	918	918	112	—	3,000
Louisiana State Univ., University Station, Baton Rouge, La.	1861	C. B. Hodges	7,313	10,078	453	14,558	293,871
Louisville, Univ. of, Louisville, Kentucky	1837	Raymond A. Kent	1,847	3,225	376	989,678	115,244
*Lowell Textile Institute, Lowell, Mass.	1895	Charles H. Eames	290	1,316	40	—	2,915
Loyola College, Baltimore, Md.	1852	Edward B. Bunn	414	414	28	1,375,000	33,416
Loyola College, Montreal, Que. Can.	1896	Edward M. Brown	497	—	28	—	19,827
*Loyola University, Chicago, Ill.	1870	Samuel K. Wilson	4,529	5,621	788	1,390,485	121,040
Loyola University, Los Angeles, Calif.	1865	Chas. A. McQuillan	505	812	54	—	35,500
Loyola University, New Orleans, La.	1912	Percy A. Roy	834	2,015	165	4,500,000	102,346
Lutheran College and Seminary, The Saskatoon, Saskatchewan, Canada	1913	N. Willison	10	10	5	2,336	9,150
*Luther College, Decorah, Iowa	1861	O. J. H. Preus	440	497	40	559,192	70,000
Lynchburg College, Lynchburg, Va.	1903	R. B. Montgomery	220	295	22	294,010	19,523
M							
Macalester College, St. Paul, Minn.	1885	Charles J. Turck	663	672	60	2,324,000	36,000
McGill University, Montreal, Canada	1821	F. Cyril James	2,914	3,483	504	35,965,936	410,595
*McKendree College, Lebanon, Ill.	1828	Clark R. Yost	179	219	22	300,000	16,000
McMaster Univ., Hamilton, Ont., Can.	1887	George P. Gilmour	623	1,059	42	2,132,727	55,200
MacMurray College, Jacksonville, Ill.	1846	C. P. McClelland	585	670	56	3,845,000	33,959
*McMurry College, Abilene, Texas	1921	Frank L. Turner	410	565	34	60,000	13,500
McPherson College, McPherson, Kan.	1887	W. W. Peters	232	300	24	324,863	1,700
Madison College, Madison College, Tenn.	1904	E. A. Sutherland	224	—	27	—	23,000
Maine, University of, Orono, Me.	1865	Arthur A. Hauck	1,868	2,227	169	1,066,209	191,128
Manchester College, No. Manchester, Ind.	1889	Vernon F. Schwalm	540	1,256	39	587,309	35,789
*Manhattan College, New York, N. Y.	1863	Brother A. Victor	1,540	1,820	130	—	55,000
Manhattanville Col. of Sac. Hrt., N. Y.	1847	Grace C. Dammann	387	558	68	346,720	46,750
Manitoba, The University of, Winnipeg, Manitoba, Canada.	1877	Sidney Earle Smith	2,458	3,157	230	928,236	108,000
Mansfield State Tch. Col., Mansfield, Pa.	1858	Willis E. Pratt	372	451	62	—	26,000
Marian College, Indianapolis, Indiana	1937	Mother M. Clarissa	120	350	22	—	16,000
*Marietta College, Marietta, Ohio	1797	Harry Kelso Eversull	318	325	38	1,274,861	119,056
*Marion College, Marion, Ind.	1920	Wm. F. McConn	200	300	18	100,000	16,000
Marion College, (Jr.), Marion, Virginia	1873	Hugh J. Rhyne	100	128	16	—	5,600
Marquette University, Milwaukee, Wis.	1881	R. C. McCarthy	3,422	5,483	435	2,054,484	135,685
Marshall, The College of, Marshall, Tex.	1917	H. D. Bruce	140	220	18	—	6,000
Mars Hill Jr. Col., Mars Hill, N. C.	1856	Hoyt Blackwell	796	976	38	121,000	17,000
*Martin Luther Col., New Ulm, Minn.	1884	Carl L. Schweppe	212	—	13	—	10,000
Mary Baldwin College, Staunton, Va.	1842	L. Wilson Jarman	318	325	32	560,489	27,500
Marygrove College, Detroit, Mich.	1910	Sister M. Honora	653	1,363	71	—	37,509
Mary Hardin-Baylor College, Belton, Tex.	1845	Gordon G. Singleton	414	570	35	790,000	30,735
*Maryland Col. for Women, Lutherville, Md.	1853	Wm. H. Moore, III	170	—	16	—	10,000
Maryland State Teachers College, Bowie, Maryland	1908	William E. Henry	120	—	11	—	—
Maryland, Univ. of, College Park, Md.	1807	H. C. Byrd	4,150	5,100	934	2,000,000	159,379
*Marymount College, Salina, Kan.	1922	Mother Chrysostom	168	412	27	—	17,500
Marymount College, Tarrytown, N. Y.	1907	M. Gerard	253	—	39	1,000,000	28,050
Maryville College, Maryville, Tenn.	1819	Ralph W. Lloyd	649	673	47	1,834,981	50,125
MaryvilleCol.oftheSac.Heart,St.Louis,Mo.	1872	Odéide Mouton	170	—	32	350,000	23,000
Mary Washington Col., Fredericksburg, Va.	1908	Morgan L. Combs	1,945	2,101	90	—	40,862
*Marywood College, Scranton, Pa.	1915	Moth. M. Marcella Gill	480	850	53	—	30,000
Mass. Inst. of Tech., Cambridge, Mass.	1861	Karl T. Compton	3,020	4,838	680	37,266,000	357,000
Mass. State College, Amherst, Mass.	1863	Hugh P. Baker	1,409	1,681	135	445,015	129,505
*Mass. State Tch. Col., Bridgewater, Mass.	1840	John J. Kelly	443	446	41	15,000	12,378
Mass. State Tch. Col., Fitchburg, Mass.	1895	Charles M. Herlihy	280	350	22	—	28,000
Mass. State Tch. Col., Framingham, Mass.	1839	Martin F. O'Connor	414	—	35	—	17,000
Mass. State Tch. Col., Hyannis, Mass.	1897	Anson B. Handy	77	294	11	—	14,100
Mass. State Tch. Col., Salem, Mass.	1854	Edward A. Sullivan	350	366	41	—	13,583
*Mass. State Tch. Col., Worcester, Mass.	1871	Clinton E. Carpenter	168	170	19	—	16,863
Mercer University, Macon, Ga.	1833	Spright Dowell	488	512	36	1,400,000	71,000
Mercyhurst College, Erie, Pa.	1926	Sister M. De Sales	200	230	32	1,750,000	17,500
*Meredith College, Raleigh, N. C.	1891	Carlyle Campbell	455	487	39	542,762	24,501
Mesa Col., (Jr.), Grand Junction, Colo	1925	Horace J. Wubben	250	300	17	—	8,000
Miami, Univ. of, Coral Gables, Fla.	1925	Bowman Foster Ashe	933	1,869	72	—	59,200
Miami University, Oxford, Ohio	1809	A. H. Upham	2,917	3,728	350	—	166,000
Mich. Col. of Mng. & Tech., Houghton, Mich.	1885	Grover C. Dillman	764	825	78	—	41,000
Michigan State Col., E. Lansing, Mich.	1855	John A. Hannah	6,100	7,161	482	$ —	170,000
Mich. State Normal Col., Ypsilanti, Mich.	1849	John M. Munson	1,250	2,124	179	—	108,500
Michigan, University of, Ann Arbor, Mich.	1817	Alexander G. Ruthven	9,880	12,882	800	15,860,469	1,168,612
*Middlebury College, Middlebury, Vt.	1800	Paul Dwight Moody	815	1,553	67	4,256,063	142,000
*Middlesex University, Boston, Mass.	1849	C. Ruggles Smith	564	—	85	—	5,500
*Midland College, Fremont, Neb.	1887	F. C. Wiegman	319	446	29	168,000	20,000
*Miles College, Birmingham, Ala.	1902	W. A. Bell	373	540	21	—	6,600
**Millersville St. Tch. Col., Millersville, Pa.	1854	Landis Tanger	530	660	45	—	25,000
Milligan College, Milligan College, Tenn.	1882	C. E. Burns	221	230	24	—	15,282
Mills College, Oakland, Calif.	1852	Aurelia H. Reinhardt	517	751	83	1,866,820	90,000
*Millsaps College, Jackson, Miss.	1892	Marion L. Smith	622	672	32	800,000	30,000
*Milton College, Milton, Wis.	1867	J. G. Meyer	167	188	21	250,000	16,000
Milwaukee-Downer Col., Milwaukee, Wis.	1851	Lucia R. Briggs	294	294	48	2,087,432	42,529
*Milwaukee School of Eng., Mlwke., Wis.	1903	Oscar Werwath	300	450	32	—	—
Minn. State Tch. Col., Bemidji, Minn.	1918	Charles R. Sattgast	278	289	39	—	24,000
Minn. State Tch. Col., Mankato, Minn.	1868	Frank D. McElroy	627	1,396	59	—	25,000
Minn. State Tch. Col., St. Cloud, Minn.	1869	George A. Selke	602	725	64	—	42,000
Minn., University of, Minneapolis, Minn.	1851	Walter C. Coffey	12,570	19,378	1902	18,935,100	1,221,987
*Misericordia College, Dallas, Pa.	1925	Sister Mary Pierre	250	524	60	—	17,000
Mission House College, Plymouth, Wis.	1862	Paul Grosshuesch	125	—	20	68,000	25,440
Mississippi College, Clinton, Miss.	1826	D. M. Nelson	365	—	26	700,000	26,000
*Miss. So. Col., Hattiesburg, Miss.	1910	J. B. George	600	1,600	65	—	25,000
Miss. State Col., State College, Miss.	1878	G. D. Humphrey	3,162	—	135	—	98,500
Miss. St. Col. for Women, Columbus, Miss.	1884	B. L. Parkinson	1,000	1,000	90	—	56,000
Mississippi, University of, Oxford, Miss.	1844	Alfred Hume	1,136	—	103	—	107,000
Missouri Jr. & Tch. Col., Jr. Col. Div., Kansas City, Mo.	1915	A. M. Swanson	995	1,202	53	—	35,000
Missouri, University of, Columbia, Mo.	1839	F. A. Middlebush	4,236	4,436	396	1,961,939	460,000
Missouri Valley College, Marshall, Mo.	1888	Thomas W. Bibb	191	262	22	569,024	25,000
*Mitchell College, Statesville, N. C.	1853	Grace K. Ramsay	200	—	15	10,000	5,204
Modesto Evening Jr. Col., Modesto, Calif.	1939	W. M. Pugh	—	2,474	60	—	250
Monmouth College, Monmouth, Ill.	1853	James Harper Grier	441	580	47	1,832,966	40,000
Montana School of Mines, Butte, Mont.	1893	Francis A. Thomson	205	316	25	800,000	15,705
Montana State College, Bozeman, Mont.	1893	W. M. Cobleigh	1,550	1,583	128	—	61,222
Montana State Normal Col., Dillon, Mont.	1893	Sheldon E. Davis	82	346	36	—	26,000
Montana State Univ., Missoula, Mont.	1893	Ernest O. Melby	1,121	1,597	84	833,047	244,000
Montréal, Collège de, Montreal, Que., Can.	1767	H. Boudreau	400	—	35	—	20,000
Montreal Diocesan Theological College Montreal, Que., Can.	1873	W. A. Ferguson	7	8	3	418,589	13,000
*Montréal, Université de, Mont., Que., Can.	1877	H. G. Ar. Charbonneau	7,653	8,793	890	150,000	53,000
Moorhead St. Tch. Col., Moorhead, Minn.	1887	O. W. Snarr	412	412	45	—	25,318
Moravian Sem. & Col. for Wom., Beth., Pa.	1742	Edwin J. Heath	270	285	40	220,000	10,000
*Morehead St. Tch. Col., Morehead, Ky.	1923	W. H. Vaughan	406	421	60	—	24,688
Morgan St. College, Baltimore, Md.	1867	D. O. W. Holmes	380	596	30	—	32,813
Morningside College, Sioux City, Iowa.	1889	Earl A. Roadman	676	825	42	301,681	49,000
Morris Brown College, Atlanta, Ga.	1881	W. A. Fountain, Jr.	459	557	36	102,107	—
Morris Harvey College, Charleston, W. Va.	1888	Leonard Riggleman	250	550	35	—	12,524
Morton Junior College, Cicero, Illinois	1924	William P. MacLean	347	381	40	—	16,225
Mount Allison Univ., Sackville, N. B., Can.	1840	George J. Trueman	409	569	55	1,000,000	49,449
*Mt. Angel Col. & Sem., St. Benedict, Ore.	1887	James Koessler	115	—	28	48,000	30,000
Mount Holyoke Col., So. Hadley, Mass.	1837	Roswell G. Ham	1,044	1,149	140	5,186,747	168,000
*Mount Royal College, Calgary, Alta., Can.	1910	George W. Kerby	165	520	20	—	2,000
*Mt. St. Jos.-on-the-Ohio, Col. of, Cincin., O.	1920	Mother Mary Regina	276	299	41	635,000	18,000
*Mt. St. Mary Sem. of West, Norwood, Ohio	1829	James W. O'Brien	196	—	12	—	25,000
*Mt. St. Mary's Col., Emmitsburg, Md.	1808	John L. Sheridan	300	—	34	250,000	45,000
*Mt. St. Mary's Col., Los Angeles, Calif.	1925	Sister M. Dolorosa	207	515	31	—	13,876
Mt. St. Scholastica Col., Atchison, Kan.	1930	Mother Lucy Dooley	305	668	37	—	22,531
Mt. St. Vincent, College of, New York, N.Y.	1910	Sister Catharine Marie	376	476	48	—	27,211
Mount Union College, Alliance, Ohio	1846	Charles B. Ketcham	600	760	44	1,388,164	70,000
*Muhlenberg College, Allentown, Pa.	1848	Levering Tyson	524	752	41	990,859	59,344
Multnomah College, (Jr.), Portland, Ore.	1931	Edward L. Clark	186	586	20	—	5,500
*Mundelein College, Chicago, Ill.	1929	Sister M. Justitia	680	—	60	—	20,143
Murray State Teachers Col., Murray, Ky.	1923	James H. Richmond	616	926	79	—	42,450
Muskingum College, New Concord, Ohio.	1837	Robt. N. Montgomery	704	1,215	65	908,000	30,000
N							
Nasson College, Springvale, Me.	1912	Dawn N. Wallace	135	135	14	50,000	5,000
National College of Edu., Evanston, Ill.	1886	Edna Dean Baker	314	341	46	—	27,515
*National University, Washington, D. C.	1869	Leslie C. Garnett	—	659	52	—	14,000
Nazareth College, Nazareth, Mich.	1924	Sister M. Kevin	196	452	39	—	22,000
Nebraska Central Col., Central City, Neb.	1899	O. W. Carrell	36	59	9	50,000	5,000
Neb. State Teachers Col., Chadron, Neb.	1911	Wiley G. Brooks	350	365	51	—	25,750
Nebraska, University of, Lincoln, Neb.	1869	C. S. Boucher	5,278	6,270	485	947,890	380,000
Neb. Wesleyan Univ., Lincoln, Neb.	1887	Benj. F. Schwartz	330	431	43	969,959	32,790
Nevada, University of, Reno, Nev.	1874	L. W. Hartman	787	1,044	82	485,428	65,600
Newark Col. of Engin., Newark, N. J.	1881	Allan R. Cullimore	795	1,027	76	97,505	18,343
Newark, University of, Newark, N. J.	1934	George H. Black	615	869	37	—	27,809
Newberry College, Newberry, S. C.	1856	James C. Kinard	276	288	26	330,000	20,000
*New Bruns., Univ. of, Fredericton, N.B., Can.	1785	Norman MacKenzie	365	455	40	—	30,000

Institution and Location	Year Founded	Chief Executive	Full Time Students	Full and Part Time Students	Faculty	Endowment	Library Volumes
Newcomb Mem. Col., New Orleans, La.	1886	Frederick Hard	746	759	80	$ 2,839,070	300,000
New Hampshire, Univ. of, Durham, N. H.	1866	Fred Engelhardt	1,967	2,571	194	1,264,166	120,694
*New Haven St. Tch. Col., N. H., Conn.	1895	Finis E. Engleman	300	809	20	—	16,000
*N. J. State Tch. Col., Newark, N. J.	1913	Roy L. Shaffer	468	1,437	42	—	35,655
N. J. State Tch. Col., Trenton, N. J.	1855	Roscoe L. West	736	1,000	71	—	43,020
N. J. St. Tch. Col., Upper Montclair, N. J.	1908	Harry A. Sprague	697	945	59	—	42,454
N. M. Col. Agri. & Mech. Arts, St. Col., N.M.	1889	J. W. Branson	610	875	82	391,457	47,000
New Mex. Mil. Inst., Roswell, N. M.	1893	Daniel C. Pearson	681	—	36	—	20,000
*New Mex. School of Mines, Socorro, N. M.	1889	C. E. Needham	114	—	15	70,000	6,000
N. Mex. St. Tch. Col., Silver City, N M.	1893	Haddon W. James	143	271	44	—	27,977
New Mex., Univ. of, Albuquerque, N. M.	1889	James F. Zimmerman	1,078	1,894	116	—	91,091
New Rochelle, Col. of, New Rochelle, N. Y.	1904	Francis W. Walsh	778	786	66	40,394	46,601
N. Y., Col. of the City of, N. Y., N. Y.	1847	Harry N. Wright	7,735	22,108	966	—	269,843
*N. Y. St. Col. of Forestry, Syracuse, N. Y.	1911	Samuel N. Spring	520	—	47	—	54,000
N. Y. St. Col. for Tch., Albany, N. Y.	1844	John M. Sayles	892	1,492	98	—	32,734
New York State Teachers College, Brockport, N. Y.	1867	E. C. Hartwell	320	320	37	—	21,000
*N. Y. State Tch. Col., Buffalo, N. Y.	1871	Harry W. Rockwell	961	—	75	—	26,000
*N. Y. St. Tch. Col., Fredonia, N. Y.	1866	Leslie R. Gregory	500	750	50	—	20,000
New York State Teachers College, Geneseo, N. Y.	1867	James B. Welles	362	533	50	—	30,000
New York State Teachers College, New Paltz, N. Y.	1886	L. H. van den Berg	584	—	49	—	17,285
New York State Teachers College, Oneonta, N. Y.	1889	Charles W. Hunt	357	—	39	—	23,000
*N. Y. St. Tch. Col., Oswego, N. Y.	1861	Ralph W. Swetman	500	772	42	—	20,180
New York State Teachers College, Potsdam, N. Y.	1866	Clarence O. Lehman	470	—	46	—	22,000
New York University, New York, N. Y.	1831	Harry W. Chase	12,626	34,158	2104	8,706,678	637,098
Niagara Univ., Niagara Univ., N. Y.	1856	Joseph M. Noonan	1,125	1,408	107	—	50,861
Nicolet, Séminaire de, Nicolet, Que., Can.	1803	Robert Charland	306	—	30	60,000	42,000
*N. C., Agri. Col. of, Greensboro, N. C.	1891	Ferdinand D. Bluford	948	1,390	77	—	25,000
N. C. College for Negroes, Durham, N. C.	1910	James E. Shepard	590	611	43	—	23,762
North Carolina, University of, Chapel Hill, N. C.	1793	Frank Porter Graham	4,405	6,654	390	3,020,360	425,000
North Central College, Naperville, Ill.	1861	Edward E. Rall	525	573	42	1,066,000	28,000
N. D. Agri. Col., Fargo, N. D.	1889	Frank L. Eversull	1,452	1,876	116	1,566,720	66,531
N. D. Sch. of Forestry, Bottineau, N. D.	1907	Albert F. Arnason	84	84	9	—	5,000
N. D. St. Nor. & Ind. Sch., Ellendale, N. D.	1889	John C. McMillan	211	334	22	—	18,000
N. D. St. Sch. of Sc., Wahpeton, N. D.	1903	E. F. Riley	300	800	46	—	8,000
*N. D. St. Tch. Col., Dickinson, N. D.	1918	Chas. E. Scott	356	376	31	—	13,500
N. D. St. Tch. Col., Mayville, N. D.	1889	Cyril W. Grace	206	—	27	—	20,000
*N. D. St. Tch. Col., Minot, N. D.	1913	C. C. Swain	702	1,340	52	—	28,000
N. D., University of, Grand Forks, N. D.	1883	John C. West	1,231	1,722	118	1,700,000	138,000
N. E. Jr. Col., La. St. Univ., Monroe, La.	1931	Clyde C. Colvert	480	797	52	—	6,253
N. E. Mo. St. Tch. Col., Kirksville, Mo.	1867	Walter H. Ryle	707	1,770	60	—	66,685
*N. E. St. Col., Tahlequah, Okla.	1909	John Vaughan	1,000	—	55	—	34,420
Northeastern Okla. Jr. Col., Miami, Okla.	1919	Sabin C. Percefull	126	285	17	—	5,900
Northeastern Univ., Boston, Mass.	1898	Carl Stephens Ell	3,130	8,601	402	409,373	34,567
Nor. Ill. State Tch. Col., DeKalb, Ill.	1895	Karl Langdon Adams	803	828	77	—	51,875
Nor. Mich. Col. of Edu., Marquette, Mich.	1899	Henry A. Tape	374	1,011	63	—	38,778
Nor. State Tch. Col., Aberdeen, S. D.	1901	N. E. Steele	458	850	42	—	27,760
North Georgia College, Dahlonega, Ga.	1873	J. C. Rogers	649	1,053	32	—	10,260
Northland College, Ashland, Wis.	1892	John A. Renling	150	200	17	167,200	25,000
North Tex. Agri. Col., Arlington, Tex.	1917	E. E. Davis	1,173	1,218	68	—	20,616
Nor. Tex. State Tch. Col., Denton, Tex.	1890	W. Joseph McConnell	2,500	5,200	165	—	124,320
N. W. Mo. State Tch. Col., Maryville, Mo.	1907	Uel W. Lamkin	600	—	70	—	35,000
Northwest Nazarene Col., Nampa, Ida.	1913	Lewis T. Corlett	412	412	29	—	12,000
*Northwestern College, Watertown, Wis.	1865	Erwin E. Kowalke	224	—	17	83,300	21,240
*Northwestern State College, Alva, Okla.	1897	Chester O. Newlun	950	1,025	42	—	19,823
Northwestern University, Evanston, Ill.	1851	Franklyn B. Snyder	6,200	15,114	913	30,000,000	635,000
*Norwich University, Northfield, Vt.	1819	John M. Thomas	519	645	44	739,981	36,000
*Notre Dame College, South Euclid, Ohio.	1922	Mother Mary Evarista	118	202	37	—	19,800
Notre Dame of Md., Col. of, Balti., Md.	1895	Sister Mary Frances	246	374	41	22,828	20,000
Notre Dame, Univ. of, Notre Dame, Ind.	1842	Hugh O'Donnell	3,256	3,263	228	1,500,000	221,270
O							
*Oakland City Col., Oakland City, Ind.	1885	W. P. Dearing	144	220	15	314,850	11,613
Oberlin College, Oberlin, Ohio	1833	Ernest H. Wilkins	1,586	1,670	178	19,479,093	426,737
*Occidental College, Los Angeles, Calif.	1887	Remsen D. Bird	797	818	76	1,232,904	63,113
*Oglethorpe University, Atlanta, Ga.	1913	Thornwell Jacobs	300	—	35	—	60,000
**Ohio Northern Univ., Ada, Ohio	1871	Robert Williams	701	722	41	403,521	22,900
**Ohio State University, Columbus, Ohio	1873	H. L. Bevis	—	17,568	800	—	601,358
Ohio University, Athens, Ohio	1804	Herman G. James	2,748	4,190	268	85,814	138,789
Ohio Wesleyan Univ., Delaware, Ohio	1842	H. J. Burgstahler	1,390	1,597	91	3,816,097	164,260
**Okla. Agri. & Mech. Col., Stillwater, Okla.	1891	Henry G. Bennett	6,500	13,865	347	—	138,000
Okla. Baptist Univ., Shawnee, Okla.	1910	John W. Raley	800	—	32	—	18,000
**Okla. Col. for Women, Chickasha, Okla.	1908	M. A. Nash	975	1,005	60	—	25,000
Oklahoma, University of, Norman, Okla.	1892	Joseph A. Brandt	7,240	7,697	350	—	238,600
Olivet College, Olivet, Mich.	1844	Joseph Brewer	205	258	25	$ 182,698	36,181
*Olivet Nazarene College, Kankakee, Ill.	1908	A. L. Parrott	428	548	31	—	6,000
Omaha, University of, Omaha, Neb.	1909	Rowland Haynes	650	—	46	—	70,000
Ontario Agri. Col., Guelph, Ont., Can.	1874	George I. Christie	284	—	127	—	43,000
Oregon Coll. of Ed., Monmouth, Ore.	1866	C. A. Howard	228	422	25	—	29,277
Oregon State College, Corvallis, Ore.	1868	A. L. Strand	4,652	4,693	468	260,799	191,066
Oregon, University of, Eugene, Ore.	1872	Donald M. Erb	2,950	3,400	350	809,362	333,961
Ottawa, University of, Ottawa, Ont., Can.	1848	Philippe Cornellier	1,347	1,555	189	—	130,000
Ottawa University, Ottawa, Kan.	1865	Andrew B. Martin	260	311	26	452,672	18,500
Otterbein College, Westerville, Ohio	1847	J. Ruskin Howe	396	496	47	1,204,056	32,510
Ouachita College, Arkadelphia, Ark.	1886	James Richard Grant	540	750	40	575,000	25,000
Our Lady of Elms, Col. of, Chicopee, Mass.	1928	Thomas M. O'Leary	166	295	-	—	18,225
Our Lady of the Lake Col., San Ant., Tex.	1896	John L. McMahon	500	977	64	254,080	45,717
Ozarks, The Col. of the, Clarksville, Ark.	1891	Wiley Lin Hurie	199	278	23	398,928	21,560
P							
Pacific College, Newberg, Ore.	1891	Emmett W. Gulley	84	88	16	279,000	11,000
Pacific, College of the, Stockton, Calif.	1851	Tully C. Knoles	297	349	64	570,000	40,000
Pacific Union College, Angwin, Calif.	1909	Walter I. Smith	430	671	45	—	27,000
Pacific University, Forest Grove, Ore.	1849	Walter C. Giersbach	236	291	20	300,000	40,000
Paine College, Augusta, Ga.	1882	Edmund C. Peters	322	—	21	35,000	18,000
Paris Junior College, Paris, Texas	1924	J. R. McLemore	355	449	20	—	6,920
*Park College, Parkville, Mo.	1875	William L. Young	520	526	40	1,315,342	35,000
Parsons College, Fairfield, Iowa	1875	Herbert C. Mayer	216	404	24	419,233	23,137
Pasadena College, Pasadena, Calif.	1902	H. Orton Wiley	300	350	23	—	14,000
Pasadena Jr. College, Pasadena, Calif.	1924	John Wesley Harbeson	5,849	8,544	274	—	40,000
Pembroke State College for Indians, Pembroke, N.C	1887	R. D. Wellons	77	87	14	—	4,500
Pa. Col. for Women, Pittsburgh, Pa.	1869	Herbert L. Spencer	305	324	39	563,000	25,704
Pa. Military College, Chester, Pa.	1821	Frank K. Hyatt	273	—	25	—	7,000
Pa. State College, The, State College, Pa.	1855	Ralph D. Hetzel	5,500	—	085	517,000	225,000
Pa. State Teachers College, California, Pa.	1852	Robert M. Steele	344	512	50	—	24,000
Pa. State Tch. Col., Clarion, Pa.	1867	Paul G. Chandler	220	287	25	—	20,000
Pa. State Tch. Col., E. Stroudsburg, Pa.	1893	Joseph F. Noonan	353	486	37	—	22,654
Pa. State Teachers Col., Edinboro, Pa.	1861	L. H. Van Houten	182	455	23	—	20,000
Pa. State Tch. Col., Indiana, Pa.	1871	Joseph M. Uhler	1,151	2,398	114	—	26,817
*Pa. State Tch. Col., Lock Haven, Pa.	1870	John G. Flowers	400	459	33	—	24,500
Pa. State Tch. Col., Shippensburg, Pa.	1871	Albert L. Rowland	289	661	36	—	23,971
*Pa. State Tch. Col., Slippery Rock, Pa.	1889	Dale McMaster	441	789	54	—	28,233
Pennsylvania, Univ. of., Philadelphia, Pa.	1740	Thomas S. Gates	6,275	10,823	1587	23,079,088	979,919
Pestalozzi Froebel Tch. Col., Chicago, Ill.	1896	Herman H. Hegner	132	250	21	—	5,317
Philander Smith Col., Little Rock, Ark.	1868	M. LaF. Harris	442	686	33	149,500	16,007
Phillips University, Enid, Okla.	1907	Eugene S. Briggs	512	525	38	683,922	35,000
Phoenix Junior College, Phoenix, Arizona	1920	Harry B. Wyman	318	393	28	—	14,529
Piedmont College, Demorest, Ga.	1897	M. B. Dana	170	362	20	225,000	17,758
Pittsburgh, Univ. of, Pittsburgh, Pa.	1787	John G. Bowman	6,334	12,713	1327	3,074,964	328,659
Placer Jr. College, Auburn, Calif.	1936	Harold E. Chastain	150	—	30	—	3,000
Plymouth Teachers College, Plymouth, N.H.	1870	Ernest L. Silver	150	150	30	—	15,000
Pomona College, Claremont, Calif.	1887	Elijah Wilson Lyon	809	917	75	3,843,826	100,000
Pomona Jr. College, Pomona, Calif.	1892	Johnston E. Walker	771	—	43	—	11,000
Portland, Univ. of, Portland, Ore.	1901	Chas. C. Miltner	807	867	75	—	20,000
Prairie View State Col., Prairie View, Tex.	1876	W. R. Banks	1,436	2,460	91	—	19,450
Pratt Institute, Brooklyn, N. Y.	1887	Charles Pratt	1,599	3,676	239	9,000,000	145,000
Presbyterian College, Clinton, S. C.	1880	William P. Jacobs	349	352	24	165,000	23,837
*Prince of Wales College, Charlottetown, Prince Edward Island, Canada	1860	George-Douglas Steel	490	—	22	—	6,000
Princeton University, Princeton, N. J.	1746	Harold W. Dodds	2,239	2,239	391	35,586,233	990,657
Principia Col. of Lib. Arts, Elsah, Ill.	1898	Frederic E. Morgan	334	342	26	692,483	27,705
*Providence College, Providence, R. I.	1919	John J. Dillon	856	1,015	65	75,000	32,047
Prov. Inst. Tech. & Art, Calg., Alta., Can.	1916	J. Fowler	?	654	50	—	2,656
*Puerto Rico, Univ. of, Rio Piedras, P. R.	1903	R. Menendez Ramos	3,653	5,441	300	1,029,654	67,295
Puget Sound, College of, Tacoma, Wash.	1888	Robert F. Thompson	395	576	39	1,200,000	42,300
Purdue University, Lafayette, Ind.	1869	Edward C. Elliott	6,296	7,447	1046	—	168,171
Q							
Queens College, Charlotte, N. C.	1857	Hunter B. Blakely	360	433	39	325,000	19,000
Queen's University, Kingston, Ont., Can.	1841	Robert C. Wallace	1,640	1,917	185	3,549,654	202,295
R							
Radcliffe College, Cambridge, Mass.	1879	Ada L. Comstock	873	982	400	5,470,962	91,000
*Radford State Tch. Col., Radford, Va.	1910	David W. Peters	515	1,390	58	—	25,749
*Randolph-Macon College, Ashland, Va.	1830	J. Earl Moreland	242	—	17	964,702	24,863
Rdlph.-Macon Wom. Col., Lynchburg, Va.	1893	Theodore H. Jack	632	638	71	1,246,130	57,868
Redlands, University of, Redlands, Calif.	1909	Elam J. Anderson	629	660	63	3,455,612	66,400
Reed College, Portland, Ore.	1904	Arthur F. Scott	419	471	35	1,700,000	70,628
Regina College, Regina, Sask., Can.	1911	Stewart Basterfield	85	415	24	—	8,500
Regis College, Denver, Colo.	1889	John J. Flanagan	225	—	26	40,000	47,000
*Regis College, Weston, Mass.	1927	Sister Honora	508	830	50	—	20,000
Rensselaer Poly. Inst., Troy, N. Y.	1824	Wm. O. Hotchkiss	1,470	1,470	155	9,824,700	35,000

Institution and Location	Year Founded	Chief Executive	Full Time Students	Full and Part Time Students	Faculty	Endowment	Library Volumes
*R. I. Col. of Edu., Providence, R. I.	1920	Lucius A. Whipple	439	842	61	$ —	56,529
Rhode Island State Col., Kingston, R. I.	1892	Carl R. Woodward	935	993	140	—	67,810
Rice Institute, The, Houston, Texas	1912	Edgar O. Lovett	1,323	1,323	93	15,500,000	163,100
Richmond, University of, Richmond, Va.	1832	F. W. Boatwright	902	2,102	85	3,077,671	105,000
Rio Grande College, Rio Grande, Ohio	1876	R. Lloyd Pobst	82	162	10	70,000	7,000
Ripon College, Ripon, Wis.	1851	Silas Evans	466	471	30	970,032	39,966
River Falls St. Tch. Col., River Falls, Wis.	1874	J. H. Ames	410	672	43	—	23,085
Riverside Jr. Col., Riverside, Calif	1916	A. G. Paul	334	350	23	—	16,458
Roanoke College, Salem, Va.	1842	Charles J. Smith	350	380	30	672,234	25,000
Rochester, University of, Rochester, N. Y.	1850	Alan Valentine	2,117	2,117	590	52,712,941	392,820
Rockford College, Rockford, Ill.	1847	Mary Ashby Cheek	270	380	34	995,000	30,000
Rockhurst College, Kansas City, Mo.	1910	William Hugh McCabe	282	463	30	—	14,200
Rosary College, River Forest, Ill.	1922	Sister Mary Evelyn	544	1,126	54	100,855	46,615
Rosemont College, Rosemont, Pa.	1922	Mother M. Cleophas	247	—	44	—	29,600
*Rose Polytechnic Inst., Terre Haute, Ind.	1874	Donald B. Prentice	325	—	30	1,900,000	24,000
Royal Mil. Col. of Can., Kingston, Ont., Can.	1876	H. F. H. Hertzberg	?	250	—	—	14,000
Russell Sage College, Troy, N. Y.	1916	Helen M. McKinstry	620	650	67	1,027,118	36,698
Rutgers University, New Brunswick, N. J.	1766	Robt. C. Clothier	2,910	4,209	421	5,023,333	336,502
S							
Sacramento Jr. Col., Sacramento, Calif	1916	Nicholas Ricciardi	1,441	3,014	105	—	24,000
Sacré-Coeur, Collège du, Sudbury, Ont., Can.	1913	Guy Courteau	275	275	30	—	9,800
Sacré-Coeur, L'Université du, Bathurst, N.B., Can.	1899	Simon Larouche	360	410	27	—	10,000
St. Ambrose College, Davenport, Iowa	1882	Ambrose J. Burke	700	1,350	50	740,000	25,000
Ste-Anne-de-la-Pocatière, Collège of, Sainte-Anne-de-la-Pocatière, Que., Can.	1827	W. Lebon	800	1,000	90	—	75,000
St. Anne's College, Church Point, N.S., Can.	1890	—	175	250	20	—	10,000
*St. Anselm's College, Manchester, N. H.	1893	Bertrand C. Dolan	275	—	31	—	13,000
*St. Benedict, College of, St. Joseph, Minn.	1913	Mother R. Pratschner	229	413	37	—	30,000
*St. Benedict's College, Atchison, Kan.	1858	Martin Veth	315	—	35	—	92,000
St. Bonaventure Col., St. Bonvtre., N. Y.	1859	Thomas Plassmann	733	1,059	69	—	52,000
St. Catherine, College of, St. Paul, Minn.	1911	Mother Eucharista	582	870	61	598,443	62,578
St. Charles' Seminary, Sherbrooke, Que., Can.	1874	Arthur Sideleau	550	—	56	—	30,000
*St. Cloud St. Tch. Col., St. Cloud, Minn.	1869	George A. Selke	1,200	1,400	70	—	45,000
St. Dunstan's Univ., Charlottetown, P. E. I., Can	1855	J. A. Murphy	155	157	15	35,000	9,000
St. Edward's University, Austin, Texas	1871	S. F. Lisewski	150	180	33	—	23,867
*St. Elizabeth, Col. of, Convent Sta., N. J.	1899	Sister Marie J. Byrne	449	—	45	—	33,000
St. Francis College, Brooklyn, N. Y.	1884	Thomas E. Molloy	192	192	24	—	11,500
St. Francis, College of, Joliet, Ill.	1874	Sister M. Aniceta	278	278	38	15,000	22,437
*St. Francis College, Loretto, Pa.	1847	John P. J. Sullivan	214	—	28	1,100,000	17,000
St. Francis Xavier University, Antigonish, N. S., Can.	1853	D. J. Macdonald	371	403	30	1,240,121	35,000
St. Hyacinthe, Séminaire de, St. Hyacinthe, P.Q., Can.	1811	J. Arthur Vézina	486	—	39	—	45,000
St. John's College, Annapolis, Md.	1696	Stringfellow Barr	170	170	30	122,239	30,000
*St. John's Lutheran Col., Winfield, Kan.	1893	Carl S. Mundinger	160	170	16	20,000	12,000
**St. John's University, Brooklyn, N. Y.	1870	Edward J. Walsh	7,558	8,731	356	—	60,000
*St. John's University, Collegeville, Minn.	1857	Alcuin Deutsch	640	—	58	—	70,000
Saint Joseph College, West Hartford, Conn.	1932	Sister M. Rosa	265	503	35	—	14,700
*St. Joseph's College, Emmitsburg, Md.	1809	Sister Paula Dunn	205	—	34	—	13,902
St. Joseph's College, Philadelphia, Pa.	1851	Thomas J. Love	433	433	39	—	18,500
*St. Joseph's Col. for Women, Brooklyn, N.Y.	1916	Thomas E. Molloy	386	—	44	—	18,000
St. Joseph, Séminaire, Mont-Laurier, P.Q., Can.	1915	Robert Jutras	162	—	30	—	8,700
St. Joseph, Séminaire, Trois Rivières, Que., Can.	1860	Joseph Desilets	560	560	50	—	23,000
St. Joseph's Univ., St. Joseph, N.B., Can.	1864	J. Hervé Morin	405	585	46	—	20,000
*St. Lawrence University, Canton, N. Y.	1856	Millard H. Jencks	687	893	64	5,300,091	76,000
*St. Louis University, St. Louis, Mo.	1818	H. B. Crimmins	3,624	7,301	640	1,800,000	374,363
*Ste. Marie, Collège, Mon., Que., Can.	1848	Emile Cambron	459	—	40	—	100,000
St. Mary College, Leavenworth, Kan.	1923	Arthur M. Murphy	266	696	42	—	25,267
St. Mary of the Lake Sem., Mundelein, Ill.	1921	Reynold Hillenbrand	279	—	37	—	75,000
*St. Mary-of-the-Woods Col., Indiana	1840	Mother Mary Bernard	224	958	41	606,700	55,000
*St. Mary's Col., Notre Dame, Holy Cross, Ind.	1844	Sister Mary Madeleva	381	702	54	100,000	27,905
*St. Mary's College, St. Mary's Col., Calif.	1863	Brother Albert	503	—	55	—	70,000
*St. Mary's College, St. Mary's, Kan.	1848	Daniel H. Conway	188	—	20	—	31,958
*St. Mary's College, Winona, Minn.	1912	Brother Leopold	333	336	32	—	20,000
St. Mary's Sem. & Univ., Baltimore, Md.	1791	John F. Fenlon	482	—	29	—	60,000
St. Mary's University, San Antonio, Tex.	1852	Walter F. Golatka	250	740	39	—	21,000
St. Michael's College, Winooski Park, Vt.	1904	J. E. Petty	171	230	22	—	20,000
St. Olaf College, Northfield, Minn.	1874	L. W. Boe	1,036	1,046	81	975,310	52,768
St. Paul's Poly. Inst., Lawrenceville., Va.	1888	J. Alvin Russell	968	—	63	200,000	9,000
*St. Peter's College, Jersey City, N. J.	1878	Dennis J. Comey	380	—	38	—	18,000
St. Rose, College of, Albany, N. Y.	1920	Edmund Gibbons	309	312	42	—	10,088
*St. Teresa, College of, Winona, Minn.	1910	Sister M. A. Molloy	380	708	52	—	30,194
*Ste. Thérèse, Séminaire de, Ste. Thérèse de Blainville, Que., Can.	1825	Philippe Chartrand	310	—	31	$ —	30,000
St. Thomas, College of, St. Paul, Minn.	1885	James H. Moynihan	715	726	49	1,322,500	34,372
*St. Vincent College, Latrobe, Pa.	1846	Alfred Koch	432	458	52	2,479,041	64,000
Salem College, Salem, W. Va.	1888	S. Orestes Bond	141	312	20	129,961	14,920
Salem College, Winston-Salem, N. C.	1772	H. E. Rondthaler	322	322	43	450,578	23,897
*San Antonio, Univ. of, San Antonio, Texas	1894	W. W. Jackson	230	270	20	—	9,100
San Bernardino Valley Union Junior College, San Bernardino, California	1926	John L. Lounsbury	323	350	29	—	19,000
*San Francisco Col. for Wom., SanFran., Cal.	1930	Mother Leonor Mejia	300	450	35	—	100,000
*San Francisco, Univ. of, San Fran., Calif.	1855	William J. Dunne	900	1,285	77	—	55,000
*San Jose State College, San Jose, Calif.	1857	T. W. MacQuarrie	3,554	4,752	215	—	75,000
San Mateo Jr. Col., San Mateo, Calif.	1922	C. S. Morris	700	3,000	49	—	10,000
Santa Ana Jr. Col., Santa Ana, Calif.	1915	John H. McCoy	600	1,420	35	—	15,681
Santa Barbara St. Col., Santa Barbara, Cal.	1909	Clarence L. Phelps	1,050	1,136	90	—	30,000
Santa Clara, Univ. of, Santa Clara, Calif.	1851	Charles J. Walsh	531	120	67	—	60,000
Santa Monica Jr. Col., Santa Monica, Calif.	1929	Elmer C. Sandmeyer	650	1,789	41	—	10,000
Sarah Lawrence College, Bronxville, N. Y.	1926	Constance Warren	291	292	56	476,091	38,800
Saskatchewan Univ., Saskatoon, Sask., Can	1907	James S. Thomson	1,540	5,414	135	182,877	76,874
Scripps College, Claremont, Calif.	1926	Mary K. Shirk	185	185	25	851,173	24,632
Seattle Pacific College, Seattle, Wash.	1891	Chas. Hoyt Watson	240	320	32	21,851	15,300
Seton Hall College, South Orange, N. J.	1856	James F. Kelley	563	2,354	91	—	23,500
Seton Hill College, Greensburg, Pa.	1918	James A. Reeves	479	1,203	64	500,000	27,261
Shaw University, Raleigh, N. C.	1865	Robert P. Daniel	381	843	45	327,848	17,137
*Shenandoah College, Dayton, Va.	1875	Wade S. Miller	150	192	20	45,945	5,391
Shorter College, Rome, Ga.	1873	Paul M. Cousins	193	292	24	460,000	17,500
*Shurtleff College, Alton, Ill.	1827	Guy Wimmer	250	392	26	168,449	22,589
Simmons College, Boston, Mass.	1899	Bancroft Beatley	1,278	1,661	144	3,184,853	92,025
*Simpson College, Indianola, Iowa	1860		770	771	30	1,250,000	33,000
Sioux Falls College, Sioux Falls, S. D.	1883	Barrett Lowe	110	183	18	168,000	15,000
*Sisters College of Cleveland, Cleveland, O.	1928	Jos. Schrembs	173	603	27	—	20,265
*Skidmore College, Saratoga Springs, N. Y.	1911	Henry T. Moore	800	—	78	876,688	47,338
Smith College, Northampton, Mass.	1871	Herbert Davis	1,962	2,089	262	6,636,000	285,132
*Snow College, Ephraim, Utah	1888	James A. Nuttall	165	167	23	—	8,000
*South Dakota State Col., Brookings, S. D.	1881	Lyman E. Jackson	1,307	1,541	141	556,272	71,300
So. Dak. St. Sch. of Mines, Rapid City, S.D.	1885	Joseph P. Connolly	423	720	30	200,000	20,000
South Dakota, Univ. of, Vermillion, S. D.	1882	I. D. Weeks	718	1,514	104	—	108,775
Southeastern State College, Durant, Okla.	1909	T. T. Montgomery	750	800	52	—	32,173
S. E. Mo. St. Tch. Col., Cape Girardeau, Mo.	1873	Walter W. Parker	796	—	60	—	78,000
*Southeastern Univ., Washington, D. C.	1917	James A. Bell	—	875	70	—	16,500
*So. Calif., Univ. of, Los Angeles, Calif.	1879	R. B. von KleinSmid	4,876	14,542	710	1,600,000	292,213
*So. Ill. Normal Univ., Carbondale, Ill.	1869	Roscoe Pulliam	1,700	2,658	153	—	41,625
Southern Methodist Univ., Dallas, Texas	1911	Umphrey Lee	1,850	2,479	160	2,443,500	156,545
Southern Oregon College of Education, Ashland, Ore.	1926	Walter Redford	147	147	26		11,782
*Southern St. Norm. Sch., Springfield, S. D.	1897	Wm. A. Thompson	200	203	25	—	10,000
*So. Uni. & Agri. & Mech. Col., Scotlndvl., La.	1914	F. G. Clark	968	1,426	121	—	20,774
*South, University of the, Sewanee, Tenn.	1858	Alexander Guerry	355	—	31	1,750,000	53,003
S. W. Baptist Col., (Jr.), Bolivar, Mo.	1878	Courts Redford	561	671	17	8,500	7,076
*S. W. Tex. St. Tch. Col., San Marcos, Tex.	1903	C. E. Evans	1,641	—	63	—	47,000
*Southwestern College, Memphis, Tenn.	1848	Charles E. Diehl	404	509	31	480,237	49,721
*Southwestern College, Winfield, Kan.	1885	Frank E. Mossman	514	616	37	594,478	24,500
*S. W. In. of Tech., Weatherford, Okla.	1901	James B. Boren	1,014	—	72	—	28,000
Southwestern La. Inst., Lafayette, La.	1900	Joel L. Fletcher	1,678	2,338	147	—	41,678
Southwestern Univ., Georgetown, Texas	1840	J. N. R. Score	592	609	45	651,000	58,150
Spelman College, Atlanta, Ga.	1881	Florence M. Read	411	—	35	3,175,363	67,307
Springfield College, Springfield, Mass	1885	Ernest M. Best	399	571	32	1,118,000	28,426
*Spring Hill College, Spring Hill, Ala.	1830	Wm. D. O'Leary	315	600	44	200,000	35,000
Stanford Univ., Stanford University, Calif.	1885	Ray L. Wilbur	3,584	—	932	29,328,107	840,000
*Stanstead Col., Stanstead, Que., Can.	1872	Errol C. Amaron	280	—	25	100,000	3,000
*State Normal School, Farmington, Me.	1864	Lorey C. Day	260	547	33	—	10,000
Stephens College, Columbia, Mo.	1833	James M. Wood	1,700	1,700	190	150,000	45,000
Sterling College, Sterling, Kan.	1887	Hugh A. Kelsey	201	254	25	462,000	18,553
*Stevens Inst. of Tech., Hoboken, N. J.	1870	Harvey N. Davis	626	1,115	82	—	32,000
Stockton Jr. Col., Stockton, Calif	1935	A. T. Bawden	815	1,179	67	—	—
Stout Institute, The, Menomonie, Wis.	1893	Burton E. Nelson	605	812	47	—	16,860
*Sue Bennett College, London, Ky.	1896	Kenneth C. East	126	—	12	—	9,500
Sullins College, Bristol, Va.	1870	Wm. E. Martin	336	365	35	200,000	9,111
*Sul Ross State Tch. Col., Alpine, Tex.	1920	Horace W. Morelock	521	927	30	—	25,000
**Susquehanna University, Selinsgrove, Pa.	1858	G. Morris Smith	337	—	35	410,000	18,000
*Swarthmore College, Swarthmore, Pa.	1864	John Nason	718	723	99	7,895,958	128,290
Sweet Briar College, Sweet Briar, Va.	1901	Meta Glass	452	452	54	653,244	57,255
Syracuse University, Syracuse, N. Y.	1870	William P. Tolley	5,465	2,241	678	4,645,930	287,020
T							
Talladega College, Talladega, Ala.	1867	Buell G. Gallagher	253	253	28	1,145,108	24,610
Tarkio College, Tarkio, Mo.	1883	M. Earle Collins	157	202	25	658,712	17,220
*Tch. Col., Athenaeum of O., Cincinnati, O.	1928	Carl J. Ryan	61	612	30	—	23,031
Temple University, Philadelphia, Pa.	1884	Robert L. Johnson	1,016	9,018	789	112,044	224,364

Institution and Location	Year Founded	Chief Executive	Full Time Students	Full and Part Time Students	Faculty	Endowment	Library Volumes
Tenn. Agri. & Indus. St. Tch. Col., Nashvle.	1912	Wm. J. Hale	1,242	1,766	59	$ —	34,488
Tennessee Poly. Inst., Cookeville, Tenn.	1916	Everett Derryberry	586	811	41	—	25,000
Tennessee State Tch. Col., Memphis, Tenn.	1012	Richard C. Jones	654	692	54	—	37,561
*Tenn. State Tch. Col., Murfreesboro, Tenn.	1909	Q. M. Smith	950	1,150	55	—	25,000
Tennessee, Univ. of, Knoxville, Tenn.	1794	James D. Hoskins	3,091	4,374	250	500,000	130,237
Tex., Agri. & Mech. Col. of, Col. Station	1871	Thomas O. Walton	7,601	7,698	352	215,389	100,000
Texas Christian Univ., Fort Worth, Tex.	1873	M. E. Sadler	1,500	2,000	105	4,000,000	65,000
*Texas College, Tyler, Texas	1894	D. R. Glass	475	811	45	—	9,500
Tex. Col. of Arts and Indus., Kingsville, Tex.	1923	E. N. Jones	656	1,390	66	—	28,000
*Tex. Col. of Mines and Metal., El Paso, Tex.	1914	Dossie M. Wiggins	1,438	—	60	586,937	26,500
Texas St. Col. for Women, Denton, Tex.	1901	Louis H. Hubbard	2,112	3,233	159	—	84,000
Texas Technological Col., Lubbock, Tex.	1925	Clifford B. Jones	2,860	3,658	189	—	81,362
*Texas, University of, Austin, Tex.	1881	Homer Price Rainey	11,146	16,556	594	44,203,548	675,000
Texas Wesleyan College, Fort Worth, Tex.	1802	Law Sone	546	931	42	147,500	18,000
Tillotson College, Austin, Texas	1877	Mary E. Branch	465	680	21	833,250	19,071
Toledo, University of, Toledo, Ohio	1872	Philip C. Nash	1,811	3,315	136	298,000	115,306
Toronto, University of, Toronto, Ont., Can.	1827	Henry J. Cody	6,413	6,784	1049	15,000,000	404,081
Tougaloo College, Tougaloo, Miss.	1869	Judson L. Cross	135	224	15	45,412	12,602
Transylvania College, Lexington, Ky.	1780	Raymond F. McLain	205	241	21	686,000	42,159
Trinity College, Hartford, Conn.	1823	Remsen B. Ogilby	453	461	58	3,605,631	135,000
Trinity College, Sioux City, Ia.	1912	Edwin Leimkuhler	38	274	10	—	30,000
Trinity College School, Port Hope, Ont., Can.	1865	P. A. C. Ketchum	245	—	22	—	3,000
Trinity Univ., San Antonio, Texas	1869	Monroe G. Everett	288	377	36	450,000	30,171
*Trinity University, Waxahachie, Tex.	1869	F. L. Wear	316	—	30	713,677	21,588
*Tri-State College, Angola, Ind.	1884	Burton Handy	950	—	35	—	7,000
Tufts College, Medford, Mass.	1852	Leonard Carmichael	2,305	2,904	442	7,216,566	200,000
Tulane University, New Orleans, La.	1834	Rufus C. Harris	3,028	4,822	410	10,175,590	300,000
Tulsa, University of, Tulsa, Okla.	1894	C. I. Pontius	654	1,181	86	1,237,379	58,982
*Tuskegee Inst., Tuskegee Institute, Ala.	1881	F. D. Patterson	1,398	2,325	257	7,063,711	50,994
U							
*Union College, Barbourville, Ky.	1879	Conway Boatman	279	500	21	396,550	15,138
*Union College, Lincoln, Neb.	1891	A. H. Rulkoetter	394	445	35	—	31,000
*Union College, Schenectady, N. Y.	1795	Dixon Ryan Fox	772	—	75	4,500,000	120,000
Union Jr. Col., Cranford, New Jersey	1933	Charles Grenville Cole	300	380	22	—	6,000
Union University, Jackson, Tenn.	1834	John J. Hurt	387	—	31	—	16,000
U.S. Coast Guard Acad., New London, Conn.	1876	James Pine	338	1,350	46	—	18,434
U. S. Military Academy, West Point, N. Y.	1802	Francis B. Wilby	2,484	2,484	269	—	115,000
U. S. Naval Academy, Annapolis, Md.	1845	John R. Beardall	3,023	3,324	392	—	84,000
*Upper Iowa University, Fayette, Iowa	1857	V. T. Smith	280	446	18	513,500	15,284
*Upsala College, East Orange, N. J.	1893	E. B. Lawson	444	597	32	200,000	22,000
Ursinus College, Collegeville, Pa.	1869	Norman E. McClure	535	535	40	700,000	30,000
Ursuline College, Louisville, Ky.	1938	Mother M. Roberta	110	494	34	—	15,000
Ursuline Col. for Women, Cleveland, Ohio	1871	Mother Marie Sands	180	—	31	—	—
Utah State Agri. Col., Logan, Utah	1888	Elmer G. Peterson	1,635	1,772	151	—	79,461
Utah, University of, Salt Lake City, Utah	1850	LeRoy E. Cowles	3,338	3,538	240	—	161,000
V							
Valleyfield, Séminaire de, Valleyfield, Que., Can.	1893	Lionel Deguire	330	330	?	—	10,000
*Valparaiso University, Valparaiso, Ind.	1859	O. P. Kretzmann	479	528	47	551,276	30,868
Vanderbilt University, Nashville, Tenn.	1872	Oliver C. Carmichael	1,737	2,686	492	26,907,548	409,626
Vassar College, Poughkeepsie, N. Y.	1861	Henry N. MacCracken	1,264	1,279	188	10,713,294	234,800
Ventura Evening Jr. Col., Ventura, Calif.	1939	E. D. Vaniman	—	1,004	21	—	—
*Vermont State Norm. Sch., Castleton, Vt.	1867	Ermo Houston Scott	126	129	12	—	7,000
Vermont St. Norm. Sch., Johnson, Vt.	1867	D. W. McClelland	55	—	11	—	6,892
Vermont St. Norm. Sch., Lyndon Center, Vt.	1912	Rita L. Bole	73	—	10	—	7,500
*Vermont, University of, Burlington, Vt.	1791	John S. Millis	1,322	2,319	266	?	150,000
Villanova College, Villanova, Pa.	1842	E. V. Stanford	992	2,832	132	239,664	67,000
*Vincennes University, Vincennes, Ind.	1806	W. A. Davis	124	151	12	150,000	25,000
Virginia Intermont College, Bristol, Va.	1884	Hugh G. Noffsinger	410	470	35	284,361	9,577
Virginia Military Inst., Lexington, Va.	1839	C. E. Kilbourne	756	756	57	283,948	62,980
Va. Polytechnic Inst., Blacksburg, Va.	1872	Julian A. Burruss	3,442	3,478	320	349,312	97,623
*Va. St. Col. for Negroes, Petersburg, Va.	1882	John M. Gandy	1,012	1,648	104	173,000	30,745
Virginia State Tch. Col., Farmville, Va.	1884	Joseph L. Jarman	803	—	56	—	37,200
*Va. Theol. Sem. & Col., Lynchburg, Va.	1888	Wm. H. R. Powell	70	—	20	—	4,000
*Virginia Union University, Richmond, Va.	1899	John Malcus Ellison	545	961	39	877,000	30,000
Virginia, Univ. of, Charlottesville, Va.	1819	John L. Newcomb	1,993	3,683	264	11,697,065	382,050
Visalia Jr. Col., Visalia, Calif.	1926	L. J. Williams	464	621	34	—	5,700
Viterbo College, La Crosse, Wis.	1931	Mother M. Engelberta	43	522	13	—	15,000
W							
*Wabash College, Crawfordsville, Ind.	1832	Frank Hugh Sparks	371	—	32	2,145,531	87,076
Wagner Mem. Luth. Col. Staten Island, N.Y.	1883	C. C. Stoughton	280	458	25	339,200	33,000
Wake Forest College, Wake Forest, N. C.	1834	Thurman D. Kitchin	830	1,131	60	3,000,000	75,000
Walla Walla College, College Place, Wash.	1892	George W. Bowers	—	763	47	—	18,983
Wartburg College, Waverly, Iowa	1868	E. J. Braulick	258	366	24	42,000	20,989
*Washburn Municipal University of Topeka, Topeka, Kan.	1865	Arthur G. Sellen	671	833	64	1,100,000	51,000
*Washington & Jefferson Col., Wash., Pa.	1780	Ralph C. Hutchison	541	617	51	1,580,785	59,549
Washington and Lee Univ., Lexington, Va.	1749	Francis P. Gaines	667	966	67	3,139,103	125,892
*Washington College, Chestertown, Md.	1782	Gilbert W. Mead	335	—	30	$ 45,000	24,000
Washington Miss. Col., Takoma Pk., Md.	1904	Benj. G. Wilkinson	149	558	36	—	30,000
Washington, State Col. of, Pullman, Wash.	1891	Ernest O. Holland	3,357	3,947	245	5,115,957	500,000
Washington St. Norm. Sch., Machias, Me.	1909	Earle D. Merrill	70	—	15		2,500
Washington University, St. Louis, Mo.	1853	George R. Throop	3,432	6,384	633	17,889,589	481,137
Washington, University of, Seattle, Wash.	1861	Lee Paul Sieg	7,293	10,235	606	—	416,550
Wayland College, Plainview, Texas	1909	George W. McDonald	140	150	11	15,000	6,000
Wayne University, Detroit, Mich.	1868	Warren E. Bow	3,620	15,034	843	—	198,000
Weatherford College, Weatherford, Texas	1873	Clarence A. Sutton	101	161	14	46,363	6,455
Weber College, Ogden, Utah	1889	H. A. Dixon	750	885	46	—	17,650
Webster College, Webster Groves, Mo.	1915	George F. Donovan	158	467	43	14,645	22,700
Wellesley College, Wellesley, Mass.	1870	Mildred H. McAfee	1,511	—	195	9,150,016	212,380
Wells College, Aurora, N. Y.	1868	William E. Weld	253	253	47	1,430,820	94,900
Wesleyan College, Macon, Ga.	1836	N. C. McPherson, Jr.	459	—	47	500,000	30,000
Wesleyan University, Middletown, Conn.	1831	Victor L. Butterfield	657	994	79	13,444,634	282,294
West Chester St. Tch. Col., West Chester, Pa.	1871	Chas. S. Swope	1,157	1,657	83	—	35,000
Western Carolina Tch. Col., Cullowhee, N.C.	1889	Hiram T. Hunter	340	340	20	—	17,000
Western College for Women, Oxford, Ohio	1853	Mary D. Thomson	210	210	46	766,045	42,142
Western Ill. St. Tch. Col., Macomb, Ill.	1899	F. A. Beu	720	1,140	91	—	52,000
West. Ky. St. Tch. Col., Bowling Green, Ky.	1906	Paul L. Garrett	947	1,376	121	—	62,912
**Western Maryland Col., Westminster, Md.	1867	Fred G. Holloway	587	814	57	902,654	37,000
West. Mich. Col. of Ed., Kalamazoo, Mich.	1904	Paul V. Sangren	2,015	2,860	225	—	57,514
West. Ontario, Univ. of, London, Ont., Can.	1878	W. Sherwood Fox	1,354	1,681	220	730,000	160,000
Western Reserve Univ., Cleveland, Ohio	1826	Winfred G. Leutner	2,932	8,712	740	14,898,308	555,000
West. St. Col. of Colo., Gunnison, Colo.	1911	Chas. C. Casey	501	570	26	—	28,849
*Western Union College, LeMars, Iowa	1900	David O. Kime	298	516	23	196,034	13,225
*Westfield St. Tch. Col., Westfield, Mass.	1839	Edward J. Scanlon	126	—	24	—	15,000
West Liberty St. Tch. Col., W. Liberty, W. Va.	1838	Paul N. Elbin	195	331	24	—	19,000
*Westminster College, Fulton, Mo.	1853	Franc L. McCluer	299	—	21	600,000	27,500
*Westminster Col., New Wilmington, Pa.	1852	R. F. Galbreath	647	665	55	640,000	24,000
Westminster Col., Salt Lake City, Utah	1875	Robert D. Steele	98	—	24	140,000	14,500
West Texas St. Tch. Col., Canyon, Tex.	1910	J. A. Hill	836	1,453	83	—	49,974
West Virginia State Col., Institute, W. Va.	1891	John W. Davis	835	1,105	53	—	25,909
West Virginia Univ., Morgantown, W. Va.	1867	Charles E. Lawall	2,517	3,031	211	105,300	172,500
**West. Wash. Col. of Edu., Bellingham, Wash.	1899	W. W. Haggard	830	884	68	—	60,824
Wheaton College, Norton, Mass.	1834	J. Edgar Park	465	465	70	1,202,015	52,200
Wheaton College, Wheaton, Ill.	1860	V. R. Edman	1,175	1,653	68	607,403	70,000
Whitman College, Walla Walla, Wash.	1859	Winslow S. Anderson	559	570	47	1,179,200	73,814
Whittier College, Whittier, Calif.	1888	W. O. Mendenhall	438	754	50	629,325	40,347
*Whitworth College, Spokane, Wash.	1890	Frank F. Warren	260	—	27	—	14,000
Wichita, Municipal Univ. of, Wichita, Kan.	1896	William M. Jardine	1,196	1,867	65	95,759	66,000
Wiley College, Marshall, Texas	1873	E. C. McLeod	308	32	37	600,000	17,000
Willamette University, Salem, Ore.	1842	G. Herbert Smith	570	675	46	1,732,299	37,000
William and Mary, Col. of, Williamsburg, Va.	1693	John Edwin Pomfret	1,414	1,889	97	1,382,983	165,000
Wm. Jennings Bryan Univ., Dayton, Tenn.	1926	Judson A. Rudd	68	—	11	—	30,000
William Jewell Col., Liberty, Mo.	1849	H. I. Hester	392	451	28	1,225,000	52,139
William Penn Col., Oskaloosa, Iowa	1873	Errol T. Elliott	174	334	21	100,000	23,200
*Williams College, Williamstown, Mass.	1793	James P. Baxter	869	873	93	11,038,969	183,147
William Smith Col., Geneva, N. Y.	1908	John M. Potter	187	223	54	1,402,882	110,375
William Woods College, Fulton, Mo.	1890	Harlie L. Smith	290	307	31	750,000	30,000
Willimantic State Teachers College, Willimantic, Conn.	1889	George H. Shafer	154	180	40	—	25,000
Wilmington College, Wilmington, Ohio	1870	S. Arthur Watson	160	275	22	300,000	18,000
Wilson College, Chambersburg, Pa.	1869	Paul Swain Havens	350	—	57	820,625	50,000
Winona State Teachers Col., Winona, Minn.	1860	O. Myking Mehus	366	738	48	—	25,000
Winthrop College, Rock Hill, S. C.	1886	Shelton Phelps	1,548	1,564	111	—	54,312
*Wisconsin State Tch. Col., Eau Claire, Wis.	1916	W. R. Davies	580	592	47	—	26,111
Wisconsin St. Tch. Col., Milwaukee, Wis.	1880	Frank E. Baker	1,100	—	93	—	66,923
Wisconsin State Tch. Col., Oshkosh, Wis.	1871	Forrest R. Polk	485	471	48	—	30,000
Wisconsin State Tch. Col., Platteville, Wis.	1866	Milton Longhorn	361	—	40	—	28,000
*Wisconsin State Tch. Col., Superior, Wis.	1896	Jim Dan Hill	591	932	57	—	31,188
*Wisconsin St. Tch. Col., Whitewater, Wis.	1868	Claude M. Yoder	736	1,256	57	—	50,000
Wisconsin, University of, Madison, Wis.	1848	Clarence A. Dykstra	9,088	12,054	1738	1,876,461	1,100,000
Wittenberg College, Springfield, Ohio	1845	Rees E. Tulloss	606	782	54	2,073,949	70,388
*Wofford College, Spartanburg, S. C.	1851	Henry N. Snyder	461	694	29	796,382	37,894
Woodstock College, Woodstock, Md.	1869	David Nugent	247	—	34	—	100,000
Wooster, College of, Wooster, Ohio	1866	Charles F. Wishart	824	994	75	3,490,640	93,947
Worcester Poly. Inst., Worcester, Mass.	1865	Wat T. Cluverius	631	—	69	4,658,878	27,000
Wyoming, University of, Laramie, Wyo.	1887	J. L. Morrill	1,444	2,817	139	3,999,577	110,000
X							
*Xavier University, Cincinnati, Ohio	1831	Celestin J. Steiner	525	1,584	72	—	76,400
Y							
Yale University, New Haven, Conn.	1701	Charles Seymour	4,830	—	520	102,751,144	3,074,817
Yankton College, Yankton, S. D.	1881	J. L. McCorison, Jr.	308	401	30	689,497	40,000
*Yeshiva College, New York, N. Y.	1928	Bernard Revel	224	229	39	506,290	10,000
York College, York, Neb.	1890	D. E. Weidler	278	373	23	91,027	15,993
Youngstown College, Youngstown, Ohio	1908	Howard W. Jones	554	1,076	88	—	25,200
Yuba Junior Col., Marysville, Calif.	1927	Pedro Osuna	275	275	28	—	5,000

Uranium.

Before the surrender of Belgium much of the accumulated stocks at the radium-uranium refinery at Oolen were transferred to the United States, resulting in an increase in the receipts of uranium compounds from 376,708 lb. in 1939 to 1,439,324 lb. in 1940. With the refinery no longer available, mine operation was stopped, and some 1,200 tons of uranium ore were shipped to the United States in 1940, and subsequent receipts of uranium compounds, amounting to 240,200 lb. in 1940 and 229,872 lb. in the first nine months of 1941, came mainly from Canada. (*See* also RADIUM.) (G. A. RO.)

Urology.

An adequate presentation of recent advances in urology makes necessary the inclusion of material on treatment of urologic diseases. However, it should be understood distinctly that some of the drugs mentioned are dangerous if prescribed or used by a person untrained in their use and that none of the treatments referred to hereinafter should be employed except under the direction of a physician.

Sulphathiazole has been found to be the drug of choice in the treatment of infections of the urinary tract. The dose given previously for urinary infection was much larger than necessary. Experience showed that sulphathiazole in a certain daily dose usually is sufficient to control uncomplicated urinary infections. Sulphathiazole in a smaller daily dose was found to be effective as a prophylactic preoperative agent. The failure of sulphonamide medication in combating postoperative urinary infection, which often follows transurethral operations, was not explained until recently. It was shown that the presence of exudates such as peptones and para-aminobenzoic acid released by the cut tissues in the prostatic bed inhibits the action of the sulphonamide compounds.

That renal irritation may follow the administration of sulphonamide drugs such as sulphadiazine was emphasized during 1942. Many cases were reported in which acetylization of the drug occurred with deposit of crystals in the renal tubules to such an extent that the secretion of urine was suppressed and uraemia resulted. Although this usually followed the administration of large amounts and long continued use of the drug, occasionally it has occurred with limited doses. In most of these cases if the condition was recognized soon enough, ureteral catheterization with lavage of the renal pelves, forced administration of fluids and cessation of administration of the drug restored renal function to normal. However, several cases of uraemia following administration of sulphadiazine also were reported in which widespread damage to renal tubules without urinary crystallization was reported. These complications apparently occurred more often with sulphadiazine than with sulphathiazole.

Failure of sulphonamide compounds to cure gonococcal infections in many cases caused some concern in the medical corps of the armed forces. It was found that inadequate administration of a sulphonamide compound is the most frequent cause. The drug often was used during only four or five days instead of the necessary 10 to 14 days. When the drug was readministered two or three weeks later the patient apparently formed a resistance to the drug so that its efficacy was negated. In the few cases in which the proper administration of sulphathiazole did not produce cure, subsequent hyperthermia was most efficient.

There was considerable discussion as to the best method of neutralizing androgenic secretion in the palliative treatment of carcinoma of the prostate gland and coincident metastasis. It was admitted generally that orchiectomy is more efficient than the use of testicular radiation. However, some observers maintained that equally good results can be achieved by the administration of stilboestrol. It was claimed that when given in a certain daily dose stilboestrol will cause regression of the prostatic carcinoma and of metastasis, and improvement of the patient's general condition will be equal in degree to that observed following orchiectomy. Some clinicians employed both orchiectomy and internal administration of stilboestrol. Intolerance to large doses of estrogenic drugs was observed but it usually was overcome by initial small doses. Comparing the results obtained from orchiectomy and from oestrogenic therapy as reported during 1942 it would seem that orchiectomy is the more efficient method of controlling androgenic secretion.

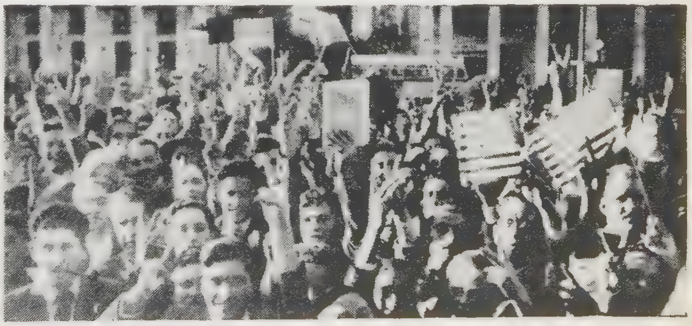
Frequent attempts were made to dissolve urinary calculi by means of continuous application of various chemical agents. Most of such chemical solutions were highly acid and they caused so much irritation in the adjacent tissues that their use was impractical. It was shown that solutions of citric acid were most effective in dissolving formations of calcium in vitro. It was found that solutions of sodium citrate can be buffered successfully with magnesium without diminishing their power of dissolving calcium elements. Certain types of phosphatic stones of loose consistency became amenable to such treatment.

During 1942 various complications resulting from nearby explosions or blasts received much attention. The symptoms accompanying this form of war injury were referred to as "crush syndrome." Suppression of urine was a frequent complication, without any gross evidence of actual renal trauma. (*See* also CHEMOTHERAPY.) (W. F. BR.)

Uruguay.

The smallest of the South American republics, on the Atlantic coast between Argentina and Brazil. Area, 72,153 sq.mi.; pop. (1939 official est.) 2,146,545. The percentage of whites is higher than in any American country except Argentina and Canada. Capital, Montevideo, pop. (1941 official est.) 770,000. President in 1942: General Alfredo Baldomir.

History.—Uruguayan developments throughout 1942 stemmed generally from World War II conditions. The almost constant political conflicts of the two main political groups in the country came, in the main, as a result of a difference of opinion over foreign policy. The obstructionist tactics of the opposition, which had led in 1941 to several cabinet and congressional crises, threatened to do the same in 1942, until in February, President Baldomir dissolved congress and postponed to November the presidential election scheduled for March. By certain peculiar provisions of the constitution the minority party (in this case, the Blanco Nationalist party, headed by Luis Alberto Herrera) was given a minimum of three of the nine cabinet posts and half the senate membership. No governmental actions were possible if the opposition refused to attend congressional meetings. To correct this situation, President Baldomir actively supported constitutional reforms. Herrera, strongly anti-United States and inclined to be pro-axis in his sympathies, steadily opposed the administration's foreign policy, the keystone of which was Pan-American co-operation. During the eight months between the dissolution of



PROTESTING THE SINKING of a Uruguayan ship, students staged a pro-United Nations rally at Montevideo in March 1942 congress and the November elections, President Baldomir ruled with the aid of a state commission, composed of a large number of prominent citizens, which he had selected to share with him the responsibilities of government.

In September, with the naming of Juan José Amézaga and Luis Alberto Herrera as the presidential candidates by the two main parties, the campaign got under way. Running as vice-president on the Baldomir-sponsored Amézaga ticket was Foreign Minister Alberto Guani. On November 29, the election was held and, with only 65% of the total electorate voting, in part because of tremendous nation-wide rainstorms, the administration's policies were approved. The government party (the Colorados) not only elected Amézaga and Guani but also captured both houses of congress and most departmental and municipal offices. In addition, the constitutional changes proposed by the chief executive were approved by decisive majorities.

After the Rio de Janeiro Conference of Foreign Ministers in January, Uruguay severed its diplomatic relations with Germany, Italy and Japan, and announced a policy of close co-operation with the other American nations against axis aggression. Active defense measures were also taken, especially after the receipt of an unspecified amount of weapons from the United States in the form of a lend-lease grant.

To offset its lost European markets and, in part, to prepare for eventual post-war conditions, Uruguay signed a reciprocal trade agreement with the United States in July. Growing fuel shortages in late 1942 promised, unless soon relieved, wide unemployment and distress.

Education.—Education is free and compulsory. There were about 1,700 primary schools (enrolment over 200,000) in 1941, and the national university at Montevideo.

Defense.—The army of some 8,000 men (as of 1941) was considerably strengthened and modernized with new weapons in 1942.

Finance.—The monetary unit is the peso (value: approx. 53.5 cents U.S. in 1942; 1940 average value: 37.55 cents U.S.).

Trade and Communication.—In 1940 exports were valued at 110,473,000 pesos (a 9.0% increase), and went chiefly to the United States, 25.8% (1939: 13.9%); Great Britain, 20.8% (18.5%); Netherlands, 6.5% (3.4%); Brazil, 5.5% (6.0%). They consisted largely of wool, 49.1% (1939: 36.2%); meats and extracts, 22.1% (21.5%); hides and skins, 9.1% (11.0%); linseed, 6.7% (7.3%); livestock, 4.6% (4.4%); cereals, 0.7% (6.6%). In 1940 imports (principally textiles, foodstuffs, fuel and miscellaneous manufactures) rose 14.4%, to 74,773,000 pesos, mainly from Great Britain, 18.5% (1939: 18.2%); United States, 16.3% (5.2%); Argentina, 13.5% (6.7%); and Brazil, 9.5% (8.3%). Decreases in exports, particularly in wool, were considerable in 1941 and 1942.

External communication is principally by water and by Pan American Airways, with supplementary rail and highway connections to Argentina and Brazil. There were more than 22,500 mi. of highways and 1,683 mi. of railway in 1941, with extension of both systems planned.

Agriculture and Manufacturing.—Uruguay is primarily pastoral (sheep and cattle), with nearly 80% of the country in grazing land. There is important acreage in wheat, flax, maize and oats. Processing and packing of meat products is an important industry. (*See* also ARGENTINA; HISPANIC AMERICA AND WORLD WAR II.) (C. N. G.)

U.S.O.: *see* UNITED SERVICE ORGANIZATIONS.

U.S.S.R.: *see* UNION OF SOVIET SOCIALIST REPUBLICS.

Utah. A Rocky Mountain state, admitted to the union in 1896, popularly known as the "Mormon state." Area 84,916 sq.mi.; pop. (1940) 550,310. The rural (nonfarm) population was 150,465, (farm) 94,352; urban 305,493, with the following origins: white (native) 510,662, (foreign born) 32,298; Negro (native) 1,225, (foreign born) 10. Capital, Salt Lake City (149,934). Other principal cities are Ogden (43,688), Provo (18,071) and Logan (11,868).

History.—In 1942 the administration of the Democratic governor, Herbert B. Maw, co-operated with federal authorities in essential war measures and continued to perfect the governmental reorganization plan adopted by the 24th legislature in 1941. Japanese resettlement centres were established at Topaz and Abraham.

In 1942 E. E. Monson continued as secretary of state, Reese M. Reese, auditor, Oliver G. Ellis, treasurer; Grover A. Giles, attorney-general and Charles H. Skidmore, superintendent of public instruction.

Education.—There were 148,632 children in the public schools in 1942, highest enrolment since 1933, when there were 149,068. The total cost of education was $12,292,390.60, with $10,223,136 devoted to operating expenses. There were 4,110 teachers and 445 principals.

Public Welfare, Charities, Correction.—Total state obligations of $8,082,000 incurred in 1942 for public assistance were distributed as follows: old-age assistance, $4,714,000, aid to dependent children, $2,035,000; aid to blind, $57,000; general $1,276,000. A total of 18,411 households were receiving state assistance in June, 1942 as compared with 21,508 in Dec. 1941.

Communication.—Highway mileage in 1942 was as follows: state, 5,106; county, 14,584; city, 2,269. There were 2,157 mi. of steam railway in 1938. Utah had more than 30 airports and fields in 1942.

Banking and Finance.—Sixty banks, 47 state and 13 national, had total assets of $233,279,000 in 1942 and 15 building and loan associations had aggregate assets of $20,926,166.17. Total bank deposits reached $212,112,000. State receipts for the year ending June 30, 1942 were $40,400,517.83; expenditures were $37,383,310.21. The total of outstanding bonds in 1942 was $1,695,000, with this amount available from the state liquor control fund for retirement of all outstanding bonds.

Agriculture.—Cash income from farm marketings was $73,815,000 during Jan.–Nov. 1942 as compared with $56,092,000 for the same period in 1941 and $41,339,000 for the same period 1940. Producers increased the farm yield as part of the war program. Value of 1942 truck and canning crops was $4,036,000; for 1941, $2,746,000. Value of canning tomatoes in 1942 was $1,356,000, and shipping tomatoes, $756,000.

Principal Agricultural Products of Utah, 1942 and 1941

Crop	1942	1941
Hay (tame and wild), tons	1,174,000	1,216,000
Potatoes, bu.	2,312,000	1,904,000
Sugar beets, short tons	570,000	575,000
Celery, crates	132,000	116,000
Tomatoes, fresh, bu.	35,000	35,000
" processing, tons	82,700	68,700
Onions, 100-lb. sacks	264,000	250,000
Peas, tons	20,080	19,170

Manufacturing.—The upward trend in manufacturing continued in 1942, with new industries enabling Utah not only to hold its population but to attract newcomers to defense industries. Workers numbered 30,700 in 1942 as compared with 20,300 in 1941, and only 15,982 in the first quarter of the latter year. Total pay rolls in manufacturing were $50,939,000 in 1942 as compared with $27,543,000 in 1941 and $23,400,000 in 1940.

Mineral Production.—The United States war program gave sharp impetus to the state's greatest industry, with important production of copper, lead, and zinc and activity in vanadium, tungsten and potash. Figures covering production of strategic minerals in Utah could not be published for reasons of national security. Production of gold in 1942 was 386,000 fine ounces and of silver 10,450,035 fine ounces. The year saw expansion of the pig iron plant and coking coal mine near Cedar City.

(F. W. GA.)

Utilities, Public: *see* PUBLIC UTILITIES.

Vanadium.

Peru is the leading producer of vanadium, with nearly half of the world total. Exports of ore declined from 19,784 metric tons in 1940 to 11,682 tons in 1941, containing 1,027.6 tons of vanadium. The output of South-West Africa in the first half of 1941 was somewhat ahead of the 1940 average, but below that of previous years. The small Mexican output practically ceased in 1941, and no data were received from Northern Rhodesia or the United States. (G. A. RO.)

Vandegrift, Alexander A.

(1887–), U.S. marine corps officer, was born March 13 in Virginia. He served under Gen. Smedley Butler at Nicaragua and Haiti and was stationed at Shanghai and Tientsin in the late 1920s. He was promoted to brigadier general in 1940 and a year later became assistant commandant of the marine corps. He was made a major general in 1942 and in May of that year, embarked for a secret destination in the Southwest Pacific. Three months later, on Aug. 7, he led the U.S. marine forces that landed on the Solomon Islands. Vandegrift's forces successfully stormed Japanese positions on Guadalcanal and seized the nearby air base (Henderson field). They successfully repulsed a Japanese attempt to break through his lines on the southeastern end of the island that month and again fought off a Japanese drive to recapture Henderson field on Sept. 13–14. In a press conference on Dec. 7, General Vandegrift estimated that 7,000 Japanese troops had been killed since the initial landings of the marines while Americans slain numbered only 700.

Vanderbilt, Cornelius, III

(1873–1942), U.S. capitalist, born Sept. 5 in New York city, was the great-grandson of Commodore Vanderbilt, founder of one of America's railroad empires. Educated by private tutors and at Yale, Vanderbilt took an early interest in mechanical engineering. Frequently, he visited railway drafting rooms and shops where he studied railroad problems. He patented more than 30 devices for improving locomotives and freight cars. A colonel of the 102nd engineers serving overseas during World War I, he won promotion to brigadier general in 1918 and maintained his rank in the organized reserves until 1935. He died aboard his yacht, the "Ambassadress," anchored off Miami, Fla., March 1.

Varnishes: *see* PAINTS AND VARNISHES.

Vassar College.

A college for women at Poughkeepsie, N.Y., founded in 1861. To meet the need for women trained for immediate usefulness in the war effort, the college added to its curriculum translator's courses preparing for civil service examinations in French, German, modern Greek, Russian and Spanish; a course in astronomy to meet the civil service requirement for junior meteorologists; advanced courses in personnel and consulting psychology; additional work in physics on radio and vacuum tube applications; a political science course in principles of public administration; special work in mathematics and a pre-engineering course with either mathematics or physics as major field. The content of many other courses, especially in the natural and social sciences, was adapted to wartime demands. Students whose academic program was not directed toward war service were expected to participate in community activities or to enroll in extra-curricular courses organized by the Vassar Co-ordinating Council for War Activities as training for employment in government and business offices, or for work in social welfare, recreational and child care centres, hospitals, canteens and protective services. Such established projects as work in settlement houses or in the techniques of communication through radio programs, forums and graphic exhibits were recognized as preparation for war service.

During the summer a six-week Institute for Family and Child Care Services in War Time was conducted on the campus for social workers, educators and others. For statistics of the faculty, student enrolment, endowment, etc., *see* UNIVERSITIES AND COLLEGES. (H. N. MACC.)

Vatican City State.

A sovereign independent state, established by the Lateran treaty between the Holy See and the royal Italian government, Feb. 11, 1929. The treaty is recognized in international law, and the reigning pope is the sovereign. The area of Vatican City is 108.7 ac. It has its own railroad station, radio station, postal system and currency. Total issue of bronze, nickel and silver coins in any one year is not to exceed 1,000,000 lire. Executive powers are exercised by the governor, responsible exclusively to the pope; administrative power is exercised by a commission of cardinals, of which Cardinal Canali was president in 1942.

The population of Vatican City in 1942 numbered about 800, to which was added the Vatican diplomatic colony representing those countries who broke off relations with Italy. Seventeen families, numbering 162 persons, were removed from Rome to quarters in Vatican City in 1942.

Forty states were represented at the Holy See—15 embassies, 24 envoys of ministerial rank and one chargé d'affaires. During 1942 Finland, Japan and China entered into diplomatic relations with the Holy See, and there was a movement in Mexico to establish relations.

The Holy See made it clear that it did not recognize territorial changes brought about by invasion. Reports that the Vatican had established diplomatic relations with the puppet State of Croatia were denied by Radio Vatican Oct. 13. The nazi government obliged the Holy See to recall some of its diplomatic representatives from occupied countries.

The Vatican published a *Yellow Book* on the work of the Prisoners of War Information bureau under the secretariate of state. The bureau was enlarged from a personnel of two to more than 130, and headquarters set up in the offices of the Congregation for the Oriental Church. The work of the bureau was extended to Britain, Australia, Africa and other countries. Daily broadcasts of the names of prisoners of war were made by Radio Vatican in various languages.

Italy's new ambassador to the Vatican presented his credentials Feb. 27, 1942. Myron C. Taylor, personal representative of President Roosevelt, was received in farewell audience by Pius XII Sept. 26.

The Holy See maintained its policy of neutrality in 1942, but the pope continued to denounce political totalitarianism, and supplied funds for food and clothing to the occupied countries. Enjoying freedom of communication with all nations, the pope by broadcasts and letters championed the cause of democracy. (*See* also PIUS XII.) (J. LAF.)

Vegetable Oils and Animal Fats.

The urgent U.S. need for increased production of fats and oils for lend-lease and military export and for increased home consumption resulted in an output of 11,700,-

000,000 lb. of fats and oils from domestic materials in the United States in the crop year of 1942, as estimated by the department of agriculture. Production in the preceding crop year was 9,600,000,000 lb. United States production of vegetable oils from domestic materials in the crop year of 1942 was 4,200,000,000 lb.

A striking example of how the loss of U.S. imports of oils from the far east, particularly coco-nut and palm oils, affected the United States in 1942 was shown in the production of oleomargarine. In Oct. 1941 4,680,000 lb. of coco-nut oil and 1,125,000 lb. of palm oil were used in the manufacture of 34,060,000 lb. of oleomargarine. In Oct. 1942, not one pound of these imported oils was used, although oleomargarine production was increased that month to 46,283,000 lb.

An extensive experiment in the production of sunflower seed oil was begun in Canada in 1942 for the purpose of relieving the shortage in fats caused by wartime cessation of Pacific imports of oil. Information received by the U.S. department of agriculture indicated that about 3,000 ac. were planted to sunflowers in 1942, that production approximated 800 lb. per ac. and that there was hope for a substantial oil crop in 1943. Earlier in 1942 the Canadian government bought 30,000 lb. of "Giant Russian" seed for crushing experiments to determine techniques of oil extraction suited to Canada. Argentina greatly increased its production and exports of oil seeds in 1942, particularly sunflower seed.

U.S. Production of Principal Fats and Oils
(Department of Agriculture Estimates)

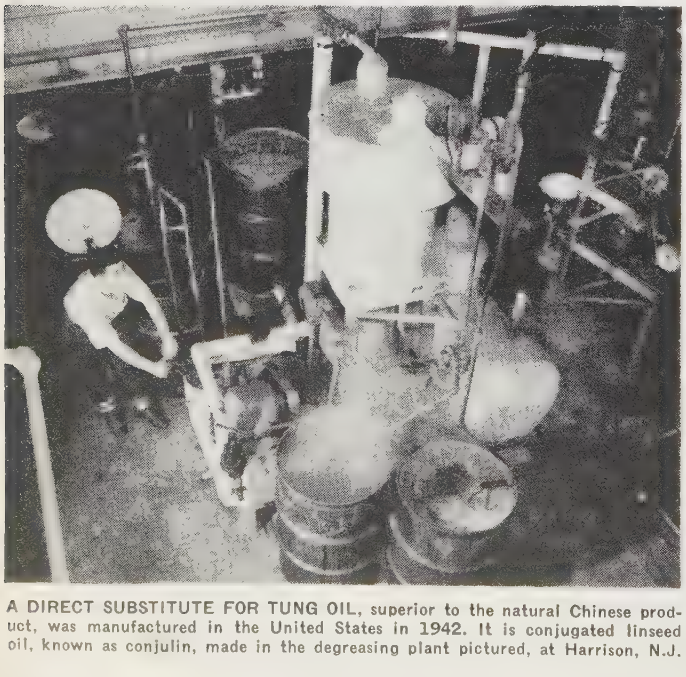
	Year Beginning	1940–41 lb.	1941–42 lb.	1942–43* lb.
Butter, creamery & farm	July	2,280,000,000	2,180,000,000	2,150,000,000
Lard, and rendered pork fat	Oct.	2,275,000,000	2,480,000,000	2,900,000,000
Inedible tallow and greases	Oct.	1,492,000,000	1,732,000,000	1,950,000,000
Corn oil	Oct.	185,000,000	242,000,000	250,000,000
Cottonseed oil	Aug.	1,425,000,000	1,250,000,000	1,445,000,000
Linseed oil**	July	707,000,000	988,000,000	010,000,000
Olive oil	Oct.	11,000,000	8,000,000	11,000,000
Peanut oil	Oct.	174,000,000	76,000,000	300,000,000
Soybean oil	Oct.	564,000,000	707,000,000	1,440.000.000
Tung oil	Dec.	5,000,000	3,000,000	8,000,000

*Estimated. **Includes production from imported flaxseed.

In the first seven months of 1942 the Argentine exported 148,451,000 lb. of oils, 60% of which was sunflower seed oil. Argentine exports for the entire year of 1941 were only 105,521,000 lb.

U.S. supplies of fats and oils for 1943, including anticipated production, imports and stocks on hand Jan. 1, 1943, were estimated at 14,500,000,000 lb. In addition to export requirements it was estimated that civilian use would require 9,200,000,000 lb., the maximum permitted under the limitation order on manufacturers. No restrictions, however, were placed on the manufacture of butter and lard. Prices of most food and soap fats and oils were maintained at ceiling levels in the closing months of 1942. Prices of flaxseed and linseed oil declined in Nov. 1942, reflecting a reduced demand for paint oils and large supplies of flaxseed. Conservation orders Nov. 20, 1942, required that about 40% of cold storage stocks of butter be set aside for the requirements of governmental agencies. Restrictions were also placed on the sale of cream, to encourage butter production. Purchases of fats and oils by the Agricultural Marketing administration averaged 80,000,000 lb. per month the first ten months of 1942. (*See* also BUTTER; COCO-NUTS; COTTON; PEANUTS; SOYBEANS.)

(S. O. R.)



A DIRECT SUBSTITUTE FOR TUNG OIL, superior to the natural Chinese product, was manufactured in the United States in 1942. It is conjugated linseed oil, known as conjulin, made in the degreasing plant pictured, at Harrison, N.J.

Vegetables: *see* AGRICULTURE; CORN; LETTUCE; MARKET GARDENING; POTATOES; TOMATOES; ETC.

Venereal Diseases.

America's entry into World War II accelerated venereal disease control activities among the armed forces, on the war production front and among civilians. In Feb. 1942, deficiency funds totalling $2,500,000 were appropriated for venereal disease control by congress, bringing the total of federal appropriations during the fiscal year to $8,750,000. State, local and other funds brought into the program raised the total from all sources to $17,700,000.

Chief objectives of control activities were: (a) to pursue an intensified control program among the general population with special emphasis on cantonment and war production areas; (b) to find, treat and restore to fitness for military or other wartime service selectees found to be infected with venereal disease; (c) to set up special venereal disease control measures for the protection of employers and employees in industry.

Of especial significance in the planning of control programs throughout the country were the prevalence rates among the first 2,000,000 selectees and volunteers examined for service in the armed forces. In accordance with provisions of the Selective Training and Service Act of 1940, all selectees and volunteers were given serologic blood tests for syphilis. By the end of Aug. 1941, reports on the first 2,000,000 were ready for tabulation and analysis. They represent the largest sampling ever taken of venereal infection in the United States, and form the basis for the most reliable estimates ever made of the prevalence of syphilis.

The selectee reports for the country as a whole show that 4.5% of the selectees and volunteers examined were infected. For the entire male population, aged 21 to 35, the estimated percentage is 4.8; for the total population—male and female, all ages—the percentage is 2.5; and the total syphilis population of the United States is estimated to be approximately 3,300,000.

Table I shows the rates and population totals for the United States, for 16 southern states and the District of Columbia, for 21 northern states, and for 11 western states. The rates are also available by individual states, with breakdowns for urban and rural areas and for race. Prevalence rates are much higher among Negroes than among whites. The estimated rate of prevalence among all Negro males, aged 21 to 35, is 27.2%; among all white males in the same age group, 2.35%.

State health departments (Table II) were steadily expanding their activities. In 1942, they distributed more drugs than ever before; they made more blood tests; they were operating more clinics; and they had more patients under treatment.

Special efforts were made to recruit and train personnel for assignments in cantonment and war industry areas. During the

Table I.—*Prevalence of Syphilis among Selectees and General Population*

Region	Selectees* examined Rate per 100	General Population		
		Males aged 21–35 Est. rate per 100†	Male and Female, All Ages	
			Est. rate per 100	Est. no. cases
United States	4.7	4.8	2.5	3,303,438
16 Southern States and D. C.	10.5	10.1	4.9	2,026,758
South Atlantic	11.0	10.3	5.1	914,812
East South Central	10.7	11.0	4.7	506,391
West South Central	9.7	9.2	4.7	605,555
21 Northern States	2.1	2.3	1.4	1,046,913
New England	1.1	1.2	0.7	59,849
Middle Atlantic	2.3	2.3	1.4	388,685
East North Central	2.3	2.7	1.6	432,219
West North Central	1.6	2.2	1.2	166,160
11 Western States	2.8	2.8	1.7	229,767
Mountain	2.9	2.9	1.6	64,207
Pacific	2.7	2.8	1.7	165,560

*2,000,000 selectee reports received through Aug. 31, 1941.
†Kentucky, Idaho, Oregon and Vermont not included in these rates.

Table II.—*Venereal Disease Control Activities of State Health Departments*

Fiscal Year	No. of Clinics	Clinic Admissions		Serologic Tests†	Drugs Distributed	
		Syphilis Cases	Gonorrhoea Cases		Doses of Arsenicals†	Sulphonamide Tablets†
1939	2,405*	249,464	62,835	5.6	4.7	3.5‡
1940	2,887*	288,778	66,811	10.2	6.9	5.3
1941	3,245	340,615	84,418	16.5	8.2	7.2
1942	3,569	343,312	104,421	20.6	8.7	13.8

*End of calendar year. †In millions. ‡Estimate.

calendar year, some 120 additional doctors were given reserve commissions to carry on venereal disease control activities. Seventy nurses were added to the regular staff, supplementing the efforts of the doctors, both by assuming routine clinic duties and by training lay personnel in contact-tracing and follow-up activities. Some 415 lay workers were employed, given special training, and were assigned to venereal disease problem areas.

Sulphathiazole has become generally accepted as the standard drug for the treatment of gonorrhoea, although reports on the use of sulphadiazine indicated that it acts more rapidly and with fewer toxic results. So successful has been the use of the sulphonamide drugs in the treatment of gonorrhoea that nearly nine-tenths of the gonorrhoea cases are rendered asymptomatic within a period of two weeks.

Reports on the rapid treatment of syphilis inspired considerable optimism. Rapid treatment techniques employed in 1942 ranged from one-day, chemo-fever therapy to a multiple-injection therapy lasting for six weeks or more. No one of the rapid treatment techniques had been, at the close of 1942, accepted as standard by the United States public health service or by the medical profession. All were experimental, and, although the results were encouraging, they were by no means conclusive. (R. A. V.)

Venezuela.

A federal republic in northern South America, bounded on the north by the Caribbean sea, on the east by the Atlantic ocean and British Guiana, on the south and west by Brazil and Colombia. Area, 352,051 sq. mi.; pop. (1941 census) 3,839,747, an 11.4% increase since 1936. This figure does not include Indians who, according to the 1936 census, numbered 103,492. Capital, Caracas (266,726). Other cities (with 1936 figures): Maracaibo (110,010); Valencia (49,214); Barquisimeto (36,429); Maracay (29,759); Ciudad Bolívar (25,134). President in 1942: General Isaías Medina Angarita (since May 9, 1941).

History.—For Venezuela, 1942 was a year of adjustments, both internal and external, to a world at war. Foreign policy was directed toward strengthening both economic and political relations with the other South American republics. Official visits were made by Foreign Minister Parra Perez to Brazil, Argentina, Chile, Peru, Ecuador, Colombia, Uruguay, and Panama, while enthusiastic receptions were given to three South American presidents who, during the course of the year, visited Venezuela—Peru's Manuel Prado, Colombia's Alfonso Lopez, and Ecuador's Arroyo del Rio. A commercial treaty (with Argentina) was signed in 1942, as well as seven *modus vivendi* agreements, while treaties with Great Britain yielded the small island of Patos in the Gulf of Paria and defined the boundary line in that gulf between Venezuela and the British island of Trinidad.

ONE OF THE RARE NONVIOLENT TRANSFERS of sovereign territory in the 20th century took place late in Sept. 1942 when Great Britain formally ceded the tiny island of Patos, in the gulf of Paria near Trinidad, to Venezuela after several years of amicable dispute. The photograph shows the ceremony at which the British flag was lowered

The war in which the U.S. had become involved led to Venezuela's closer co-operation with the North American republic. In January, at the conference of American foreign ministers at Rio de Janeiro, Venezuela was one of the strongest advocates of hemispheric solidarity against Germany, Japan, and Italy.

Domestic developments in 1942, Venezuela's second year under President Medina's administration, were characterized by determined efforts to lessen the country's dependence upon imported foodstuffs and manufactured goods. Among the most important work of Venezuela's congress in 1942 was the adoption of a new civil code and the passage of Venezuela's first income tax law. Also notable in 1942 was the increase and improvement of the government's emergency controls of prices, transportation and imports, initiated at the outbreak of World War II.

The year ended with two national expositions, one industrial and the other agricultural, and, on December 17, a great centennial observance of the transfer of the remains of Simón Bolívar, South American hero of the Wars of Independence, to his native city of Caracas.

Education.—There were in 1942 more than 5,000 elementary schools with some 272,000 students; also 69 secondary schools and 21 institutions of commercial and other specialized training with a combined enrolment of more than 7,000. Two national universities (at Caracas and Merida) enrolled a total of 3,000 students in 1942.

Finance.—The monetary unit is the bolívar (value in 1942: approx. 30 cents U.S.). Public revenues during the first quarter (July–September) of the fiscal year, 1942–43, were 68,340,000 bolívares and expenditures were 73,817,000 bolívares; the 1942–43 budget was 320,248,000 bolívares. Notes in circulation (Sept. 30, 1942) totalled 207,534,170 bolívares. The gold reserve (Aug. 1942) was 208,234,230 bolívares, an amount more than sufficient to cover notes in circulation. The commercial banks (Aug., 1942) had a total capital of 73,500,000 bolívares, reserves of 30,175,000 bolívares, and deposits of 249,249,000 bolívares.

Trade and Communication.—In 1941 exports totalled 1,061,565,000 bolívares (an 18.9% increase over 1940), of which petroleum and its derivatives amounted to 94.2% (1940: 94%). Non-petroleum exports, principally coffee (39.2%), gold (26.2%), cacao (9.9%), cattle (3.4%), and hides (3.0%), went chiefly to the United States, 76.8% (1940: 77.5%); Argentina, 5.4% (.02%); Trinidad, 3.8% (4.3%); Curaçao, 2.6% (1.9%); and Colombia, 2.2% (1.7%). Imports in 1941, mostly foodstuffs, machinery, textiles, and chemicals were valued at 287,736,000 bolívares (an 8.2% decline), mainly from the United States, 78.8% (1940: 73.9%); Great Britain, 6.0% (7.6%); Brazil, 3.4% (0.7%); Canada, 1.6% (1.9%); and Argentina, 1.6% (0.4%).

Foreign communication is by steamship service, by Pan American Airways, and Royal Dutch Airways. There is also an all-weather highway connection with Colombia, by means of a branch of the Inter American highway running from Caracas to the Colombian border at Cúcuta. Within Venezuela the principal population centers are connected by a domestic airline. Highways (about 3,600 mi. surfaced and improved) and railroads (less than 700 mi.) are mostly situated in the mountainous area of northern Venezuela. In 1942 there were 42,000 licensed motor vehicles.

There were 28 broadcasting stations in 1942, though only five possessed more than purely local significance. Radio receiving sets were estimated at 120,000. At the beginning of 1942 there were 8,351 miles of telegraph lines.

Mineral Production.—Third largest petroleum producer in the world (after the U.S. and U.S.S.R.), Venezuela produced 225,000,000 bbls. in 1941 (21.6% more than in 1940), the largest annual output yet achieved; 13.1% of the 1941 production was refined in Venezuela, most of the remainder being sent to Aruba, Curaçao, and the U.S. (H. B. L.)

Vermiculite. Sales of vermiculite in the United States in 1941 increased 5% over 1940, to 23,438 short tons, but the value of the output dropped 13%. Most of the output was from Montana and Wyoming, but North Carolina was making a bid for a share in the market. (G. A. Ro.)

Vermont. A north Atlantic state, first to be added to the original thirteen of the United States; popularly known as the "Green Mountain State"; area, 9,718 sq.mi., of which 440 sq.mi. are water. The population in 1940 was 359,231, including 235,992 rural, 123,239 urban. There were 327,079 native whites, 31,727 foreign-born, 384 Negro, 41 of other races. Montpelier is the capital, with a population of 8,006. The two largest cities are Burlington on Lake Champlain (27,686), and Rutland (17,082).

History.—The year 1942 was an off-year for the biennial sessions of the Vermont state legislature. The principal activities of the state centred around various phases of war work. A Council of Safety was set up, modelled on the original Council of colonial days, to head up all the civilian defense work of the state. Gov. William H. Wills became the honorary chairman and Albert A. Cree of Rutland, executive chairman. Vermont led the nation in the scrap metal drive and was among the leading states in the scrap rubber drive. Aside from Governor Wills, other chief officers of the state for the year were Mortimer R. Proctor, lieutenant governor; Rawson C. Myrick, secretary of state; Thomas H. Cave, state treasurer; Warren R. Austin and George D. Aiken served as U.S. senators, and Charles A. Plumley as congressman.

Education.—There were approximately 1,100 elementary schools in operation during 1942, or some 80 less than in the preceding year. The enrolment, dropping 1,500, reached 44,095 pupils. The number of teachers was about 1,900. In the 91 secondary schools of the state there were some 16,065 pupils enrolled, a decrease of 1,000 from the preceding year. Teachers in the secondary schools numbered 705.

Public Welfare, Charities, Correction.—The state department of public welfare carried an average of 708 cases for aid to dependent children for the fiscal year ending June 30, 1942, with an average of 1,898 eligible children under the age of 16, and expended $277,014.96 for assistance payments. This expenditure was made up of 50% federal funds and 25% each of state and local funds. In the blind assistance program, there was an average of 161 cases, with an expenditure of $42,988.50, equally divided between the state and social security board. During the fiscal year there was an average of 1,441 cases receiving general relief, with expenditures of local funds totalling $318,719.27. Excluded from this figure was all expense of hospitalization, medical care, administrative cost, expense of poor farms and almshouses and the cost of distributing surplus commodities. There are only two penal institutions within the state. As of July 1, 1942, there were 173 inmates in the state prison for men and 97 in the house of correction, making a total of 270 confined in the state prison at Windsor. There were 25 women at Riverside reformatory in Rutland. The total cost of operation at the state prison in Windsor was $165,000 and the total cost at the women's reformatory was roughly $28,000. The Weeks school for minors at Vergennes is not included, because it is classed as a school rather than a penal institution.

Communication.—The total number of miles included in the public highways of the state during 1942 was 14,204.5. Of this number, 1,780.3 mi. were listed as state highways; 2,744.0 mi. as state-aid highways; 9,680.2 mi. as town highways. The total estimated state expenditure for highway work in Vermont during 1942 was $4,083,000. The state railroad system included 969.2 mi. of road. There were 56,535 telephones in the state.

Banking and Finance.—In 1942 there were 41 state banks in Vermont, 40 national banks, and 11 savings and loan associations. In 1941 (the latest date for which figures were available in 1942), the total resources of the 41 state banks were $127,313,722.25, showing a decrease of $29,279,310.26 since 1934. This decrease in total resources was accounted for in the amount of 44% or $12,800,000 by a decrease in liabilities. The remaining $17,100,000 represented shrinkage in asset value as estimated in 1934. On the whole, however, the financial condition of the state banks showed commendable progress since the 1934 period. The deposits in state banks in 1941 amounted to $116,837,463.65, which was an increase of $4,229,605.41 over the preceding year, but a decrease of $14,702,828.75 since 1934.

The capital and liabilities of the co-operative savings and loan associations in the state totalled $2,634,936.65 in 1941, and in 1940 $3,939,049.73, denoting a decrease of $1,304,113.08.

The total receipts in the state treasury department as of June 30, 1942, the close of the fiscal year, were $17,453,933.62. The disbursements were $17,008,053.86. The total state debt as of the same date was $6,650,031.90, a decrease of $1,157,000 from the preceding year. The total improvement in the state's financial condition was $1,754,196.44.

Agriculture.—The total acreage of Vermont crops in 1941, the latest survey from which figures were available in 1942, was 1,048,150. The 1940 acreage was 1,061,930. Agricultural crops were valued in 1941 at $22,459,000 and in 1940 at $18,489,000. The cash income from all farm crops in 1941 was $7,764,000 as against $7,716,000 in 1940, and of livestock and livestock products $41,258,000 as against $34,317,000, making a total of $49,022,000 for 1941 and $42,033,000 for 1940. Government payments in 1941 equalled $1,414,000 and in 1940 they equalled $595,000, bringing the grand total of income to $50,436,000 in 1941 as against $42,628,000 in 1940.

The production of dairy products and poultry and eggs increased in 1942, and the 1942 maple season resulted in a considerably increased income over 1941. The apple crop was larger in 1942, but the potato acreage was down. The weather was favourable to large hay and grain crops.

Leading Agricultural Products of Vermont, 1942 and 1941

Crop	1942	1941	Crop	1942	1941
Corn, bu. . . .	2,760,000	2,622,000	Maple syrup, gal.	. .	759,000
Potatoes, bu. .	1,500,000	1,740,000	Apples, bu. . .	714,000	664,000
Oats, bu. . . .	1,715,000	1,504,000	Maple sugar, lb.	. .	190,000
Hay, tons . .	1,207,000	968,000	Barley, bu. . .	160,000	135,000

Manufacturing.—The principal manufactured products of Vermont are machine tools, woodworking, lumber and furniture, marble, granite, textiles, paper. Other important products include talc, asbestos, slate, scales and clothing. Some industries, such as slate and marble, were not operating as extensively in 1942 as in normal times. Industries manufacturing war goods expanded output, employees and pay rolls.

The number of manufacturing establishments in Vermont was about 800 in 1942. The total number of workers was about 110,000, of which approximately 50,000 were industrial workers. Total wages paid industrial employees were about $49,500,000. As nearly as could be determined from available figures, wages in the non-manufacturing group averaged about $12 weekly. The total value of products produced was estimated to run well over $175,000,000.

Mineral Production.—The latest survey of mineral products in the state as of 1942 was made in 1939–40. At that time the total value of such products was $12,283,886. Granite products were valued at $7,304,356; slate at $1,948,315; marble at $1,533,824. Other important products are asbestos, talc, limestone and clay products. In 1942 much was done toward opening up old copper deposits and it was expected that the industry would prove profitable. (L. W. D.)

Veterans Administration.

On June 30, 1942, the U. S. Veterans administration was operating hospital facilities at 92 locations in 45 states and the District of Columbia. There were 62,453 beds for hospital treatment and 18,371 for domiciliary care. In addition, 1,959 hospital beds in other government facilities were being utilized. The hospital load of the Veterans administration at that time was 56,346 patients, of whom 56,073 were United States veterans, 31 were Allied veterans, 18 were employees of the Civilian Conservation corps and Work Projects administration, and 224 were miscellaneous beneficiaries. Of the United States veterans, 52,999 were in Veterans administration facilities, 2,080 in other government hospitals and 994 in state or civil institutions. Approximately 76.82% of these United States veterans were receiving treatment for disabilities not of service origin. During the fiscal year 1942, 9,658 United States veterans were admitted for observation and treatment of tuberculosis, 10,200 for psychotic or mental diseases, 14,101 for other neurological disorders and 145,315 for general medical and surgical conditions. The veteran population in domiciliary status June 30, 1942, totalled 11,573. Of this number, 7,417 veterans were disabled by general medical and surgical conditions, 3,987 by neuropsychiatric diseases and 169 by tubercular ailments. During the fiscal year 1942, an average of 5,730 veterans eligible for care in Veterans administration facilities were cared for in state or territorial homes. These homes are reimbursed by the federal government at the rate of $240 a year for each of such veterans domiciled therein. During this year, dental care was provided for 32,505 hospital patients, 10,087 domiciliary members and 3,394 out-patients in clinics maintained by the veterans administration.

Pensions and Compensation.—Table I shows the number of cases on the rolls as of June 30, 1942, and the net disbursements during the fiscal year 1942 from the appropriations "Army and Navy Pensions."

Table I.—*U.S. Veterans on Roll, June 30, 1942*

War	On roll, June 30, 1942	Disbursements, fiscal year 1942
Yellow fever experiments		
Participants	9	$ 14,750.00
War of 1812		
Deceased veterans	1	240.00
Mexican War		
Deceased veterans	95	54,966.34
Indian Wars—total	5,389	2,663,535.27
Living veterans	1,713	1,332,595.20
Deceased veterans	3,676	1,330,940.07
Civil War—total	38,689	19,525,453.16
Living veterans	975	1,340,514.75
Deceased veterans.	37,714	18,184,938.41
Spanish-American War—total	209,833	125,674,152.90
Living veterans	146,886	102,692,905.36
Deceased veterans.	62,947	22,981,247.54
Regular establishment—total	53,512	19,293,923.49
Living veterans	41,583	15,623,585.08
Deceased veterans.	11,929	3,670,338.41
World War I—total	550,929	263,870,650.55
Living veterans	432,409	199,371,996.01
Service connected	348,103	168,362,812.92
Nonservice connected	81,660	26,603,293.11
Emergency officers, etc.	2,646	4,405,889.98
Deceased veterans.	118,520	64,498,654.54
Service connected	94,171	53,817,353.17
Nonservice connected	24,349	10,681,301.37
World War II—total	1,246	200,788.22
Living veterans	93	11,913.32
Deceased veterans	1,153	188,874.90
Grand total—pensions and compensation. . .	859,703	431,298,459.93
Living veterans	623,659	320,373,509.72
Deceased veterans	236,035	110,910,200.21
Participants, yellow fever experiments .	9	14,750.00

The guardianship load of the Veterans administration, June 30, 1942, was 81,114 wards, of whom 43,336 were incompetents and 37,778 minors. The value of estates of these wards approximated $159,935,514.67.

Insurance.—As of June 30, 1942, there were 594,735 United States government life insurance policies in force, representing $2,507,082,186 of insurance. Monthly payments were being made to 10,836 policyholders for permanent and total disabilities. Disbursements for this type of insurance during the fiscal year 1942 totalled $44,481,192.02. On June 30, 1942, monthly payments on yearly renewable term insurance policies were being made to 9,981 permanently and totally disabled veterans and to the beneficiaries of 6,402 deceased veterans. Monthly payments on automatic insurance policies were being made to 236 veterans and the beneficiaries of 30 deceased veterans. Disbursements for term and automatic insurance during the fiscal year totalled $15,490,931.27. During the period Oct. 8, 1940, to June 30, 1942, 1,481,758 applications for national service life insurance aggregating $6,810,239,500 were approved. An act approved Oct. 17, 1940, provided for suspension of enforcement of certain civil liabilities of persons serving in the armed forces of the United States. Article IV of the act provides that the government would, on application by the insured, guarantee to commercial insurance companies premiums on insurance carried with such companies by policyholders while in active service. Through June 30, 1942, 35,118 applications for this benefit had been received, of which 23,421, representing $56,501,816 of insurance, had been approved. Certificates issued to insurers guaranteeing premiums totalled 1,621 aggregating $1,016,995 of insurance.

Civilian Conservation Corps.—The total authorized quota for the veterans contingent of the corps at the beginning of the fiscal year 1942 was 24,400. The year was begun with an enrolment strength of 20,200 veterans. There were 11,342 veterans enrolled in the corps during the fiscal year. The remaining strength on June 30, 1942, was 11,147. The records indicate that as of June 30, 1942, there had been approximately 225,000 enrolments in the veterans contingent since its beginning. The total number of veterans and their dependents who had received direct monetary benefits through payments and allotments was slightly less than 600,000.

The Civilian Conservation corps ceased to exist as an operating agency on June 30, 1942, responsive to congressional legislation. The veterans remaining in the corps at that time were given assistance primarily through the medium of the United States employment service in obtaining employment elsewhere.

Table II.—*Net Disbursements of Veterans Administration in Fiscal Year 1942*

Purpose	Disbursements
Salaries and expense	$104,539,046.33*
Printing and binding	155,032.86
Public Works Administration act of 1938 (allotment to Veterans administration 1938–1942)	42,502.37
Hospital and domiciliary facilities and services, Veterans administration	4,002,650.93
Army and navy pensions	431,298,459.93
Military and naval insurance	15,490,931.27
United States government life insurance fund	44,481,192.02
National service life insurance	960,608.14
Adjusted service certificate fund	43,227,404.24†
Adjusted service and dependent pay	253,196.34
Vocational training	—3,641.63‡
Allotments and allowances	—2,217.06‡
General post fund	35,906.51
Funds due incompetent beneficiaries	124,148.39
Personal funds of patients, Veterans administration	2,702,885.67
Miscellaneous	25,885.59
Total	$647,333,991.90

*Includes adjustments on lapsed appropriations—medical and hospital services, credit of $2,071.40 and national homes for disabled volunteer soldiers, credit of $5.60; also includes net disbursements of $987,004.75 made to other government agencies for the care and treatment of Veterans administration beneficiaries.

†Includes amounts for repayment of loans, due to a change in method of reporting as of July 1, 1941, to conform to Executive Order No. 8512 and Regulation No. 1 issued pursuant thereto. Actual disbursements for fiscal year 1942 amounted to $1,659,220.95.

‡Credits.

Co-operative Employment Activities.—The Veterans administration maintains personal contact with local representatives of the United States employment service of the Social Security board and other government agencies with regard to employment of veterans. Employment service reports show that on June 30, 1942, the number of unemployed veterans registered for employment was 152,130 as compared with 212,984 June 30, 1941.

(F. T. Hi.)

Veterans of Foreign Wars.

Between Dec. 8, 1941, and Sept. 1, 1942—the close of its fiscal year—the V.F.W.'s war programs included:

1. Presentation to the U.S. government of fifteen $10,000 trainer planes for use by the army air forces. The entire $150,000 was voluntarily contributed by V.F.W. posts and members.

2. Organization of an aviation cadet recruiting program. Under the direction of a national chairman, local posts throughout the country were advised and instructed in the recruiting of young men for the army air forces. As a result, as of Sept. 1, 1942, more than 6,500 V.F.W. candidates had been sent to the army air corps for aviation cadet training. More than 14,000 additional candidates were receiving V.F.W. instruction so that they, too, might qualify as aviation cadets. This instruction included coaching by co-operating instructors to overcome educational defects and medical examinations to check physical qualifications so that operations and medical treatment could repair minor physical handicaps.

3. Purchase of government war savings bonds and stamps by individual members and V.F.W. units.

4. Local war programs included a wide range of activities from canteens and entertainment for service men to "letters-from-home" clubs sending weekly news letters to all men in service from their respective communities, the distribution of pocket-size New Testaments or Prayer Books, farewell parties to all local men leaving for service, the presentation of community "honour rolls" bearing the names of all local men in uniform and scores of similar projects.

5. Nation-wide distribution of war posters through local posts and placing on display in post headquarters, bus and railroad stations, in post offices, on bulletin boards at army camps and naval stations and in many other places where they contributed to the morale of the armed forces and stimulated public unity. One of these posters "Stop, Look and Listen" was printed, in mat form, in a total of 546 newspapers throughout the country. Similar patriotic features were the Memorial day full-page features published under V.F.W. auspices in 331 daily and weekly newspapers.

6. A nation-wide distribution of service star window cards to the families of men in uniform. The co-operation of more than 1,000 newspapers and more radio stations brought the V.F.W. offer of these cards, gratis, to millions of American homes. By the end of the fiscal year, Sept. 1, 1942, more than 350,000 of the cards—bearing from one to six stars—had been sent to mothers and fathers, wives, sisters and brothers and sons and daughters of members of the armed forces.

Besides these war-time activities, the V.F.W. program, as always, stressed veteran welfare, child care and Americanism. Rapid membership increases, as soldiers, sailors and marines became eligible when they entered the combat zones of World War II, added many thousands of World War II participants to the membership rolls which previously had consisted of more than a quarter of a million veterans of World War I, the Spanish-American War and other campaigns and armed expeditions in which the United States had been involved since the founding of the V.F.W. in 1899.

"United We Win" was the theme of the 1942 national encampment held at Cincinnati, Ohio. Officers elected to serve for the 1942–1943 term were: Robert T. Merrill, Havre, Mont., commander-in-chief; Carl J. Schoeninger, Detroit, Mich., senior vice commander-in-chief; Jean A. Brunner, Brooklyn, N.Y., junior vice commander-in-chief; R. B. Handy, Jr., Kansas City, Mo., adjutant-quartermaster general; Louis E. Starr, Portland, Ore., judge advocate general; Joseph M. Stack, Pittsburgh, Pa., chief of staff; Clarence R. Christie, Seattle, Wash., inspector general; Dr. George M. Lochner, St. Petersburg, Fla., surgeon general; Rabbi Michael Aaronsohn, Cincinnati, national chaplain; Robert E. Kernodle, Kansas City, Mo., national historian and Teller Ammons, Denver, Colo., national patriotic instructor. (B. Y.)

Veterinary Medicine.

Veterinary preparedness committees were appointed in each state under the authority of the procurement and assignment service. Local draft boards, governed by information provided by these committees co-operated in the effort to prevent the removal of rural veterinarians from regions densely populated with food-producing animals or threatened by sweeping epizootics which cut down food supply.

Veterinary Corps.—Since meat and milk inspection had been a specialized branch of the American veterinary college curriculums from 1890 on, food inspection by the veterinary corps, which operates under the direction of the surgeon general of the army, grew in magnitude and importance with the expansion of the military forces and their distribution to various parts of the world. Contrary to the popular impression that veterinary officers are not needed in mechanized warfare, commanders of U.S. troops in foreign countries, accustomed to the protection of health afforded by modern methods of food inspection requested the surgeon general to provide them with this service. To name but one of many examples, the dairy cows of Iceland, furnishing milk to U.S. troops were tested for tuberculosis as a health measure.

Vaccination of Military Animals.—Over 12,000 horses and mules were used in the simulated warfare carried out in Louisiana, where encephalitis, tetanus and anthrax are prevalent. All of these animals were vaccinated with chick-embryo-encephalitis vaccine, tetanus toxoid and intradermal anthrax vaccine made at the veterinary laboratory of the medical centre in Washington. The consequence of the precaution taken was that no case of these infections occurred as a result of these manoeuvres. The result was particularly pronounced for tetanus, since horses and mules are highly susceptible to that disease and more than 300 distinctly tetanogenic wounds were treated at the veterinary field hospitals during the training period. In view of the infectious character of the terrain occupied, the complete control of tetanus by vaccination demonstrated the preventive merits of tetanus toxoid in military animals.

Veterinary Medicine Honoured.—In creating the rank of brigadier general in the Veterinary corps of the army, President Roosevelt paid tribute to the veterinary service. Col. R. A. Kelser, director of the corps was promoted to that rank March 17, 1942. General Kelser was also awarded the Twelfth International Congress prize for 1942 by the American Veterinary Medical association.

Poultry Medicine.—Statistical records having shown that the mortality among farm chickens and turkeys is nearly 60% per annum, the government's plan to increase poultry and egg production by merely telling the farmers to hatch more chicks was vigorously challenged by the veterinary service on the ground that trying to raise more poultry without corresponding improvement in poultry hygiene would only increase the appalling death rate and thus diminish rather than augment production. Increasing housing capacity and abolishing the notoriously insanitary customs of poultry raising were the initial steps recommended by the United States bureau of animal industry. In co-operation with state and national societies of veterinarians and poultrymen, short courses on poultry hygiene and poultry pathology were given by many of the state agricultural colleges, and a series of technical bulletins for the guidance of farmers and veterinarians was published and widely distributed. Poultry pathologists from the colleges conducted schools for veterinary practitioners in numerous localities with the object of encouraging them to improve this neglected branch of animal medicine. The result of the combined effort was gratifying.

Military Animals.—A survey of the use of horses, mules and camels by the field armies of World War II, based upon obtainable information showed that animal transportation is still a necessary part of military organization. For transportation of men (cavalry) and of matériel (guns, food, ammunition), the German, Japanese and Italian troops utilized a large number of animals. The conclusion of the U.S. remount service, based upon current information and experiences of World War I, was that as soon as the strength of competing forces in tanks, aeroplanes, guns and infantry become equal, animal transportation might be the deciding factor.

Swine Erysipelas.—Although once rare in the United States, erysipelas is now pronounced one of the three grave diseases of swine, namely: cholera, paratyphoid enteritis and erysipelas. A step taken toward its control was the permission granted by the government to use the serum-culture method of vaccination. Owing to the danger of spreading the infection through the use of this living vaccine, the method had, hitherto, been prohibited. Only the antiserum which confers but transient passive immunity was permitted until 1942. The developments of 1942 showed that swine erysipelas is a menace of the first rank to the people's food supply. An outbreak in horses, the first of record in the U.S., occurred in Iowa and numerous veterinarians contracted the disease (erysipeloid) while handling infected hogs or the vaccine.

Swine Dysentery.—In the effort to increase the hog crop to 100,000,000 head in obedience to the government's urge, certain swine breeders of the middle west increased their herds beyond their ability to care for them. The increment and the heavy rains of the summer season of 1942 brought about widespread outbreaks of intestinal infections which led to the belief that a new disease had struck the swine-growing industry, when in fact the incident proved to be but the increased virulence of an old malady.

Canine Medicine.—A war-dog service was organized in the remount division of the quartermaster department of the army. Although dogs were employed for various purposes in all of the modern armies, the first dog service in the United States army was established in 1942. From a small beginning of a few hundred dogs for guarding important centres of production, the quartermaster general set up a training centre for military dogs at Front Royal, Va., which forecasts an extensive development of this new departure. Concurrently with the mobilization of a large number of dogs, came the necessity of instituting measures for preventing the more common dog maladies: distemper, rabies, mange, malnutrition and various avitaminoses, deadly to the canine species.

Bovine Brucellosis.—As a destroyer of food—meat and milk—brucellosis of cattle ranks high. (This disease is more commonly known as contagious abortion or Bang's disease.) Encouraged by the success attained in eradicating bovine tuberculosis, the veterinary service set out to exterminate this disease in cattle and swine. Developments of 1942 indicated that the infection, particularly that of swine, is responsible for the increasing incidence of undulant fever of man. A conference of health officials and veterinarians of the federal and state services held at Council Bluffs, Iowa, in June 1942, clearly established the relationship of brucellosis in swine and man, and in swine and cattle. A well controlled investigation of an outbreak of undulant fever in an Iowa city (Marcus) showed that brucellosis of dairy cows contracted from swine was the source responsible for the infection in the human victims: hog to cow to man.

In Great Britain, struggling to become as self-contained as conditions permit, brucellosis of cattle was rated as a major threat to the effort. The success achieved in the United States from vaccination with an attenuated culture of Brucella abortus properly combined with sanitary measures, resulted in the adoption of the American method in England. A scientist of the United States bureau of animal industry who was invited to visit England to make a tour of investigation, installed the plan which gave promising results during the past two years in the U.S.

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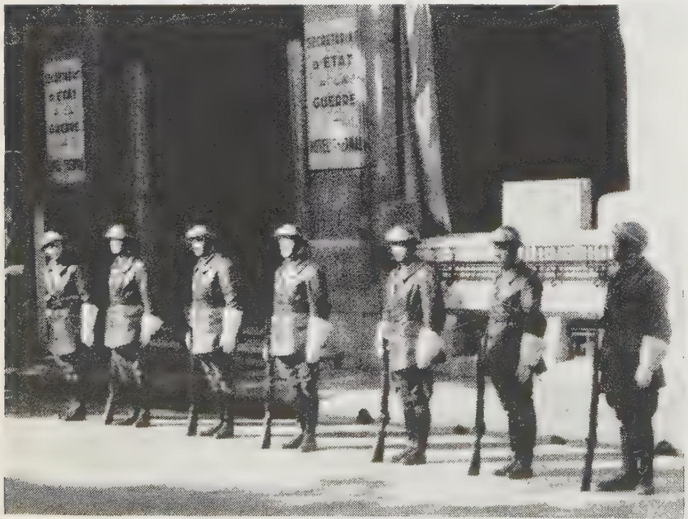
Vichy. A town of central France, department of Allier, located on the right bank of the Allier river, 33 mi. southeast of Moulins; pop. (1939), 20,000. Vichy has been an internationally famous medicinal spa since the latter part of the 17th century; its alkaline waters are especially recommended for diseases of the stomach and the liver, including diabetes and gout.

Vichy first acquired political importance in the summer of 1940, when the French government, formed after the loss of the war to Germany and headed by Chief of State Marshal Henri Philippe Pétain (*q.v.*), established itself there. It was unwilling to return to Paris because of the German military occupation, and Vichy was convenient as a temporary seat of government because of the large number of hotels and sanatoria which could be converted to use as official residences and offices. What was originally regarded as a temporary makeshift arrangement continued through 1942, since the war did not come to an end and no final peace was concluded between Germany and France. A rapid succession of events, initiated by the U.S. and British landing in French North Africa on Nov. 8, led to the disappearance of even the semblance of independence formerly maintained by the Vichy regime. Admiral Jean François Darlan (*q.v.*), a former premier of the Vichy government and formerly minister of marine, passed over to the United Nations' side and carried on in North Africa as civil administrator until his assassination. Repudiating the armistice, Hitler occupied all France. The greater part of the French fleet, stationed at Toulon, was scuttled by its crew to prevent the ships from falling into axis hands. The stage seemed set for a return to Paris of whatever puppet regime Germany might wish to maintain in France. (*See* also FRANCE.)

(W. H. CH.)



PÉTAIN'S GUARD stationed in front of the office of the secretary of war at Vichy in 1942, before German occupation of all France

Victoria. A state of the Australian commonwealth, area 87,844 sq.mi.; pop. (est. Dec. 31, 1941), 1,952,152. Chief cities (pop. Dec. 31, 1939): Melbourne (Cap., 1,046,750); Geelong (40,100); Ballarat (38,590); Bendigo (30,150). Governor (1942): Maj. Gen. Sir W. J. Dugan.

History.—In July 1942 the Victorian Labour party decided to end its alignment with the Dunstan (Country party) government, which it had supported for more than seven years. The Labour party objected to Albert Dunstan's opposition to the commonwealth government's uniform tax legislation, and his general attitude toward the commonwealth. The defeat of the government was avoided, however, by Everard, the leader of the United Australia party (opposition) moving a vote of confidence in the government before the Labour party was able to move a nonconfidence motion. The motion was carried by 36 votes to 19, and the U.A.P. took its place on the cross-benches in support of the government while Labour became the official opposition.

The state budget which was presented in August revealed a surplus of £A.792,000 for 1941–42 which was to be set aside for the erection of buildings such as hospitals and schools. Estimates for 1942–43 provided for a surplus of £A.85,000, revenue being estimated at £A.32,541,000 and expenditure at £A.32,456,000. Features of the budget were increased pay for police and other public servants, a cut of about 50% in suburban rail fares for servicemen and a reduction in land tax on land used for primary production.

In August the city of Melbourne celebrated the centenary of its incorporation as a municipality and a congratulatory message was received from his majesty the king.

Education.—In 1939: state primary schools, 2,585; scholars on roll, 221,219; average attendance, 155,441. State secondary schools, 154; scholars on roll, 42,104; average attendance, 34,176.

Finance.—In 1942–43 (estimated) revenue £A.32,541,000; expenditure £A.32,456,000; debt outstanding (June 30, 1941) £A.181,219,000.

Communication.—Roads and streets fit for motor traffic (Sept. 30, 1939) 103,929 mi. Railways (1940–41) 4,745 mi. Motor vehicles licensed (March 31, 1942): cars, trucks, etc., 211,441; cycles 18,166. Wireless receiving set licences (March 31, 1942) 372,010. Telephones (June 30, 1941) 228,936.

Agriculture, Manufactures, Mineral Production.—Production in 1941–42: wheat 47,000,000 bu.; wool (1940–41) 185,000,000 lb.; coal, brown (1940) 3,994,515 tons; gold (1939) 156,522 fine ounces. Industry and labour, 1940–41: factories 9,121; employees 237,636; gross value of output £A.209,348,845; unemployment (trade union returns) (March 1942), 1.4%. (W. D. MA.)

Victory Tax: *see* TAXATION.

Virginia. Southernmost of the middle Atlantic states, the "Old Dominion" was one of the 13 original United States; first permanently settled at Jamestown in 1607. Area, 40,815 sq.mi.; pop. (1940) 2,677,773. Of the population, 35.3% were urban and 64.7% rural. An estimate based upon 5% of the census showed a white population of 2,013,723, nonwhite of 664,050. Capital, Richmond (193,042, increased by annexation to 213,500 on the basis of 1940 census figures). Other cities include Norfolk (144,332) and Roanoke (69,287). Richmond's metropolitan population was estimated in Dec. 1942, at 258,000; the Norfolk-Portsmouth-Newport News area at 429,000.

History.—The biennial session of the general assembly began Jan. 14 and ended March 14. The war program outlined by Governor Colgate W. Darden, Jr., in his inaugural address Jan. 21 was substantially and quickly made law. The assembly established a state department of corrections to introduce into Virginia a system of probation and parole; established a retirement system for state employees and school teachers; established a personnel and merit rating system for state employees; made the governor director of civilian defense; added $5,000,000 to the sinking fund, and simplified the administration of several state departments. A special session of the assembly met from Sept. 29 to Oct. 1. Approving unanimously the governor's suggestion, the legislature provided for eventual liquidation of the state debt by transferring an additional $10,000,000 of an unobligated surplus of $18,639,879.66 from the treasury to the sinking fund for the purchase of federal government bonds. The governor in 1942 (elected in Nov. 1941) was Colgate W. Darden, Jr.; William M. Tuck was lieutenant-governor.

Education.—In 1941–42, elementary school enrolment was 449,657; teaching staff, 12,416; secondary school enrolment, 136,525; teaching staff, 5,660.

Public Welfare, Charities, Correction.—For the year ended June 30, 1942, 6,314 persons received $910,673.95 in general relief; 19,783 persons received $2,454,481.19 in old-age assistance; 14,313 dependent children, $1,164,015.66; 1,081 blind, $163,727.70; and in 1942 (January through November) 289,432 unemployment compensation checks were written for $2,655,778.98. An average daily population of 4,557 were in five penal institutions for adults and 772 were in four industrial schools for juveniles.

Communications.—On Jan. 1, 1942, there were 9,459.9 mi. of highway in the state's primary system; on July 1, 1942, there were 37,486.61 mi. in the secondary system. During the year ended June 30, 1942, the state spent $31,305,304.24 on the highways. Railroad mileage in Virginia was 4,203.2 on Jan. 1, 1942. There were 302,585 telephones in Virginia on Nov. 30, 1942.

Banking and Finance.—On Dec. 31, 1941, Virginia had 184 state banks and branches and 130 national banks and branches. Deposits of the former totalled $337,776,000; of the latter, $506,799,000; assets of the state banks, $379,985,000; of national banks, $563,380,000. Resources of 19 industrial loan associations, 58 building and loan associations, and 32 credit unions were $46,933,207. The state budget for the fiscal year ended June 30, 1942, showed receipts of $134,534,252; expenditures, $122,729,989. The gross debt on June 30 was $18,888,996.75; the net debt, $12,580,802.99; in the sinking fund, $6,308,193.76. Later in the year $15,000,000 was added to the sinking fund by authorization of the state legislature.

Agriculture.—The value of Virginia's principal crops in 1942 was estimated at $172,127,000, an increase of 39% over 1941. Acreage harvested advanced 6% above the 1941 figure to 3,851,000 acres. Yields of most crops were above the recorded average, but a wet fall hampered harvesting activities, and a shortage of farm labour became increasingly acute as the year advanced. The farm income in 1942 was estimated at more than 35% higher than in 1941, when the income was $158,260,000. Of the latter amount, $77,821,000 came from crops, $73,915,000 from livestock, and $6,524,000 from government payments. Tobacco, first in value of production at $40,346,000, was worth 60% more than in 1941.

Manufacturing.—The total value of manufactures in 1940 was $1,255,354,533. Wage earners were paid $184,506,695. The principal industries were tobacco products, transportation equipment, textiles, food products and paper and printing.

Mineral Production.—The value of mineral production in 1940 was $37,670,935; 19,057 wage earners were paid $20,382,889. The two leading minerals were coal (valued at $27,103,764 in 1940) and coke ($928,239). (J. S. Br.)

Leading Agricultural Products of Virginia, 1942 and 1941

Crop	1942 (estimated)	1941
Tobacco, lb.	106,528,000	88,572,000
Cotton, lint, bales	33,000	28,000
Corn, bu.	33,586,000	32,942,000
Oats, bu.	3,510,000	2,625,000
Barley, bu.	2,120,000	1,800,000
Apples, commercial, bu.	13,908,000	11,800,000
Peaches, bu.	1,936,000	1,860,000
Wheat, winter, bu.	7,520,000	7,665,000
Hay, all tame, tons	1,489,000	1,257,000
Lespedeza seed, lb.	9,200,000	6,800,000
Potatoes, bu.	7,242,000	6,808,000
Sweet potatoes, bu.	3,875,000	2,970,000
Peanuts for nuts, lb.	201,500,000	169,510,000
Soybeans for beans, bu.	1,782,000	638,000

Virginia, University of. A state institution for higher education at Charlottesville, Va. The original university was designed and built by Thomas Jefferson. There are six departments: two academic—the college and department of graduate studies; and four professional—law, medicine, engineering and education. The total budget for 1942–43 was $3,030,609. The corporate name of the university is "The Rector and Visitors of the University of Virginia." For statistics of student enrolment, faculty members, endowment, library volumes, etc., *see* Universities and Colleges. (J. L. N.)

Virgin Islands. A United States dependency in the West Indies, east of Puerto Rico, comprising St. Croix (pop. 12,902), St. Thomas (11,265) and St. John (722) islands. Area, 133 sq.mi.; pop. (1940) 24,889, 13.1% more than in 1930, with whites 9%, Negroes 69% (1930: 78.3%), "mixed and other races" 22% (1930: 12½%). The chief cities are: Charlotte Amalie, the capital, on St. Thomas, 9,801 (1930: 7,036); Christiansted, 4,495 (1930: 3,767) and Frederiksted, 2,498 (1930: 2,698) on St. Croix. The governor in 1942 was Charles Harwood.

History.—In 1942 the Virgin Islands celebrated the 25th anniversary of their transfer from Denmark to the United States. The effects of World War II were felt heavily in continued loss of tourist trade and various restrictions and economic dislocations. Rationing was begun on many articles, notably gasoline.

Education.—In 1941, there were 26 elementary schools (3,281 enrolment, including 1,471 in eight accredited private schools), and three high schools (enrolment: 750).

Finance.—The monetary unit is the United States dollar. An annual United States government subsidy is made to assist in defraying government expenses. The total budget for 1942 was $889,845.

Trade.—Under wartime conditions in 1942 official policy was to withhold full trade statistics. Nevertheless, trade, although restricted to strategic and war related movements, increased greatly in 1942 as indicated by a doubling of the revenues of St. Thomas, principally derived from commercial sources. Imports from the United States (normally 60–75% of the total) were valued at $3,023,979 in 1940; exports (normally around 95% of the total) $1,448,020, and in the first nine months of 1941, $3,003,200 and $1,725,053 respectively. Rum, bay rum, and sugar provided most of the exports.

Communication.—External communication is by steamer and Pan American Airways, through Charlotte Amalie. Inter-island traffic is by boat.

Agriculture.—Agriculture supplements shipping to support St. Thomas. St. Croix and St. John are largely agricultural. In 1940 there were 828 "farms" of 3 ac. or more, totalling 55,228 ac. St. Croix produces practically the entire sugar crop of the islands. Vegetable, orchard products (guava, cacao, coco-nuts, limes, lemons and oranges), and livestock comprise the remainder.

Manufacturing.—Local manufactures for export were greatly restricted in 1942 because of the shipping shortages. As a result, sales dropped from a 1941 total of $55,357.77 to $32,798.66. (C. L. G.)

Virgin Islands, British: *see* West Indies, British.

Viruses: *see* Epidemics and Public Health Control; Infantile Paralysis; Medicine; Pneumonia.

Visser, Lodewijk Ernst (1871–1942), Dutch jurist, was born August 21 in Amersfoort and studied law at the University of Utrecht. He taught for a time at the University of Amsterdam before becoming judge of the Rotterdam Court of Justice in 1903. He was named judge of the Netherlands High Court of Justice in 1915 and rose to the position of president of the court in 1939. He held the latter post until he was ousted by the Germans shortly after the invasion of May 1940. Visser was active in Jewish welfare work and had been president of the Jewish community of The Hague. He died in the Netherlands, February 24, according to a Dutch news agency report.

Vital Statistics: *see* BIRTH STATISTICS; CENSUS, 1940; DEATH STATISTICS; INFANT MORTALITY; MARRIAGE AND DIVORCE; SUICIDE STATISTICS.

Vitamins. Significant advances were made particularly in the biochemistry and physiology of some of the members of the vitamin B complex. The work on biotin was probably most intensive, resulting in definite knowledge of its chemical structure and some indications of its role in physiology and its importance to man. Climaxing chemical studies of several years, DuVigneaud in association with Melville and Hoffman and other students obtained conclusive proof of the probable structure of biotin and effected a synthesis of the compound. In 1941 it was shown that biotin has the empirical formula $C_{10}H_{16}O_3N_2S$. In 1942 it was found that the compound consisted of a cyclic urea structure combined with a five-membered ring structure containing sulphur and having an aliphatic acid side chain. The exact position of the valeric acid side chain had not been established but the investigators believed that it was attached to one of the carbon atoms adjacent to the sulphur.

Some interesting observations were reported by Sydenstricker and his collaborators, who maintained a group of human volunteers on foods which supplied a minimal amount of this factor of the B complex. In the seventh week on such a diet all the subjects developed a grayish pallor of the skin, and in one person there was observed a maculosquamous dermatitis of the hands, arms and legs. Some of the patients developed atrophy of the lingual papillae, but in none were there observed the characteristic tongue lesions found in riboflavin and nicotinic acid deficiencies. The neurologic symptoms reported after five weeks on the deficient diet were strikingly similar to those that had been prominent in induced thiamin deficiency in man. These symptoms consisted of a mild depression, lassitude, sleeplessness, and were accompanied by loss of appetite. Despite the administration of iron the blood showed a deficiency in haemoglobin content. Treatment with a preparation supplying from 75 to 300 micrograms of biotin daily effected prompt relief within from three to five days. The authors emphasized that the signs and symptoms observed were similar to those seen in some cases of spontaneous nutritional deficiency, which perhaps is to be expected because dietary deficiencies in man are apt to be multiple in nature.

There was some interest in the possibility of treating certain types of cancer by procedures designed to withhold biotin from the cells. Because of the observations of Sydenstricker and his collaborators it seemed doubtful that such studies would be fruitful for, although the cancer cells may need biotin, the normal cells also require this factor. One method of reducing the biotin intake was through the feeding of large amounts of raw egg white. This food contains avidin, a protein which combines with biotin and prevents its absorption. Coagulated egg white does not have this effect.

Students of nutrition were becoming increasingly aware of the probable importance of intestinal bacteria in synthesizing some of the vitamins. This was particularly well known in the case of vitamin K, the anti-haemorrhagic vitamin which can be synthesized by common intestinal organisms. Burkholder and McVeagh grew pure cultures of six common intestinal organisms in synthetic media. It was found that one organism, *B. mesentericus,* required biotin for its growth and another, *P. vulgaris,* required nicotinic acid. These two organisms, however, were able to synthesize the remaining vitamins that were studied and four other species of bacteria produced appreciable quantities of thiamin, riboflavin, biotin and nicotinic acid. Most of the vitamins were found to be within the bacterial cell, which indicated that bacteria synthesize the vitamins for their own metabolism. Some of the vitamins had leeched out into the culture media, however, and it seemed quite possible that the intestinal bacteria which inhabit the alimentary tract of man throughout life (beginning from a few days after birth) may be of some benefit through their ability to synthesize dietary essentials which are needed, not only for the unicellular organism which makes the vitamin but also for the complex multicellular host.

An interesting technique for the study of the importance of the intestinal microorganisms in nutrition was provided by the oral administration of sulphaguanidine or the newer drug, sulphasuxidine (succinyl sulphathiazole). These drugs are effective bacteriostatic agents for intestinal organisms and their administration to experimental animals results in a retardation of growth. This retardation of growth may be counteracted by the administration of liver extract (which supplies more of the B complex) or para-aminobenzoic acid (which antagonizes the effect of the sulphonamide drugs). In the rat the administration of sulphaguanidine resulted in a state of hypoprothrombinaemia, probably because of inhibition of vitamin K synthesis in the intestinal tract, but this deficiency was not sufficient to delay the clotting time of the blood in these animals. Nielsen and Elvehjem showed that the retardation of growth caused by feeding sulphasuxidine can be counteracted by biotin and also by folic acid. The latter compound was studied intensively by R. J. Williams. It is found in green leaves and is considered to be a member of the vitamin B complex.

It appeared evident that the less well known members of the vitamin B complex will ultimately be found to be important in human nutrition. Pilgrim, Axelrod and Elvehjem showed that pantothenic acid and biotin are involved in the metabolism of pyruvic acid, an intermediate in carbohydrate metabolism which hitherto was thought to require only an enzyme containing thiamin for its further oxidation. Pyruvates accumulate in the blood of men who are maintained on a thiamin deficient diet. There was evidence that certain members of the vitamin B complex are essential for the development and maintenance of normal tooth structure. Choline undoubtedly is of importance in several ways. Pantothenic acid deficiency in experimental animals, particularly in young animals, was so striking and so severe that its importance in human nutrition seemed a certainty. These facts emphasized the importance of obtaining an adequate diet complete in all nutritional factors, especially those of the vitamin B complex.

Observations on human beings indicated that the minimum daily requirement of men for thiamin is about 0.5 mg. for each 1,000 calories, but a more desirable intake is probably about 1 mg. for each 1,000 calories. In the United States the increased availability of enriched flour, which provided more thiamin and niacin and iron than ordinary white flour, was a distinct aid in helping to secure the thiamin requirement, as shown by the experiments of Lane, Johnson and Williams.

A number of new reports appeared on the effect of maintenance of human beings on thiamin deficient diets. Wilder and his collaborators noted vague subjective symptoms of discomfort and nervous instability, as well as objective signs of poor health. The most significant observation perhaps was the loss of ability to do muscular work. Similar results were reported by Egana and his collaborators who maintained seven healthy physicians on a diet deficient in the vitamin B complex. They noted loss of ambition, increased fatigue, and lowered efficiency in their work. There was developed in less than a month a moderate deterioration of the ability of the subjects to undergo exhausting exercise. The investigators reported that more severe disability was observed when persons accustomed to vigorous exercise were maintained on deficient diets. All of these signs and symptoms were relieved by administration of the vitamin B complex.

Other studies of interest which may be mentioned were the demonstration that vitamin A along with vitamin C is of great importance in the diet of the patient with tuberculosis, and the observation that increased amounts of vitamin C may be needed to maintain the patient with pernicious anaemia who is receiving treatment with liver extract. Improvements in the technique of medical evaluation of nutritional status, especially with regard to mild deficiency of vitamins, continued and Kruse and his collaborators reported some interesting signs of what they consider to be deficiencies of ascorbic acid, niacin, riboflavin and vitamin A. Further work would be necessary before the importance of these studies can be fully evaluated.

Applications of vitamin research to human welfare were evidenced by the first order of Food Administrator Wickard in the United States to the effect that beginning Jan. 18, 1943, all flour and bread must be enriched in accordance with specifications of the Food and Drug administration pertaining to these products. Beginning Jan. 1, 1942, steps were undertaken to give all British children fish liver oil and orange juice as sources of vitamins D and C. Surveys of population groups were made in both Britain and the United States and Canada for the purpose of checking on the nutritive status of civilians. In such studies the vitamins along with protein and the other components of an adequate diet were shown to be of the greatest importance to the maintenance of health. A study by Dorothy G. Wiehl showed that the diets of a group of aircraft workers in southern California were markedly deficient in riboflavin and ascorbic acid. The remedy for poor diets of industrial workers was improvement in the diet rather than in the indiscriminate administration of vitamin preparations, according to a report of the Council on Foods and Nutrition of the American Medical association. If vitamin mixtures are to be used for therapeutic purposes another report of the same association described the principles involved in the rational formulation of such mixtures according to the daily dietary requirement for each vitamin. Of interest to persons concerned with the calculations of diets was a report by Booher, Hartzler and Hewston of the Bureau of Home Economics, U.S. department of agriculture, on the vitamin values of foods in relation to processing and other variants.

(*See* also ALIMENTARY SYSTEM, DISORDERS OF; BIOCHEMISTRY; CHEMISTRY; DERMATOLOGY; DIETETICS; FISHERIES; FLOUR AND FLOUR MILLING; GYNAECOLOGY AND OBSTETRICS; MEDICINE; PHYSIOLOGY.)

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V-Mail: *see* PHOTOGRAPHY.
Vocational Education: *see* EDUCATION.

Voliva, Wilbur Glenn (1870–1942), U.S. clergyman, was born March 10 near Newtown, Ind. Son of an Indiana lawyer, he was ordained minister in the Christian Church in 1889 and later joined the sect known as the Christian Catholic Apostolic Church in Zion. Voliva became a close associate of John Alexander Dowie, Australian evangelist who founded the sect. In 1901 Dowie established a community for his flock at Zion, Ill., on the shores of Lake Michigan. But in 1906 the Zion congregation repudiated Dowie, and Voliva stepped into the role of overseer. Voliva then acquired all of Zion's real estate and expanded the city into an $11,000,000 business and religious institution. He got into financial difficulties in the early 1930s and on several occasions his parishioners tried to force him into bankruptcy. A fundamentalist, Voliva insisted the world was flat, although he had made a round-the-world cruise. He forbade his followers in Zion to drink, smoke, chew gum, swear, dance or to eat pork and oysters. He persistently predicted the end of the world and expected to live to the age of 120. He died in Chicago, Oct. 11.

Von (in personal names): *see* under proper names.

Voroshilov, Klementiy E. (1881–   ), Russian army officer, was born Feb. 4 in Verkhnyi, Ukraine. In 1903, he joined the Social-Democratic party. He was exiled to Archangel in 1907 for revolutionary activities but escaped to Baku. During World War I, he was a revolutionary organizer, but after the bolsheviks seized power he entered active military life. He led guerrilla detachments against German armies in the Ukraine in 1918. He was people's commissar of the army and navy in 1925 and was a member of the Communist party central committee after 1921. On May 8, 1940, Voroshilov was named vice-premier and Marshal Timoshenko succeeded him as defense commissar. In Aug. 1941, Marshal Voroshilov was in command of the northwestern front which included Leningrad, and in Oct. 1941, he was charged with formation of new Russian armies. He was then returned to the Leningrad area and was in command of Russian troops that attempted to batter their way out of nazi siege lines in Jan. 1942. In August, he attended the Churchill-Stalin conference in Moscow.

WAAC: *see* WOMEN'S ARMY AUXILIARY CORPS.
WAFS: *see* LOVE, NANCY HARKNESS.

Wages and Hours. During 1942 employment and pay rolls in manufacturing and non-manufacturing industries improved substantially as a result of World War II orders and the U.S. war program. Improvement became particularly noticeable during the latter part of 1940 and proceeded continuously to higher and higher levels. Portland, Ore., had the highest known index of employment in Nov. 1942, with 383 (1937=100). The government had discontinued releasing indexes for such cities with war work, but it was announced that in Nov. 1942, 34 cities had employment indexes above 150, though four cities had lower employment indexes than in Sept. 1937. Table I shows the employment indexes for 1941 and the first eight months of 1942. Table I and Table II show improved employment and higher average weekly earnings during the first half of 1942 as compared with the first half of 1941.

Employment during the first eight months of 1942 was about 15% better than during the corresponding months of 1941 (Table I). This was caused principally by the improvement in employment in the durable goods industries where employment increased more than 20% over the corresponding months in 1941.

Table I.—*Employment, Pay Rolls and Earnings in Manufacturing Industries in the U.S. in 1942 and 1941*

(Indexes are based on 3-year average, 1923–25=100, and are adjusted to preliminary 1939 census of manufacturers. Not comparable to indexes published by the U.S. Bureau of Labor Statistics prior to August 1939.)

	All Manufacturers				Durable Goods				Nondurable Goods			
	Employment		Pay Rolls		Employment		Pay Rolls		Employment		Pay Rolls	
	1942	1941	1942	1941	1942	1941	1942	1941	1942	1941	1942	1941
Jan.	132.5	115.5	173.5	120.7	143.3	118.3	204.3	132.0	122.1	112.7	139.0	108.1
Feb.	133.8	117.8	178.3	126.8	145.1	121.0	210.6	139.2	123.0	114.7	142.1	112.9
Mar.	135.1	119.9	182.9	131.2	147.5	123.7	217.3	144.6	123.2	116.3	144.3	116.3
Apr.	136.6	122.6	188.0	134.7	150.9	127.7	226.6	149.9	123.0	117.8	144.8	117.7
May	137.8	124.8	193.5	144.0	154.0	131.2	235.6	163.0	122.4	118.7	146.4	122.7
June	139.4	127.9	198.2	152.2	157.5	135.1	244.2	173.9	122.2	121.1	146.7	127.9
July	142.4	130.7	204.6	152.7	161.2	137.7	252.7	172.4	124.6	123.9	150.8	130.8
Aug.	145.9	133.1	214.7	158.1	165.4	138.7	266.7	177.6	127.2	127.7	156.6	136.3
Sept.		135.2		162.6		142.1		183.3		128.7		139.5
Oct.		135.4		167.0		144.0		191.4		127.3		139.6
Nov.		134.8		165.4		144.6		190.3		125.4		137.4
Dec.		134.2		169.9		144.2		195.4		124.8		141.3

This table compiled from tables published monthly in the *Monthly Labor Review*, United States Bureau of Labor Statistics.

During the period 1937–39 average hourly earnings increased. This was an unusual event. In periods of increased unemployment such as prevailed from late 1937 through 1938, labour ordinarily experiences reductions rather than increases in average hourly earnings. The contra-cyclical rise in hourly earnings 1937–39 appears to have been the result principally of the upsurge of unionism which began in 1933–34. By 1937 a large number of the new unions had become sufficiently consolidated and effective, and the older unions sufficiently strengthened, so that their increased bargaining power more than counterbalanced the temporarily adverse business trend of late 1937 and 1938 and enabled them, both in union and nonunion industries, to push the wage level higher. In the first half of 1940 the higher hourly earnings were maintained but not increased in the majority of industries. Table II shows that hourly earnings rose gradually and with increasing rapidity in late 1941 and in 1942, both because of increases in rates and because of overtime.

The bureau of labour statistics figures show a downward trend of hours in most industries, from 1937 to 1939 because of reduction in hours-standards effected by union agreements. But in 1941 and 1942 average hours increased, particularly in the heavy industries, because so much overtime was worked as a result of the war.

The much higher hourly earnings in some industries are due to one or more of the following factors: (1) character of the labour supply employed, as to sex, age and skill, (2) productivity of the industry, principally determined by its degree of modernization, technical equipment and proportion of skilled workers, (3) degree to which union working conditions prevail, (4) necessity of paying high wages to attract labour supply.

Weekly earnings are really of greater significance than hourly rates, from the point of view of living standards. There were 16 industries of the 24 studied in which average weekly earnings exceeded $30 per week in July 1941, and the maximum was $40.50 in the transportation equipment industries. The lowest weekly earnings were in hotels: $16.03. In July 1942, there were 17 industries in which average weekly earnings exceeded $30 and six where they exceeded $40 per week. Three of these were: $50.93 in transportation equipment; $46.04 in machinery; and $43.42 in construction. The lowest, hotels, were but $16.69. The average weekly earnings of durable goods manufacturers were $44.62 in July 1942 compared with $31.24 a year earlier and $28.52 in 1940.

Table II.—*Average Hours per Week, Average Earnings per Hour, and Average Weekly Earnings in Major Industrial Classifications, January and July, 1942 and 1941 in the U.S.*

(Compiled from the *Monthly Labor Review* of the United States Bureau of Labor Statistics)

Industry	Average Hours per Week				Average Earnings per Hour				Average Earnings per Week			
	1942		1941		1942		1941		1942		1941	
	Jan.	July	Jan.	July	Jan.	July	Jan.	July	Jan.	July	Jan.	July
ALL MANUFACTURING					Cents	Cents	Cents	Cents				
INDUSTRIES	41.5	42.4	39.0	40.3	80.1	85.0	68.9	74.4	$35.11	$38.56	$27.71	$31.24
Durable Goods	43.7	44.7	40.6	41.5	88.9	94.6	75.8	82.6	40.91	44.62	31.90	35.83
Nondurable Goods	39.1	39.6	37.3	39.0	70.1	73.2	62.0	65.7	26.95	28.66	22.64	25.12
Iron and Steel (not including machinery)	41.3	42.0	39.8	39.9	90.4	94.3	78.6	86.2	37.31	40.46	31.46	35.49
Machinery	47.1	47.5	43.2	44.6	89.9	96.1	76.8	83.6	42.55	46.04	33.35	37.51
Transportation equipment	46.0	46.4	40.4	41.2	106.9	109.1	91.1	98.8	49.29	50.93	36.57	40.51
Nonferrous metals	43.8	44.5	41.4	42.0	86.5	93.5	74.0	80.3	38.19	42.03	30.71	33.81
Lumber and products	38.9	41.2	38.9	39.9	60.7	66.0	52.9	57.7	23.80	27.26	20.72	23.21
Stone, Clay, Glass	37.2	37.7	36.5	37.4	75.1	78.7	68.2	72.0	28.04	29.90	25.17	26.97
Textiles and products	37.7	38.2	35.7	37.4	58.9	61.1	51.2	55.0	22.14	23.73	18.13	20.54
Leather and products	38.8	38.1	37.3	38.7	64.9	68.7	55.5	60.9	25.08	26.46	20.67	23.68
Food and kindred products	40.8	41.9	39.0	41.1	71.8	73.5	64.9	66.1	29.06	30.21	24.89	26.63
Tobacco manufactures	37.9	38.5	35.7	37.3	54.9	57.5	49.8	52.3	20.76	22.10	17.76	19.45
Paper and printing	40.1	38.8	38.8	39.6	85.2	89.3	80.2	82.5	33.34	33.75	29.75	31.70
Chemicals and petroleum refining	40.2	41.0	38.9	40.0	88.6	94.1	77.0	83.8	36.17	38.80	30.31	33.81
Rubber products	39.3	41.4	39.0	39.2	88.7	93.3	78.8	84.5	34.55	38.88	30.85	33.18
NONMANUFACTURING												
Coal Mining:												
Anthracite	27.0	32.3	27.0	23.2	97.0	98.4	92.5	99.8	26.31	32.09	25.13	23.25
Bituminous	31.3	30.5	29.7	28.7	105.1	105.3	88.5	102.8	32.73	32.18	26.00	31.22
Metalliferous mining	43.3	43.3	40.7	39.6	85.1	89.2	74.8	79.5	37.07	38.90	30.31	31.62
Quarrying and nonmetallic mining	39.2	44.7	38.2	42.0	68.3	70.9	57.6	63.5	26.34	31.76	22.06	26.67
Crude petroleum	38.6	39.4	37.8	38.1	98.1	99.5	88.3	93.0	38.88	39.90	33.27	36.05
Telephone and telegraph	40.2	40.5	39.7	40.5	81.8	81.8	80.4	79.6	32.66	32.96	31.69	32.04
Electric light, power and gas	39.9	40.4	39.4	39.9	95.2	97.6	90.3	91.9	37.90	39.59	35.49	36.50
Wholesale trade	40.9	41.3	40.6	40.9	82.8	86.2	75.0	79.7	33.88	35.35	30.59	32.45
Retail trade	42.2	42.0	42.7	42.6	59.4	61.2	54.5	57.4	23.14	23.57	21.53	22.54
Hotels (year-round)	45.6	45.6	45.9	46.1	36.2	48.2	33.8	34.6	16.69	20.66	15.65	16.03
Building	34.2	37.5	32.6	35.4	109.0	115.7	98.6	100.0	37.27	43.42	32.10	35.38

Table III.—*Rise in Hourly Earnings Rates in U.S.A., 1939–42*

Industry	Hourly earnings in August			
	1939	1940	1941	1942
Manufactures in general	$.634	$.668	$ .745	$ .864
Durable goods manufactures	.699	.731	.830	.966
Nondurable goods	.585	.613	.658	.738
Iron and steel	.757	.777	.871	.967
Machinery	.721	.745	.844	.976
Lumber and products	.502	.526	.588	.677
Food and kindred products	.596	.615	.658	.732
Tobacco products	.472	.492	.520	.587
Rubber products	.770	.779	.861	.936
Anthracite mining	.928	.926	.989	.992
Bituminous mining	.890	.887	1.033	1.061
Wholesale trade	.711	.736	.798	.861
Building	.924	.956	1.001	1.174

Four industries fell between $20 and $25 per week and four between $25 and $30; none below $20 in July 1942.

The wages of farm labour were higher in 1942 than in 1941, judging by the reports of the U.S. bureau of agricultural economics.

Daily wages, with board, averaged $2.76 on Oct. 1, 1942, and ranged from $6.10 in the state of Washington down to $1.25 per day in South Carolina. (*See* also AGRICULTURE; BUSINESS REVIEW; CANADA; CENSUS, 1940; LAW.) (D. D. L.)

Great Britain.—According to the official figures, British wage rates had risen, in July 1942, by 30% above the level prevailing in Aug. 1939, whereas the cost of living had risen by 29%. Both these figures were, however, misleading under the special conditions created by the war. Wage rates no longer bore the same relation to earnings as in normal times, and an average of all trades, or rather of all for which returns were available, was misleading in view of the wide differences in wartime changes from one industry to another. On the other side, the official cost of living index was greatly affected by the policy of keeping the prices of certain essential goods pegged by means of subsidies; for these particular goods were heavily weighted in the composition of the index, which therefore failed to reflect accurately changes in the cost of living as a whole.

It is not possible to compare earnings in 1942 with earnings in 1939, as no prewar figures exist later than Oct. 1938. In Jan. 1942, the latest available returns, average earnings in the trades covered had risen by 46% above the 1938 level (as compared with a rise in wage rates of 26% above 1939). Earnings had risen most (63%) for boys and youths, whereas for men, women and girls the rises were nearly the same (48%, 46% and 45%). Differences between industries are illustrated by the following examples, showing the average rises for all classes of labour: metal, engineering and shipbuilding (56%), textiles (43%), food, drink and tobacco (30%), transport (29%), printing and paper (20%). The high average for all trades was of course due to the great increase in numbers in the metal, etc., group. The earnings of boys and youths in this group had risen by 73% and those of women by 61%. Over all the trades covered weekly earnings averaged 102/—for men, 42/6*d.* for boys and youths, 47/6*d.* for women over 18, and 26/10*d.* for girls, with a general average of 77/9*d.* for all classes. The corresponding averages for metal, engineering and shipbuilding were 119/2*d.*, 45/2*d.*, and 31/—, with an over-all average of 93/—.

There was no authoritative measurement of the real rise in living cost. An estimate made by the Oxford Institute of Statistics put the real rise at 41% to 45%, at the end of 1941, for wage-earning families; and a re-calculation of the Rowntree Minimum Needs Standard for a family of five persons worked out at 89/— a week for April 1942 (34/— food, 55/— other items). Sir John Orr's higher "optimum" standard required in Oct. 1942 a weekly income of at least 29/— per head.

The incomes of the families of men serving with the forces, not included above, were in many cases so low as to have given rise to serious discontent. Until Sept. 1942 the total allowance for the wife of a serving private soldier with three children was 45/— a week, which could be supplemented, subject to a means test, by special war service grants up to about 55/—. Small increases were then announced in the basic allowances; but these failed to satisfy any party in the house of commons, and the matter was still under active discussion at the close of 1942.

About hours of labour there were no general figures available. There was a tendency to cut down the very heavy overtime and week-end work that was common in 1940–41, as it was found that this led to much absenteeism and sickness, and actually lessened output. On the other hand, the reduction in the labour force of the less essential trades led to the working of longer hours by those who remained. In the war trades, a working week of about 56 hours, as against 47 in normal times, was common for men; but there were still wide variations, especially among women. Night work was fairly widely allowed in trades in which it was forbidden before the war; and there was much controversy over certain permits which were given for extending the hours worked by children and young persons.

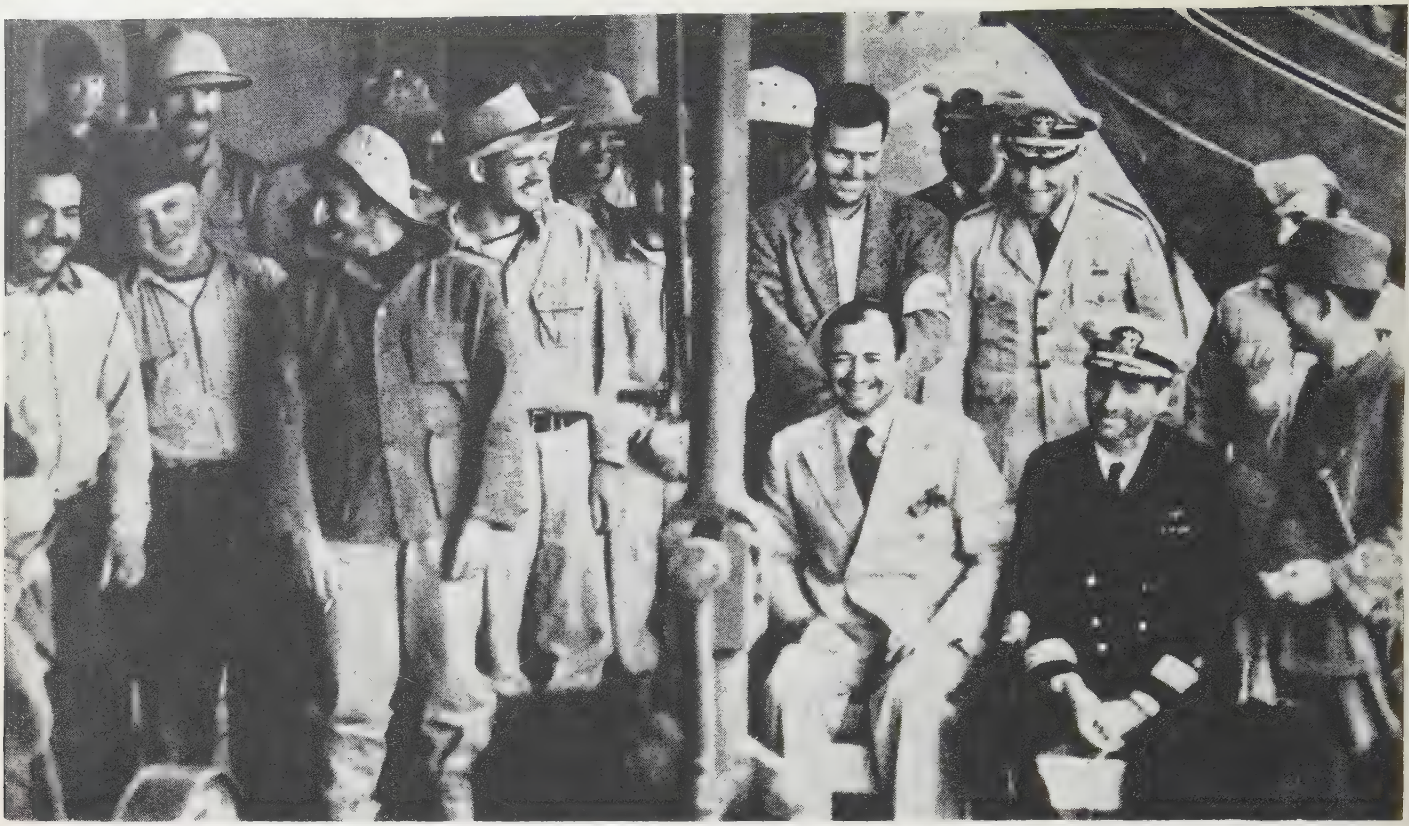
The principal body for settling disputes about wages and hours was in 1942 the National Arbitration Tribunal. This body was set up in connection with the order of 1940 prohibiting strikes without prior reference to the ministry of labour, which could then refer any dispute to arbitration, either by the N.A.T. or by some other body. The government's policy at the close of 1942 was to oppose wage increases except when they were either linked with plans for stimulating output or necessary in order to raise abnormally low wages to a tolerable level. There were, however, a large number of applications for wage advances pending. It was estimated by the Oxford Institute of Statistics that in 1941 wages accounted for 52.9% of national income, as against 52.3% in 1938. This proportion is gross—before direct taxation, which could be estimated at an average of about 9% of working-class incomes. It should be added that for the whole population consumption was estimated early in 1942 to have declined by about 15%. A further decline was in prospect, whatever happened to money wages, owing to the decline in stocks of consumers' goods. (*See* also LABOUR UNIONS; PRICES.) (G. D. H. C.)

Wagner, Boyd David (1916–1942), U.S. army air officer, was born Oct. 26 in Emeigh, Pa. A graduate of the air corps flying schools in 1938, he became a squadron leader during the Philippine campaign in World War II. "Buzz" Wagner was cited for heroism and awarded the D.S.C. when he shot down five enemy planes in close combat and led his squadron in a raid on a Japanese beachhead at Vigan, in the Philippines. He was later transferred to Australia and was skipped three full grades to the rank of lieutenant colonel. The war department announced on Dec. 2 that he had been missing for two days while on a routine flight from Florida to Alabama.

Wainwright, Jonathan M. (1883–), U.S. army officer, was born Aug. 23 in Walla Walla, Wash. He was graduated from West Point in 1906 and served in the Philippines during the Moro uprisings in 1909, and also saw active service in World War I in France. During World War II he was stationed in the Philippines and was second in command to Gen. Douglas MacArthur when the Japanese invaded the Philippines in Dec. 1941. When MacArthur was sent to Australia, Wainwright assumed command on March 17, 1942, of the U.S.-Filipino armies in the Bataan peninsula. Two days later, President Roosevelt raised him to the rank of a lieutenant general. Wainwright led his out-numbered forces with great skill but, lacking supplies and planes, retired in April from Bataan to Corregidor. He held out under a concentrated air and artillery bombardment until May 6, when he was compelled to surrender because his starved and exhausted forces were no longer able to fight. Wainwright, who was awarded the distinguished service medal with an oak leaf cluster for his heroic stand, was interned in a Japanese military prison in Formosa.

Wake Island. A mid-Pacific atoll some 2,600 ac. in area, owned by the United States of America since 1899, Wake island lies in latitude 19° 15′ N., longitude 166° 38′ E. It is about 2,104 mi. west of Honolulu, Hawaii and 1,334 mi. from Port Apra, Guam. By executive order dated Dec. 29, 1934, Wake island was placed under control and jurisdiction of the navy department. Prior to establishment of the Pan American Airways base, under license from the navy department, Wake had no regular inhabitants.

Wake island was attacked by air and sea Dec. 8, 1941, almost



U.S. PRISONERS FROM WAKE ISLAND photographed aboard a Japanese ship after their capture in Dec. 1941. The Japs released many such propaganda pictures of U.S. prisoners in 1942

simultaneously with the Japanese attack on Hawaii (the atoll lies west of the international date line). During the next two weeks a small garrison of 385 U.S. marines repulsed a number of separate attacks and, according to a report of the U.S. navy, knocked three Japanese destroyers, a cruiser and a submarine out of action. On Dec. 22, 1942, after the last U.S. marine plane had been forced down, the Japanese effected a landing and subdued the remainder of the defending garrison.

Japanese installations on Wake island were bombed several times by U.S. air squadrons during 1942. An attack on Christmas day was reported to have caused particularly heavy damage to enemy supplies and equipment.

Wales: *see* Great Britain and Northern Ireland, United Kingdom of.

Wallace, Henry Agard

(1888–), vice-president of the United States. (See *Encyclopædia Britannica.*) Wallace was secretary of agriculture in the cabinet of Franklin D. Roosevelt from March 4, 1933 until Sept. 5, 1940, when he resigned to campaign for the vice-presidency, to which he was elected the following Nov. 5.

In the summer of 1941 he became an important figure in the U.S. defense program. President Roosevelt appointed him head of the Economic Defense board (later the Economic Warfare board) on July 31, and chairman of the Supply Priorities and Allocations board on Aug. 28. In a speech on May 8, 1942, Wallace described World War II as a people's revolution; many persons assailed the speech, particularly his statement about making it possible for everyone in the postwar world to have a quart of milk a day.

On Dec. 28, Wallace, in a speech presumably authorized by the president, envisioned a postwar world federation of nations to preserve peace and maintain economic and political justice.

This proposal was criticized as "impractical" and a prelude to "red communism."

War Bonds: *see* Banking.
War Chest: *see* Relief.

War Communications, Board of.

Activities of this agency, which was previously called the Defense Communications board (created by President Roosevelt in 1940) were greatly intensified after the outbreak of war between the U.S. and the axis powers. The board in 1942 extended radiotelephone and radiotelegraph circuits to many parts of the world as a service to the armed forces; established a system of telephone priorities which cleared the wires for all messages relating to military necessity or vital public need; assisted broadcasters in the conservation of equipment, in obtaining technical personnel, and in the operation and protection of their stations during wartime. Its members in 1942 were Chairman James Lawrence Fly, also chairman of the Federal Communications commission; Herbert E. Gaston, an assistant secretary of the treasury; Major General Dawson Olmstead, chief signal officer of the army; Captain Carl F. Holden, director of naval communications; and Breckinridge Long, an assistant secretary of state. Advising the board were committees representative of labour, industry, aviation, cable, domestic broadcasting, international broadcasting, radio communications, telegraph, telephone and government, state and municipal facilities. A co-ordinating committee, of which FCC Chief Engineer E. K. Jett was chairman, supervised the work of the advisory committees. (*See* also Federal Communications Commission; Radio.)

(J. L. Fy.)

War Damage Corporation: *see* Insurance.
War Damage Insurance: *see* Insurance.

War Debts. A statement follows showing the indebtedness of foreign governments to the United States as of July 1, 1942:

Country	Principal	Accrued Interest	Total Indebtedness
Funded debts:			
Belgium	$ 400,680,000.00	$ 77,913,811.81	$ 478,593,811.81
Czechoslovakia . .	165,241,108.90	642,193.15	165,883,302.05
Estonia	16,466,012.87	6,305,283.68	22,771.296.55
Finland	8,039,601.83	658,668.47	8,698,270.30
France	3,863,650,000.00	511,614,098.99	4,375,264,098.99
Germany (Austrian indebtedness)[1]	25,980,480.66	42,721.75	26,023,202.41
Great Britain . .	4,368,000,000.00	1,591,217,031.47	5,959,217,031.47
Greece	31,516,000.00	4,045,357.03	35,561,357.03
Hungary	1,908,560.00	632,942.53	2,541,502.53
Italy	2,004,900,000.00	32,299,224.27	2,037,199,224.27
Latvia	6,879,464.20	2,516,686.95	9,396,151.15
Lithuania	6,197,682.00	2,218,704.01	8,416,386.01
Poland	206,057,000.00	78,908,869.71	284,965,869.71
Rumania	63,860,560.43	5,616,610.36	69,477,170.79
Yugoslavia . . .	61,625,000.00	847,343.78	62,472,343.78
Total	$11,231,001,470.89	$2,315,479,547.96	$13,546,481,018.85
Unfunded debts:			
Armenia	11,959,917.49	13,637,174.23	25,597,091.72
Russia	192,601,297.37	226,587,745.95	419,189,043.32
Total	$ 204,561,214.86	$ 240,224,920.18	$ 444,786,135.04
Total of above . .	$11,435,562,685.75	$2,555,704,468.14	$13,991,267,153.89
Germany[2]			
Army costs (reichsmarks)	997,500,000.00	38,043,026.21	1,035,543,026.21
Awards of Mixed Claims Commission (reichsmarks)	2,040,000,000.00	112,200,000.00	2,152,200,000.00
Total (reichsmarks)	3,037,500,000.00	150,243,026.21	3,187,743,026.21
Total (in dollars at 40.33 cents to the reichsmark) . .	$ 1,225,023,750.00	$ 60,593,012.47	$ 1,285,616,762.47

[1] The German government had been notified that the government of the United States would look to the German government for the discharge of this indebtedness of the government of Austria to the government of the United States.

[2] Indebtedness to the United States under agreements of June 23, 1930 and May 26, 1932.

(D.W.B.)

War Department, U.S.: *see* GOVERNMENT DEPARTMENTS AND BUREAUS.

Warfare, Incendiary. Several interesting developments in the technique of military incendiaries were noted during 1942, although these had not effected any major modifications in the tactics of incendiary warfare. The most notable incidents as far as concerned the United States were the dropping of appreciable loads of incendiaries by the Japanese in an attempt to fire the Siskiyou national forest in southern Oregon by aerial attack on Sept. 9, 1942. The only bombing of the United States was thus an incendiary attack.

The incendiary was increasingly vying with the explosive bomb in importance as a weapon of aerial warfare. This was evidenced from the fact that in bombing operations the weight of incendiaries very frequently exceeded the weight of explosive bombs dropped, even though more supersized high explosive bombs were used in 1942 than in any preceding year.

Targets sufficiently inflammable to justify attack with incendiaries were in particular cities and industrial establishments lying usually beyond the range of artillery and reachable only by aircraft. Hence the rise of the incendiary as an important military weapon must be viewed as a development of modern aerial warfare.

Against burnable targets, incendiaries were potentially capable of producing wider and more complete destruction than were explosive bombs. However, in any major operation against land targets both types were employed, the proportion of each depending on the nature of the target.

The larger categories of explosive bombs were principally agents of demolition. Their effects, although powerful, were strictly limited as to both time and space. Their normal action was practically instantaneous; and even a 2-ton explosive bomb would seldom cause serious damage beyond a limited definite distance. Incendiaries on the other hand reacted slowly, cumulatively, and, by inducing self-destruction of matériel, produced effects that extended far beyond their points of impact.

The essential technical limitation of the incendiary bomb was that it had to bring fire directly to an object that would burn. A miss of only a few feet was enough to cause the incendiary to burn out harmlessly, while a direct hit on a fire-resistant surface was likewise ineffectual.

Two tactical methods were followed in dropping incendiaries, area bombing and point bombing. Area bombing was usually undertaken from high altitudes. A large number of small incendiaries were scattered over a wide area known to contain a fair proportion of inflammable structures. (Probably 35% of the area should be covered by good incendiary targets.) In area bombing, no attempt was made to hit any particular structure in the area. The ultimate tactical objective of such an operation was to produce a major conflagration. The penetrating power of the small incendiary bombs used in area bombing was low, hence dependence had to be placed on surface fires or on fires started in upper floors of buildings. Dropping of two to four tons of incendiary bombs per square mile of target area was not uncommon in area bombing.

In point (or aimed) bombing of specific targets, use was made of larger incendiary bombs having good penetrating qualities. This method was employed where it was necessary to reach through to well-protected inflammable stores or surfaces. It was also appropriately used against isolated facilities so located as to escape destruction during a conflagration.

Regardless of the materials it employed to produce incendiary action, an effective incendiary bomb had to: (a) generate high heat; (b) for sufficient time to induce combustion.

The kindling point of the target material was in theory the criterion as to the proper relationship between the factors (a) and (b) and hence as to the most suitable incendiary material for use against any given target. In practice, however, availability of raw materials frequently dictated as to production while military logistics tended to limit the variety of incendiary munitions that could be supplied in the field.

Prior to the development of aerial warfare, fires caused by explosion of artillery shell gave some credence to belief that a special incendiary munition was not necessary for military purposes. Analysis of fires resulting from aerial bombardment however showed that only an insignificant percentage could be traced to explosives. Although an exploding bomb generated extremely high temperatures (well over 3000° Centigrade) this heat was dissipated in a fraction of a second. The explosive bomb was therefore an ineffective incendiary, notwithstanding the high temperature it generated, because the duration of its heat was quite inadequate. Actually an explosive was only a reliable fire producer when detonation occurred in the presence of liquids or gases having a high flash point.

Of the militarily acceptable incendiary materials, the one producing the best combination of (a) intense heat and (b) duration of burning, was magnesium. A 1-lb. magnesium tube (the essential feature of the incendiary bomb generally used in area bombing) would maintain a burning temperature in excess of 3000° Fahrenheit for approximately ten minutes. This was sufficient to ignite almost any material susceptible to incendiary action.

The core of the magnesium bomb was loaded with a mixture of flake aluminum and iron oxide (thermit). A firing pin, which functioned on impact, started a special firing mixture which fired the thermit charge, the burning thermit producing a temperature higher than the melting point of magnesium and thus igniting the bomb case. The thermit charge usually burned out in about 50 seconds and after the magnesium case became well ignited.

Thermit was also used as an independent incendiary agent. Temperature produced by the thermit bomb was slightly higher than the burning temperature of magnesium. However thermit reacted much faster so that its maximum temperature could not be sustained more than about 60 seconds; in this respect thermit compared unfavourably with magnesium as an incendiary. At the same time, thermit was effective against readily ignitable materials and its components were cheap.

White phosphorus was another inexpensive substance sometimes used for its incendiary properties. It is a relatively "cold" burner, is less generally efficient than magnesium, but possesses other important advantages. Since phosphorus will ignite spontaneously when exposed to air, it need not be detonated and so could be dropped in small quantities without warning, over large areas of field or forest that are ripe for burning. Or it might also be widely scattered by a burster, thus multiplying the chances of fire.

Solidified oils were likewise used as fillers for incendiary bombs, solid chunks of burning oil being thrown for considerable distances upon detonation. Here much of the latent heat of the filler was dissipated by radiation, although this loss was compensated for by the wide expanse of surface reached.

Thus there were two technical principles involved in the design of incendiary bombs, so that incendiaries might be classified either as (a) intensive type or (b) scatter type.

Intensive incendiaries were those that concentrated intense heat at a single point. They were needed for targets of relatively low inflammability, but they had to be dropped so as to burn within a few inches of ignitable materials. Scatter incendiaries on the other hand generated less intense heat at any one point but tended to fire any readily combustible materials that might be found in a wide area.

Man's long experience in combating fire was immediately drawn upon once the threat of incendiary warfare became real. Excessive destruction following early incendiary attacks resulted not so much from inability to cope with fires as from lack of understanding of the tremendous potentiality of the aerial bomber as a distributor of incendiaries. Once defense against incendiary warfare had become properly organized, it threatened to nullify the effectiveness of the incendiary bombs first employed. In the development of both tactics and technique of incendiary bombing, much thought accordingly was devoted to countercontrols, or measures intended to impede fire fighting on the ground.

Destruction of water mains by high explosive bombs and the use of antipersonnel bombs and even of machine guns against firefighters were common tactical measures to hamper fire prevention work.

In planning area bombing, the capability of fire-fighting organization on the ground was a definite factor in determining the quantity of bombs to be employed, the object being to start more fires than could effectively be combated.

Design of incendiary munitions was also modified from time to time in efforts to render extinguishment difficult or dangerous. An early instance was the introduction of sodium compounds which reacted violently on application of water.

Another interesting example was the addition of the "howler" tail to the 2-lb. magnesium bomb, intended to simulate the whine of a heavy bomb in flight, at the sound of which one ordinarily takes cover.

A small explosive charge in the base of magnesium bombs served as another but a not altogether effective deterrent to extinguishment.

A modification was the addition of a heavy explosive charge, equivalent to eight ounces of tetryl, so as to produce a combination magnesium incendiary and antipersonnel bomb, the unit weighing approximately 5 lb. This bomb, designed to kill or seriously maim anyone within 50 ft. of the burning incendiary, first appeared in 1942.

These technical innovations made the handling of some incendiaries extremely hazardous and necessitated expert training of fire wardens.

Fire defense against incendiary warfare was based primarily on defense against the threat of area bombing. It involved first, augmentation of appliance units as auxiliaries to professional fire-fighting organizations and second, utilization of amateur fire squads and individual fire watchers. The majority of small incendiary bombs that impacted on combustible structures could be controlled by 3- or 4-man fire squads provided with stirrup pumps and other simple equipment. A number however required service of appliance units equipped with pumpers; the latter were frequently required to handle fires resulting from larger scatter type incendiary bombs often used in point bombing.

Organization for civilian fire defense therefore presupposed handling of the largest possible number of incendiary bomb incidents by individuals and amateur fire squads, thus reserving pumper units for the small number of serious fires that might be expected from every sizable incendiary attack. The number of fire watchers and number of fire squads required for adequate fire protection against incendiary attacks in congested districts ran as high as 4,000 individuals per square mile.

During 1942 much progress was made in organizing and training civilian fire squads and auxiliary fire units in preparation for possible incendiary attacks. The National Office of Civilian Defense was instrumental in co-ordinating this development on a nation-wide scale and supplied standardized fire-fighting equipment to local communities. (G. J. B. F.)

War Information, Office of.

The Office of War Information, created by executive order on June 13, 1942, merged the U.S. information activities previously carried on by the Office of Facts and Figures, the Office of Government Reports, the Information Division of the Office for Emergency Management, and a portion of the Coordinator of Information's office. Elmer Davis, news analyst for the Columbia Broadcasting system, was named director of OWI on June 18. Milton S. Eisenhower, formerly director of the War Relocation authority, was appointed associate director of the office, and Archibald MacLeish, Librarian of Congress, was named assistant director in charge of policy development.

Under the terms of the president's directive, the Office of War Information was authorized primarily "to formulate and carry out . . . information activities designed to facilitate the development of an informed and intelligent understanding, at home and abroad, of the status and progress of the war effort and of the war policies, activities and aims of the government." The overseas operations branch in 1942 broadcast to the world from New York city and San Francisco and prepared publications and leaflets for neutral, enemy and allied countries everywhere outside Latin and South America. Within the United States, the domestic operations branch utilized every medium of information during the year—press, radio, movies, posters and publications—in an effort to tell the American people about the progress of the war, problems on the home front, the nature of the enemy, and the objectives of the United Nations.

War Labor Board, National.

The National War Labor board was established by executive order No. 9017 on Jan. 12, 1942, to succeed the National Defense Mediation board. Originally set up to effect the peaceful settlement of all U.S. labour disputes for the duration of World War II, the board was given added duties on Oct. 3, 1942, by executive order No. 9250, which provided that no increases or decreases in wage rates or in salary rates under $5,000, with certain exceptions, could be made without the board's approval. The board was set up as tripartite in composition, with four representatives of the public, four of labour, and four of industry.

In the first 11 months of 1942, the board received a total of 2,119 cases involving about 3,800,000 workers and closed 396 cases, involving approximately 2,067,000 workers. These figures exclude cases handled by the board's regional offices. Man-days of strike idleness in the first eleven months of 1942 never rose above 1/10 of 1% of man-days worked in war industries, and they averaged 7/100 of 1%. Total strikes in progress in war industries in the first 11 months of 1942 were 1,267, involving 521,230 workers, with 1,975,722 man-days idle.*

To dispose during wartime of the union security issue, the War Labor board developed a compromise maintenance of membership formula. This formula was so widely accepted by management and labour that versions of it were often included in voluntary agreements. The formula most frequently written by the board in 1942 provided that all employees of a company who were members of the union 15 days after the date of the board's directive order, or who later chose to become members, should remain in good standing for the duration of the company-union contract.

What later became known as the "Little Steel" formula was evolved by the board in deciding the request of the United Steelworkers of America, C.I.O., for a $1-a-day raise for the 157,000 employees of Bethlehem, Republic, Youngstown and Inland steel companies. The formula set a ceiling of 15% over the wage levels prevailing on Jan. 1, 1941. From that date to May 1942, shortly after the president's "cost of living" message to congress, the bureau of labor statistics' national cost-of-living index had risen 15%. The board announced that it would grant general wage increases only to groups of employees who had not received a 15% increase in their straight-time rates since Jan. 1, 1941. About two-thirds of all manufacturing industries had previously granted such increases in that period.

Out of a total of over 300 directive orders issued on dispute cases in 1942, only four refusals to comply were recorded. The Toledo, Peoria and Western railroad was taken over by the government in March 1942, when George P. McNear, president of the road, refused to accept a WLB decision that his dispute with two railway brotherhoods be settled by arbitration. The General Cable company plant at Bayonne, N.J., was taken over by the navy in Aug. 1942 because workers had been on a wildcat strike for three days, protesting the board's refusal of a wage increase requested by the International Brotherhood of Electrical Workers, A.F. of L. Within a week the plant was returned to private management. The S. A. Woods Machine company, Boston, was taken over by the army in Aug. 1942 when the company refused to comply with an order of maintenance of membership.

In Dec. 1942 Montgomery Ward & Co. refused to comply with a WLB order of compulsory arbitration and maintenance of membership, but said it would obey if directed to do so by the president of the United States. After the president directed the company to comply with the board order, however, the company attempted to insert into the union contract a statement that the document was being signed by the company "under duress." A further order from the president was required before the company signed the contract as originally ordered, with the addition of a statement of protest.

In all other cases, both parties recognized the board's wartime functions as final arbiter of labour disputes. (*See* also LAW; NATIONAL LABOR RELATIONS BOARD.) (W. H. Ds.)

War Manpower Commission. The War Manpower commission was created in the Office for Emergency Management by executive order of President Franklin D. Roosevelt on April 18, 1942, "for the purpose of assuring the most effective mobilization and utilization of the national manpower." Paul V. McNutt, federal security administrator, was appointed chairman. By further executive order of Dec. 5, 1942, the functions of the commission were extended.

The chairman of the War Manpower commission, with the advice of and after consultation with the members of the commission, was empowered to formulate over-all manpower policy and programs, direct the administration of the Selective Service system, a national system of placement services, and programs for the training and effective utilization of manpower, and co-ordinate the action of all government agencies concerned with manpower problems.

A deputy chairman was appointed to act for the chairman and advise him regarding relationships with representatives of workers and employers, other governmental agencies and public groups. The Management-Labor Policy committee, composed of equal representation for management and labour, was to consult with the chairman on matters of policy and programs.

The president's Committee on Fair Employment Practices, through the office of the executive director, was made responsible

THERE MUST BE SOMEBODY SOMEWHERE!
U.S. GOV'T.
MANPOWER NEEDS FOR THE WAR
NONESSENTIAL BUREAUS & AGENCIES
KNOX

A REMEDY for the U.S. manpower shortage of 1942, suggested by Knox of the Memphis *Commercial Appeal:* "Reduce a Little, and Then Look Around" to the chairman for carrying out the provisions of President Roosevelt's executive order of June 25, 1941, which reaffirmed "the policy of the United States that there shall be no discrimination in the employment of workers in defense industries or government because of race, creed, color, or national origin." The Women's Advisory committee was organized to consider and recommend to the chairman on matters of policy, particularly as they affected women and the contribution women could make in the successful prosecution of the war.

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*These figures are gathered monthly by a committee of representatives of the war, navy and labour departments, the War Production board, the Maritime commission and the War Labor board.

The executive director was appointed to assist the chairman in the organization, general direction and supervision of the staff of the commission, and in the execution of policies and direction of programs. The following five bureaus were placed under the general direction of the executive director:

The bureau of program planning and review, to formulate over-all manpower policies and programs and be responsible for all reports and research, and compilation and release of labour market data. It was charged with co-ordinating the statistical activities of the commission and maintaining technical consulting service.

The bureau of selective service, including the Selective Service system, to be responsible for the administration of the Selective Training and Service act.

The bureau of placement services, including the United States employment service, to be responsible for handling employment for industry, agriculture and the government, and for placement of professional and scientific manpower. More than 8,000,000 jobs were filled through the employment service in 1942.

The bureau of training services, to develop unified programs and policies to meet training needs of wartime employment and obtain the most effective utilization of training resources.

The bureau of manpower utilization, to develop programs and policies to obtain maximum utilization of manpower by industry, agriculture and government.

Also under the general supervision of the executive director were placed 12 regional manpower directors, each of whom was made responsible for co-ordinating the activities of the Selective Service system with other activities of the commission, and conducting all other commission programs within a region. Area manpower directors, about 60 of whom were in operation at the end of 1942, were responsible for the formulation and effectuation of a manpower program within a designated area. (*See* also Business Review.) (P. V. M.)

GIRL WORKER welding an exhaust manifold at an aircraft plant in southern California. Skilled women workers were employed in 1942 to offset the loss of U.S. manpower to the armed forces

War Prisoners: *see* Prisoners of War.

War Production, U.S.

Early in 1942, under the impetus of many months of defense production experience, U.S. industry hit its stride in the titanic task of arming itself quickly for the war into which the United States had been hurled by Japan's surprise attack at Pearl Harbor and at the same time of providing its allies with all possible munitions and subsistence supplies.

Initial steps toward conversion from the production of goods for civilian consumption to the manufacture of a great variety of implements of war had been taken in the United States before the nation found itself among the belligerents. During the previous year (1941), much of the inevitable confusion attendant upon an uncharted course involving such a huge enterprise had been encountered and, to a degree, overcome. But when 1942 dawned there were still great loopholes in the production set-up and seemingly endless wrangling among government officials, industrial managers (both large and small), and labour leaders. Public criticism had been directed at the war and navy departments, the Office of Production Management, and Supply Priorities and Allocation board; in fact, at many other harassed branches of the government, as well as business management and labour.

As the clamour for the appointment of a single administrator with absolute control over the arms production program reached a climax, President Roosevelt, by executive order, on Jan. 16, 1942, established the War Production board (*q.v.*), to supersede the Office of Production Management and to take over the functions of the Supply Priorities and Production board, which was abolished by the president's order. Donald M. Nelson, who had been drafted from industry in 1940 to help set up the production machinery of the government, was appointed chairman of WPB and was given supreme authority to assure "maximum production and procurement for war," in the words of the president. It was imperative that every possible manufacturing facility, every ounce of available manpower, should be mobilized in the most effective manner to place more ships on the seas, more planes in the air, more tanks and guns and munitions of all kinds in the hands of the United Nations' fighting forces everywhere.

How well the war production job of 1942 had been performed was proclaimed by President Roosevelt on Jan. 7, 1943, in his message to congress on the state of the union. Asserting that the arsenal of democracy was "making good," the president declared: "We produced about 48,000 military planes—more than the aeroplane production of Germany, Italy and Japan put together. In Dec. 1942 we produced 5,500 military planes, and the rate was rapidly rising." Other production figures for 1942 reported by President Roosevelt were: 8,090,000 tons of merchant shipping; 56,000 combat vehicles, such as tanks and self-propelled artillery; 670,000 machine guns and 21,000 anti-tank guns, both six times greater than 1941 production; 10,250,000,000 rounds of small arms ammunition, five times greater than in 1941; and 181,000,000 rounds of artillery ammunition, 12 times the size of the 1941 output and 10 times greater than the total production of the

United States in World War I. Construction of war vessels and cargo ships in the United States during 1942 far exceeded expectations at the beginning of the year.

In early Feb. 1942 the WPB issued an order which loosed the might of America's greatest industry against the foreign foes; production of automobiles was stopped, and the industry which had produced 5,000,000 cars and trucks in a year set its manpower and inventive genius to work tooling up for tanks, planes, guns and other weapons. In quick succession came limitation orders to insure that steel, copper, aluminum and a score of other materials went into war goods, and that industry went to work as never before producing them. Within a few months the great consumer goods industries were virtually shut down, as such, for the duration. Instead of civilian durable goods, these plants in most instances turned to the production of vital war materials.

As early as May it had become apparent that the tremendous program of new plant construction started around the first of the year was doomed because the nation would not be able to produce enough steel to carry out the extravagant building program and at the same time keep the plants already equipped in full operation. The new building program was cancelled. The steel that would have gone into auxiliary plants and machinery to produce munitions in 1943 and 1944 was allocated at once to the manufacture of immediately needed war implements. Notwithstanding the heavy demands for building materials and labour—and for millions of fighting men—scores of huge war plants for loading shells, making powder and other similar purposes, were erected at strategic locations throughout the country. Most of them are owned by the federal government.

Free Private Enterprise.—The ingenuity of U.S. industry (free private enterprise, sustained by more than 15,000,000 thrifty citizen investors), faced as it was with a sudden demand for mass production of war munitions on an undreamed-of scale, provided inspiration for one of the proudest chapters in American economic history. Literally thousands of timesaving, laboursaving, and moneysaving devices were developed in industry's research laboratories or among the workers in the factories.

The 1942 construction program within the United States totalled some $13,000,000,000, the greatest in history. Deliveries of machinery and equipment added another $3,500,000,000. Altogether, about 70,000 prime contracts and 700,000 subcontracts were let during 1942.

The profit motive, a dominant influence in traditional U.S. industry, was largely cast aside in the race for production for victory. Ability to produce in huge volume and with the utmost speed was the prime consideration in the placing of contracts. Where excessive profits might result from production of war goods, the contract renegotiation provision of the Federal tax law and the excess profits tax were expected to provide a means of equitable adjustment.

The smaller industrial plants and small industry in general were the principal sufferers from the new era of high speed war production, but attempts were made from time to time to relieve this situation. Through the contracts distribution branch of the production division of WPB special effort was made to induce prime contractors to do more subcontracting and, from Feb. to June 1942, approximately 15,000 subcontracts valued at over $522,000,000 were negotiated.

Labour.—The loyal response of organized labour to the unprecedented demands for concentration upon the world's greatest production job was demonstrated by many outstanding instances

DAY SHIFT of the Douglas Aircraft plant at Long Beach, Calif. An estimated 350,000 persons were at work in southern California war industries in 1942—more than double the number employed in 1940 and an impressive array of facts and figures. Production records were broken in practically every category of war materials. The battleship "New Jersey," for example, was built 18 months ahead of schedule. Bombers, fighters and tanks were assembled in the United States faster than ever before anywhere in the world. The war production labour force grew from 6,900,000 in 1941 to more than 17,500,000 in 1942.

Organized labour relinquished the strike as a weapon for the duration of the war, but on the other hand was protected by federal legislation and administrative rulings with regard to hours, wages and working conditions. Nevertheless, as the year approached its close, the scarcity of manpower became an increasingly serious problem. The War Manpower commission (*q.v.*) was established in April 1942, with Paul V. McNutt as chairman, and at that time WPB's labour production division became an agency to represent labour within the WPB rather than an agency to handle labour supply problems for the government. Participation in the consideration of important policies was accorded representatives of A.F. of L. and C.I.O.

Labour-management committees were established in co-operation with the War Production Drive headquarters (located in Chairman Nelson's executive office) to insure the most effective utilization of production facilities, raw materials and manpower. Valuable production ideas, ways to save time or materials, and reduction in absenteeism resulted from the work of these committees. On Dec. 5 President Roosevelt centralized responsibility for manning the armed forces, industry and agriculture in the hands of War Manpower Commissioner McNutt.

Scrap Conservation.—The magnitude of the role assumed by the United States as "the arsenal of democracy" was emphasized in 1942 by the growing shortage of vital commodities, including so-called substitutes, in a hemisphere which had generally been regarded as independently rich in raw material of every description. More steel, copper and aluminum were being produced than ever before, but not enough. America learned, for example, that it couldn't get all the synthetic rubber it wanted because among other things a lot of copper was required to build a synthetic rubber plant. Copper was short. Steel was short. Aluminum was short. Rubber and silk were short, and all the good substitutes for them were short.

"TANK TRAPS" of 1942, as viewed by Bishop of the *St. Louis Star-Times*

The scrap campaigns and other conservation measures alleviated the situation as the American people gathered up waste rubber, metals and other useful commodities that had been discarded in attics, cellars or farm yards. Newspaper publishers throughout the nation responded effectively to a call from Chairman Nelson of WPB for a whirlwind campaign for the collection of scrap metal. By November more than 5,000,000 additional tons of scrap metal were collected and the steel mills were assured enough to see them through the winter.

Other salvage drives produced similarly satisfactory results. President Roosevelt's scrap rubber drive in June netted 450,000 long tons of scrap rubber. The scrap rubber inventory at the end of October was 583,000 long tons, not to mention the tremendous number of automobile tire casings and tubes turned in around Dec. 1. In October detinning plants received 12,000 tons of reclaimed tin cans, while returned collapsible tubes that had once held shaving cream or tooth paste yielded almost 80 tons of tin in the same month.

Reorganization of the War Production Board.—Another crisis in the supreme effort of the combined forces of government and industry to maintain an ever-expanding volume of production impended during the late summer of 1942 through an understandable difference in the points of view of the various agencies and officials involved in the over-all construction problem. The almost constant argument over the allocation of raw materials and the status of production for civilian use between the army and navy on the one hand and the WPB and other agencies on the other hand, reached a near-breaking point in September. A major change in the administration's production policy was widely predicted. The change that finally did take place came in the form of a constructive reorganization of the War Production board by Chairman Donald Nelson. Industry was given a more comprehensive role in the production picture through the appointment of Charles E. Wilson, president of General Electric company, as a vice-chairman of WPB, and the army and navy liaison was improved through appointment of Ferdinand Eberstadt as another vice-chairman of WPB. Eberstadt brought to WPB valuable experience gained as chairman of the army and navy munitions board. Wilson was placed at the head of the new Production Executive committee (formed to set up production schedules and follow them through) in association with Lieut. Gen. Brehon B. Somervell and Maj. Gen. Oliver P. Echols of the army, Vice-Admiral Samuel M. Robinson of the navy and Rear Admiral Howard L. Vickery of the maritime commission. Numerous other personnel changes followed this reorganization, one being the acceptance by Hiland G. Batcheller, president of Allegheny-Ludlum Steel corporation, of the difficult task of heading the iron and steel branch of war production. These changes left Chairman Nelson more time to devote to the over-all job of co-ordinating war production in all its phases.

Balanced Production.—One of the lessons learned in the vigorous U.S. war production drive of 1942 was the lesson of a balanced manufacturing program. It was evident as the production program got under full headway that it was going faster in some directions than in others; that it would be necessary to curtail factory output in some portions of the over-all production until the manufacture of component parts could catch up. It became possible late in 1942 to get a firmer and clearer grasp on the long-range program. It was realized that a program of the magnitude conceived must provide munitions needed by all the armed forces, and just as importantly it must provide for the goods and services to maintain a sound, healthy civilian economy. The over-all program was divided into a number of major components, each balanced within itself and with the others. There were the programs of the army, navy, aircraft, maritime commission, Office of Civilian Supply, Board of Economic Warfare, and Office of Lend-Lease Administration, and other agencies, each of the agencies being responsible for its part in the over-all, long-range program.

The difficult problem of achieving maximum sustained production was met by the War Production board's plan to help get every plant on an approved schedule with a precisely balanced over-all program. Materials and other resources had to be budgeted and allocated to produce the greatest possible amount of the particular things needed most by the United Nations at any given time. Results of the production requirements plan, set up as a means of allocating materials on the basis of the quarterly needs of the various manufacturers, proved unsatisfactory, principally because it did not compel that the total program would be kept within materials supply and the ability to produce and because it didn't make sure that some components would not be manufactured at the expense of others.

Controlled Materials Plan.—The War Production board, with the co-operation and advice of the armed services and other government procurement agencies and with the counsel of management and labour, worked out a new system to control and implement production in an economy of scarcity. This system, the controlled materials plan, was announced early in Nov. 1942. Under this plan, the WPB began dividing available steel, copper and aluminum among the government agencies responsible for filling the essential military and civilian needs of the United States and the other United Nations. Each agency, in turn, cut its programs to fit its share of materials and divided the steel, copper and aluminum allotted to it among its manufacturers. Thus, each manufacturer was assured of just enough material, when he needed it, to produce precisely what was expected of him. The controlled materials plan was put into effect gradually, with a view of reaching total application by July 1, 1943, when it was expected to become the only system under which controlled materials were to be allotted.

Steel and Alloys.—As facilities for the manufacture of war munitions rapidly expanded during 1942, shortage of raw materials became more acute. The steel industry, which operated at above 90% capacity for more than two years, was operating at more than 97% capacity at the close of 1942. By October three out of every four tons of the more than 5,000,000 tons of finished steel produced each month were going into direct war use, and the remainder was diverted to such essential purposes as railroads, machinery manufacture, and construction.

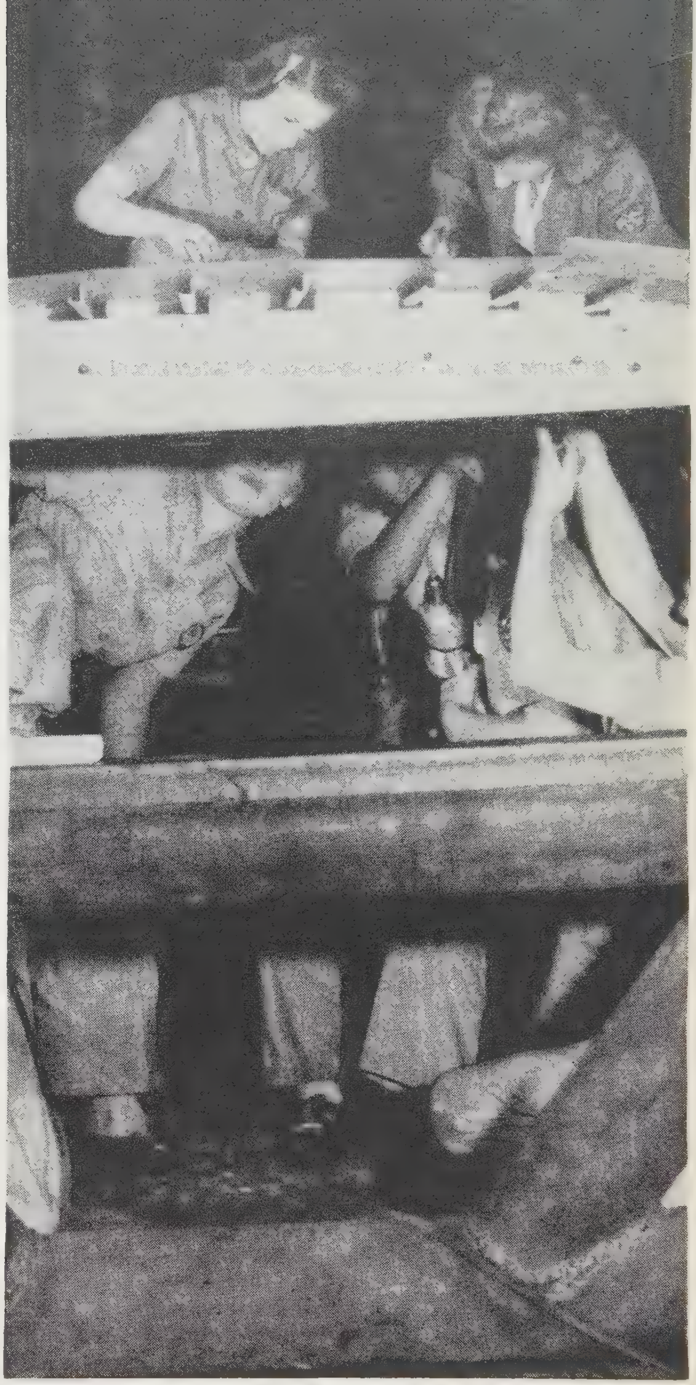
In terms of plates and shapes, sheets, bars, pipe, wire, rails and the like, the United States in 1942 turned out about 62,000,000 tons, or slightly more than 70% of the total of 86,000,000 ingot tons the nation produced. The remaining 30% went back into the furnaces in the form of scrap.

The growth of ingot production was shown by the following comparisons:

	Net tons
1939	52,798,714
1940	66,982,686
1941	82,927,557
1942	86,000,000*

*Estimated

To make such increased production possible, rated steelmaking capacity, as distinct from actual production, was stepped up correspondingly. By the end of 1942 rated steelmaking capacity approached 93,000,000 tons, compared with 88,000,000 tons at the end of 1941, 84,000,000 tons for 1940, and 81,000,000 tons for 1939. Predictions were that the rated capacity would reach 98,000,000 tons by the middle of 1943.



GIRL AIRCRAFT WORKERS assembling the belly section of a transport plane at Ft. Worth, Tex. By the latter part of 1942, women were earning an estimated third of the U.S. national income

Among the major steps undertaken by WPB to fit essential requirements for alloy steel to the supply was the development of national emergency alloy steels. These NE steels used manganese and silicon to produce steels with qualities comparable to more highly-alloyed steels. Progress also was made in expansion of production and imports. The problem of alloy steel supply was complicated by the fact that of the six alloying metals—nickel, chromium, manganese, tungsten, vanadium and molybdenum—all but molybdenum were produced principally outside the United States.

In 1936, when the United States used 324,258 tons of chromite ore, all but 269 tons were imported from Africa, Cuba, the Philippines and Turkey. By 1940, when war had spread widely, consumption doubled over 1936 and imports increased ten times. But domestic production was still only 2,666 tons out of the total supply of 657,689 tons. Government experts estimated late in 1942 that to meet military and essential civilian requirements in 1943, about three times the tonnage used in 1939 would be required, even with civilian needs cut to something like 3% of the former total.

The Reconstruction Finance corporation made $10,000,000 available for the furtherance of chromium projects in the United States, and private enterprise added several million dollars more, in order to assure a domestic output in 1943 as large as imports in prewar years. Large low-grade deposits of chromite ore were developed in Montana, California and Oregon.

Although the United States produced more than 85% of the world's supply of molybdenum, the heavy demand for this alloying material as a substitute for tungsten, chromium and nickel soon exhausted the surplus production and created a scarcity of molybdenum also. As a result of steps taken in 1942 to increase domestic output, the 1943 production of molybdenum was expected to be increased by at least 15%.

Production of tungsten in Latin American countries was stimulated in 1942 through U.S. government action and development projects were started in the United States—in California in particular. The 1942 supply was 10% short of demand.

Imports of vanadium into the United States in 1942 fell below 1940, but domestic production was the highest on record. Government financial aid was extended to mines whose ore was so low grade that it could not be extracted at current prices.

Only negligible amounts of nickel were obtainable in the United States in 1942—2,000 to 3,000 tons of secondary metal recovered from scrap, and about 500 tons of primary metal as a byproduct of electrolytic refining of copper. Essential demand for nickel in 1942 ran some four times that of 1938. In the hope of increasing imports from Cuba, the RFC aided a United States corporation to the extent of $20,000,000 to finance an experiment in treating low-grade Cuban ores by a special process.

Remarkable success was achieved in 1942 in the expansion of domestic output of manganese in the United States. This metal was absolutely essential in steel production, and by careful planning the United States stockpile at the end of 1942 contained enough for at least two years' supply, aside from expected additions from domestic output and imports.

Copper.—A striking illustration of the dislocation that may occur in war production through unexpected labour shortage was witnessed during 1942 in the copper mining industry. A labour shortage had been growing, and so bad did it get that more than 5,000 tons of copper a month were lost in July and August because miners had dropped their tools and taken higher-paying jobs in shipyards, aircraft plants and other construction projects or gone off to the armed forces. As an emergency measure, 4,000 soldiers with mining experience were furloughed to work in the copper mines. United States copper supply reached an all-time high in 1942 of nearly 3,000,000 tons, yet production in many munitions plants was interrupted because copper was not readily available. A premium payment plan to stimulate production of marginal ores was developed by WPB, OPA and Metals Reserve company to pay 5 cents a pound above the prevailing price of 12 cents for all production over certain quotas. Many mines were worked 168 hours a week. Scrap collection was the most important source of metal, resulting in nearly 600,000 tons added to the U.S. supply of copper during 1942.

Zinc.—The zinc supply became a source of deep concern in the latter half of 1942. After trimming nonessential use to a minimum, two problems had to be solved—developing new sources of ore and expanding milling, smelting and refining capacity. Forty-eight projects recommended by the zinc division of WPB were put into construction. These projects included development and exploitation of new ore deposits, opening new mines, mills, smelters and refineries. One new smelter was completed in 1942, and four electrolytic refineries with an annual capacity of 216,000 tons were put into operation. To encourage production of marginal ores, premium prices of 2¾ cents a pound over regular prices were paid for all production over quota. Imports were also stepped up considerably.

Tin.—With the far east producing 70% of the world supply of tin, the flow of this indispensable metal to America was cut off abruptly with the spread of the war. The year's most hopeful development in the tin field was the completion of the Longhorn tin smelter in Texas, with a capacity to handle all the tin ore currently available to the United Nations. Efforts to recover tin from cans, which normally took half the supply, gave promise of yielding more than 5,000 tons of tin a year. Also great hopes were placed in the expansion of electrolytic tin-plate manufacturing facilities.

Aluminum.—One of the most satisfying situations in America's storehouse of war materials was provided by aluminum. At the end of 1942, the rate of supply was about 2,300,000,000 lb. a year, with facilities nearing completion to bring the 1943 production rate up to 3,000,000,000 lb. a year. Of the 1942 total, 230,000,000 lb. came from Canada. An important development of 1942 in aluminum production was the conversion of plants to low-grade domestic bauxite and the construction of new plants to use the low-grade ore. It was confidently expected that the United States would be completely independent of foreign-ore imports by May of 1943 and by September would be able to supply Canada's bauxite needs as well. During 1942 eight new ingot aluminum producing plants came into operation with a total rated capacity of more than 1,000,000,000 lb.

Magnesium.—Large-scale production of magnesium was carried on in the United States for the first time in 1942. This metallic element became an important partner of aluminum in aircraft manufacture. At the close of 1942, production was at the rate of 260,000,000 lb. a year, and a program to raise United States production to over 600,000,000 lb. a year was well under way Eight plants with a rated capacity of 324,000,000 lb. a year came into production in 1942. The outstanding technological development of the year in magnesium was the ferro-silicon process for extracting magnesium in commercial volume. Under this process, less electric power was required, and construction of the plants took less critical materials than other types.

Lead.—To the end of building a stockpile of lead to take care of all contingencies, production was pressed during 1942, with premium payments of 2¾ cents a pound above the regular price for all production over quota. The favourable lead outlook late in 1942 brought a slight easing of restrictions on use of lead in building and other products in November. United States supply of lead at the end of 1942 was at the rate of 1,308,000 tons a year. About 350,000 tons of this lead were recovered from scrap.

Rubber.—The biggest "fly-in-the-ointment" in the United States during the first year of the war—at least so far as disturbing the equilibrium of the public mind—was the rapidly dwindling rubber stockpile of the nation and the certainty of not being able to get much new rubber for at least two or three years. The overrunning by the Japanese, almost at the outbreak of hostilities in the Pacific regions, of 90% of the world's rubber supply precipitated a rubber crisis for the United Nations, and wrote finis to the pleasure-driving programs of millions of American families. With less than one year's supply of rubber on hand in the United States and synthetic production almost negligible, the government sought to find the best remedies for the situation.

The synthetic rubber program was expanded, with the goal set for more than 400,000 tons in 1943 and still greater capacity later. The sale of new tires, except on strict rationing basis, was stopped Jan. 5, 1942, and recapping was restricted Feb. 19. On May 2 the Office of Defense Transportation (*q.v.*) was given authority over all rubber-borne transportation, and ten days later gasoline rationing began on the eastern seaboard—both as a gasoline and rubber-saving measure. There followed a period of public confusion on the subject of rubber, aggravated by the suggestions of a multitude of pseudo-experts and the conflicting opinions of those in possession of facts. Faced with both problem and confusion, the president appointed a rubber survey committee composed of Chairman Bernard M. Baruch, Dr. James B. Conant and Dr. Karl T. Compton to assemble the facts, study them, and report. On Sept. 10, the Baruch committee laid down a comprehensive program designed to carry the nation through the rubber shortage. The report stressed both rubber conservation and increased synthetic production. To bring about the former, the committee called for nation-wide gasoline rationing (tire mileage rationing), 35-mi. speed limit, periodic tire inspections, and a program to maintain essential civilian driving for the duration. The committee further recommended expansion of the projected synthetic program to 1,100,000 tons annually, as well as of reclaiming facilities and scrap collection, and urged the appointment by the chairman of the War Production board of a rubber administrator with full authority to carry out the recommended program. A week later the president created the Office of Rubber Director in WPB, and Donald M. Nelson appointed William M. Jeffers director. The conservation measures recommended by the Baruch committee, to make the 1,000,000 tons of rubber then on automobile tires last as long as possible, were put into effect. On Dec. 1 nation-wide mileage rationing was instituted. (*See* also BUDGETS, NATIONAL; BUSINESS REVIEW; ECONOMIC WARFARE, BOARD OF; PRIORITIES AND ALLOCATIONS; PRODUCTION RESEARCH AND DEVELOPMENT, OFFICE OF; RATIONING; SALVAGE DRIVES, U.S.; STRATEGIC MINERAL SUPPLIES; UNITED STATES; WAR LABOR BOARD, NATIONAL; WAR MANPOWER COMMISSION; WAR PRODUCTION BOARD; WORLD WAR II.) (M. P. Q.)

War Production Board.

Keeping pace with the remarkably swift industrial and economic developments in the U.S. war effort, the War Production board, which was established by President Roosevelt on Jan. 16, 1942, adjusted its organizational make-up and personnel as occasion required during 1942 to fit changing conditions. Chairman Donald M. Nelson, who was charged by the president with responsibility for giving the nation "the most effective prosecution of war procurement and war production," remained at the helm throughout the year in supreme control of all the policies and operations of the board.

In the last and most thorough reorganization of the year, early in the fall, Chairman Nelson announced the addition of new blood and ability to the imposing group of officials already functioning on this important government body. The organizational structure was radically changed to meet the need for co-ordination that would assure to each governmental agency and each industry engaged in providing the war necessities of the United States and its Allies everything needed to operate on a definite schedule within a precisely balanced over-all program.

As constituted during the final months of 1942, the War Production board's principal offices, bureaus and divisions were divided into three spheres, namely: (1) the chairman and general staff agencies, (2) the office of production vice chairman and (3) the office of program vice chairman. Heading these spheres were Chairman Nelson and his *alter ego,* Vice Chairman W. L. Batt. Vice Chairman J. S. Knowlson represented Mr. Nelson on the combined Production and Resources board. The office of rubber director was established within the WPB by order of the president, and Chairman Nelson appointed as rubber director, William M. Jeffers, president of the Union Pacific railroad, with full authority over the rubber program. There were a number of other divisions directly under the chairman, such as the office of civilian supply and the Labor Production division.

The office of production vice chairman was filled by appointment of Charles E. Wilson, president of General Electric company, to supervise the scheduling of programs. With him were associated such men as Lieut. Gen. B. B. Somervell of the army, Major Gen. O. P. Echols of the army air force, Vice Admiral S. M. Robinson of the navy, Rear Admiral H. L. Vickery of the maritime commission, Ferdinand Eberstadt, Lieut. Gen. William Knudsen, Rear Admiral R. A. Davidson and others.

The office of program vice chairman was headed in 1942 by Ferdinand Eberstadt, former chairman of the Army and Navy Munitions board. The functions of this office were to co-ordinate programs and effect distribution and allocation of materials and other resources to meet such programs. Mr. Eberstadt was also appointed chairman of the requirements committee, membership of which included John F. Fennelly as vice chairman, Brig. Gen. L. C. Clay, Rear Admiral Henry Williams, Lieut. Col. W. F. Rockwell, Brig. Gen. B. E. Meyers, and others. The director general for operations, Ernest Kanzler, reported to the program vice chairman, and under the director general were various operating bureaus and divisions, covering a wide range of materials and industries. Mr. Eberstadt appointed Donald D. Davis, president of General Mills, to head his program co-ordination division.

The new set-up of the War Production board, which implemented the new Controlled Materials plan, was designed not only to bring allocation and supply into balance as rapidly as possible, but to establish more intimate relationship between WPB and industry.

With the establishment of the War Production board in Jan. 1942, the Office of Production Management and the Supply Priorities and Allocations board passed out of existence. The functions of those boards were transferred to WPB. (*See* also HOUSING; PRIORITIES AND ALLOCATIONS; PRODUCTION RESEARCH AND DEVELOPMENT, OFFICE OF; WAR PRODUCTION, U.S.)

(M. P. Q.)

War Relief Contributions.

The year 1942 saw increased U.S. governmental participation in foreign war relief work, a field which formerly had been left, in large part, to private agencies.

In July 1942, under executive order No. 9205, the supervision of private relief organizations was transferred from the department of state to the President's War Relief Control board (formerly President's Committee on War Relief agencies), and the board's supervisory scope was enlarged to include all organizations (except the American Red Cross) engaged in collecting contributions for war relief, both in the United States and elsewhere. Registered organizations, numbering 190 at the end of the year, raised a total of $35,382,189.12, $28,533,960.98 in cash and $6,848,228.14 as the value of goods in kind. $21,482,412.69 in cash was transmitted abroad and goods in kind valued at $5,989,707.60 were shipped. The chief beneficiaries of privately financed relief operations were Great Britain, China and the soviet union. The above-mentioned totals do not include the value of shipments of food, medicines and clothing sent to these countries through the Lend-Lease administration (*q.v.*) and the American Red Cross.

The joint Anglo-U.S. blockade directed against the axis powers prevented, as had been the case since the beginning of World War II, the carrying on of large-scale relief projects in axis-occupied countries during 1942. With the appointment of former-

Governor Herbert H. Lehman as Director of Foreign Relief and Rehabilitation Operations, announcement was made that relief operations would begin as soon as the invaders were driven from these areas.

The United States and Great Britain found it possible, however, to make an exception to the above-mentioned policy in the case of Greece. Through the good offices of the Swedish government, an agreement was reached with the German and Italian governments whereby they agreed to refrain from further requisitioning of native produce and to permit the distribution to the Greek people of foodstuffs imported through the blockade, such distribution to be supervised by a commission composed of Swiss and Swedish nationals. Shipment of grain from Canada began in the autumn, supplemented later with dried vegetables from the United States. Substantial quantities of medicines also were sent to Greece.

Relief of U.S. Prisoners.—With the outbreak of war with Japan, U.S. citizens in the Philippine Islands and elsewhere in the far east were taken into custody by the Japanese, and some U.S. soldiers were taken prisoner. While, under the Geneva Prisoner of War convention of 1929 which Japan had agreed to observe and to apply to civilian internees as well as to prisoners of war, the provisioning and humane treatment of prisoners by the detaining power was provided for, differences in dietary habits and standards of living prompted friends and relatives to endeavour to send to the far east supplementary supplies, a procedure recognized and provided for in the convention. Determined and continued efforts through governmental and International Red Cross channels had failed in 1942 to obtain Japanese safe conduct for the shipment of supplies to the far east. Supplies furnished by the American Red Cross and the war and navy departments were, however, sent on the ships engaged in the exchange of nationals between Japan and the United States. (*See* also PRISONERS OF WAR; RED CROSS; RELIEF.) (E. D. K.)

War Relocation Authority: *see* ALIENS.

Warren, Joseph (1876–1942), U.S. educator, was born March 16 in Boston. He received his law degree from Harvard in 1900 and practised law until 1907, when he became administrative assistant at Harvard university. Prof. Warren joined the Harvard law faculty in 1913 and was professor from 1913 until his retirement in 1942; during the last 15 years of his life he held the chair of Weld professor of law. Prof. Warren published *Cases on Wills and Administration* (1917) and *Cases on Conveyances* (1922). He died in Boston, Sept. 19.

War Risk Insurance: *see* INSURANCE.
War Savings Stamps: *see* POST OFFICE.
War Shipping Administration: *see* INSURANCE; SHIPPING, MERCHANT MARINE.

Washington. A state in the extreme northwest United States, popularly known as the "Evergreen state," admitted to the union Nov. 11, 1889. Area, 68,192 sq.mi.; pop. (1940) 1,736,191; native, 1,525,812; foreign born, 210,379. Capital, Olympia (13,254). The three largest cities are Seattle (368,302); Spokane (122,001); and Tacoma (109,408). The urban population in 1940 was 921,969 or 53.1%.

History.—In line with the general U.S. trend toward Republicanism, three of the six congressional districts of Washington, formerly all Democratic, elected G.O.P. candidates in Nov. 1942. The perennial 40-mill limit on the taxation of real property and a measure to increase the benefits of industrial insurance were adopted by popular referendum. The supreme court sustained the state law designed to curb chain-dentistry.

Education.—During the school year 1941–42, average daily attendance in elementary and secondary schools was 266,929; the number of teachers was 11,658. Total current expenditures were $32,845,972.53, and the cost per pupil in daily attendance was $123.05. Salaries of teachers, exclusive of superintendents, averaged $1,756.20.

Public Welfare, Charities, Correction.—The total amount spent upon public assistance in the state, including federal direct expenditures and state aid, was $39,831,000 for the year Aug. 1941 to July 1942. An average number of 7,441 cases on relief received subsidies totalling $1,854,000. The average number of persons on WPA was 8,836, and the total expenditure was $8,241,000. Old persons averaging 62,985 in number received a total of $25,097,000. An average of 12,387 dependent children received a total of $2,536,000. An average number of 1,027 blind people received aid totalling $436,000. In 1942 there were 11 state charitable institutions with a total of 9,068 patients, and four correctional institutions with 2,442 inmates.

Communication.—On Dec. 31, 1940 there were 6,297 mi. of highways in the state. During 1940, $39,925,000 was spent on highways. Railroad mileage was 5,268 mi. and water-borne commerce amounted to 2,531,909 tons in 1940.

Banking and Finance.—State revenue receipts for the fiscal year 1942 were $147,801,987.83; expenditures, $130,012,267.21. On Nov. 30, 1942, surplus funds amounted to $41,217,804.21, of which $20,203,768.46 was invested in government bonds, and $21,014,035.75 cash balance. The bonded indebtedness at the end of 1942 was $9,450,000. One hundred and thirty-five banks in the state reported a total capital of $30,121,000; capital surpluses and undivided profits of $54,879,000; deposits of $855,093,000; and resources of $920,855,000.

Agriculture.—In 1940, 66 farm crops totalling $95,416,000 in value were grown on 3,547,800 ac. Income from crops in 1941 was $123,946,000; from livestock $98,095,000; from government payments $5,665,000.

Leading Agricultural Products of Washington, 1942 and 1941

Crop	1942 (est)	1941
Wheat, bu.	53,083,000	61,142,000
Apples, bu.	27,552,000	27,000,000
Hay (wild and tame), tons	1,984,000	1,969,000
Potatoes, bu.	8,610,000	8,400,000
Barley, bu	12,560,000	5,402,000
Pears, bu.	6,723,000	6,954,000
Peas, (100 lb. bags)	4,150,000	1,950,000
Oats, bu.	10,944,000	7,605,000

Manufacturing.—In 1939 the total value of manufactured products was $636,649,809; 101,136 salaried persons and wage earners received a total of $143,412,064. Shipbuilding and aeroplane construction possibly equalled or exceeded lumber and sawmill products as the state's leading industry in 1942.

Mineral Production.—Mining statistics were a military secret in 1942, but production probably exceeded the 1941 figure of $31,590,023, a post-depression high. Copper and zinc were exploited to the very limit. Four aluminum ingot plants and an aluminum rolling mill constituted the basis for the state's new light metal industry. (H. J. DE.)

Washington, DISTRICT OF COLUMBIA, national capital of the U.S.A., and 11th largest of U.S. cities, with a population of 663,091 by federal census of 1940, had increased its population to an estimated 865,000 at the end of 1942, when the total federal employment amounted to 280,000, 150% more than the peak at the end of World War I.

World War II changed the appearance of the city in 1942. The Mall, Potomac park and many vacant plots of ground were covered with temporary office buildings. The federal government also rented many private office buildings and converted some apartment houses to office use. The principal permanent public building completed in 1942 was the huge Pentagon building for the war department, located in Arlington county in territory once a part of the District of Columbia but in 1846 returned by congress to the state of Virginia. The building was constructed to accommodate nearly 40,000 employees. The president directed that it be converted after the war for quartermaster stores and government files. The bureau of public roads constructed an elaborate system of approach roads with 22 grade separations to avoid all grade crossings.

It was expected by the National Capital Park and Planning commission that after the war all permanent public buildings would be located according to the well considered official plan.

Between July 1941 and Nov. 1942 priorities were given to private companies for building 31,823 family units. Up to June 1942 these were coming on the market at the rate of 500 a month, and after that date at the rate of 1,000 a month. In all it was estimated that private industry would provide accommodations for about 110,000 persons and that public housing would take care of about 50,000 more in permanent, demountable and demolishable dwellings. About 20,000 persons were to be housed in dormitories and about 100,000 in the 12,000 rooming and boarding houses in the district. In spite of all these new accommodations, Washington was overcrowded in 1942, and the National Housing agency launched a program for conversion of large houses into apartments, to be located in areas designated by the National Capital Park and Planning commission as zoned for multi-family dwellings and within an hour's transportation of the central public buildings or adjacent to outlying government buildings. Restricted, single-family districts were protected from structural changes, but families might rent surplus rooms during the war period.

In connection with the housing program for Washington, the National Capital Park and Planning commission prepared seven maps showing: (1) areas served by water supply and sanitary sewerage systems; (2) transit, transportation and time zones; (3) availability of electric service; (4) availability of gas service; (5 and 6) schools, hospitals and recreational facilities for white people and Negroes; (7) land use—existing commercial development.

The National Capital Park and Planning commission was pushing to completion three unfinished projects: (1) the Fort drive connecting the Civil War forts around the city; (2) the East Capital development on the Anacostia river; and (3) the George Washington Memorial parkway to Great Falls on the Potomac.

(H. Js.)

Water-Borne Commerce of the United States.

The release of statistics on water-borne commerce of the United States has been suspended for the duration of the war period. Accordingly, the office of the chief of engineers is not in a position to furnish commercial statistics for the year 1942. (*See* Canals and Inland Waterways.) (E. Rd.)

Wavell, Sir Archibald Percival

(1883–), British soldier, born in May, was the son of Maj. Gen. A. G. Wavell. Following his father's career, he enlisted in the Black Watch in 1901 after studying at the royal military college and the staff college and saw action in the Boer War, in India and in World War I. He then served with the Egyptian expeditionary force until 1920. In 1938 he was promoted to lieutenant general. From 1937 to 1938 he commanded the British troops in Palestine and Trans-Jordan, and in 1940 he became commander in chief of the British forces in the middle east. His small force of empire soldiers swept the Italians out of Cyrenaica in Libya, and he supervised the operations in East Africa which recaptured British Somaliland and took Italian Somaliland, Eritrea and Ethiopia from the Italians. He suffered serious reverses at the hands of the Germans, however, in Libya, Greece and Crete, and on July 1, 1941, he was succeeded as middle east commander by Gen. Sir Claude Auchinleck, whose post as commander of the British forces in India Wavell thereupon took over. In August, Wavell directed the British campaign which resulted in the joint British-Russian occupation of Iran. After the Japanese declaration of war Dec. 7, Wavell met at Chungking with U.S. Gen. George H. Brett and Chiang Kai-shek to discuss measures for common prosecution of the war against Japan. On Jan. 3, 1942, Wavell was named supreme commander of the allied forces in the far east, with Gen. Brett as his deputy. The following March, Gen. Wavell was returned to his former post as commander in chief of India and Burma. On Dec. 15, he asserted that the Japanese peril in India had lessened and on Dec. 19, he launched a drive into Burma. He was named a field marshal on Jan. 1, 1943.

WAVES: *see* Women Accepted for Volunteer Emergency Service.

Wealth and Income, U. S. Distribution of.

By the distribution of income is usually meant its apportionment among individuals according to the size of income; that is, an analysis of the number of individuals or consumer units receiving incomes of various amounts. Although interest in this subject grew out of social and economic reform movements, data on the size distribution of income have many other uses in connection with government and business economic policy. Business marketing programs and even production schedules, taxation policy, social security requirements, and such things as price control, rationing systems and plans for war bond sales are dependent upon knowledge of the distribution of income by size.

Despite wide interest in this subject and its recognized importance, no completely satisfactory study of the size distribution of income in the United States had been made up to the close of 1942. All existing studies suffered to some extent from lack of adequate basic data. Nonetheless, considerable progress was made and studies were available which provided much useful information, even though their results could only be said to be tentative.

The most comprehensive study was that issued by the National

Table I.—*Size-Distribution and Utilization of Consumer Incomes in the U.S., 1935–36*

(In millions)

Income Level (Dollars per Year)	Consumer Units		Aggregate Income		Income Utilization		
	Number (Millions)	% of Total	(Million Dollars)	% of Total	Current Consumption	Gifts and Personal Taxes*	Savings
Total. . . .	39.46	100.00	$59,259	100.00	$50,214	$3,067	$5,978
Under $ 500.	6.71	17.01	2,061	3.48	2,817	44	−800
500— 1,000.	11.65	29.52	8,745	14.76	9,097	284	−636
1,000— 1,500.	8.73	22.12	10,698	18.05	10,294	406	−2
1,500— 2,000.	5.19	13.15	8,875	14.98	8,072	362	441
2,000— 3,000.	4.44	11.25	10,577	17.85	9,043	465	1,069
3,000— 4,000.	1.35	3.42	4,599	7.76	3,631	226	742
4,000— 5,000.	.46	1.17	2,045	3.45	1,494	117	434
5,000—10,000.	.60	1.52	4,092	6.90	2,604	270	1,218
10,000—20,000.	.22	0.56	2,922	4.93	1,532	238	1,152
20,000 and up .	.11	0.28	4,645	7.84	1,630	655	2,360

Source: *Consumer Incomes in the U.S.* and *Consumer Expenditures in the U.S.*, National Resources Committee.

*Personal income taxes, poll taxes and certain personal property taxes.

Table II.—*Average Disbursements of Consumer Units* in Each Third of Nation, 1935–36*

Category of Disbursement	Average disbursements of families and single individuals in:			Percentage of income		
	Lower third, incomes under $780	Middle third, incomes of $780 to $1,450	Upper third, incomes of $1,450 and over	Lower third	Middle third	Upper third
Current consumption:						
Food	$236	$404	$642	50.2	37.5	21.7
Housing	115	199	408	24.4	18.5	13.8
Household operation	54	108	240	11.4	10.0	8.1
Clothing	47	102	251	10.0	9.5	8.5
Automobile	16	57	215	3.3	5.3	7.2
Medical care	20	41	106	4.3	3.9	3.6
Recreation	9	28	89	1.8	2.6	3.0
Furnishings	9	28	72	1.8	2.6	2.4
Personal care	12	22	44	2.5	2.1	1.5
Tobacco	10	23	40	2.2	2.1	1.4
Transportation other than auto	11	19	37	2.4	1.7	1.3
Reading	6	12	23	1.3	1.2	.8
Education	2	7	30	.5	.6	1.0
Other items	3	6	15	.6	.5	.5
All consumption items	550	1,056	2,212	116.7	98.1	74.8
Gifts and personal taxes†	13	39	181	2.8	3.7	6.1
Savings	−92	−19	566	−19.5	−1.8	19.1
All items	471	1,076	2,959	100.0	100.0	100.0

Source: *Consumer Expenditures in the United States,* National Resources Committee, 1939.

*Includes all families and single individuals, but excludes residents in institutional groups.

†Taxes shown here include only personal income taxes, poll taxes and certain personal property taxes.

Resources committee. It provided a wide variety of data on both the distribution of income and the disposition of income for the year 1935–36. Three reports were published: *Consumer Incomes in the United States, Consumer Expenditures in the United States* and *Family Expenditures in the United States.* These studies were developed from income data for some 300,000 consumer units (augmented by income tax data for the higher incomes) and expenditures data for about 60,000 units. Some of the basic information in these reports is presented in Tables I (p. 755) and II.

During 1942 the bureaus of labour statistics and home economics made small studies of the distribution of income for 1941 and the early part of 1942 which are very illuminating in showing the changes that occurred under the impact of the expansion of income and mobilization for war. The over-all results of these studies, together with the comparison for the year 1935–36 are shown in Table III. It should be recognized that Table III is not comparable with Tables I and II since it is based on only money income whereas the latter two tables also include income in kind.

The most striking result of the expansion of income after 1935–36 was to move families out of the smallest income classes and into the larger income classes. In 1935–36, for example, the largest single group of income recipients was that which received between $500 and $1,000 whereas in both 1941 and 1942 the largest group was that receiving between $2,000 and $3,000. More than half of the families in 1935–36 had cash incomes below $1,000 and almost three-fourths had cash incomes below $1,500. In the early part of 1942, on the other hand, less than one-third of the families had incomes below $1,000 and less than half had incomes less than $1,500. Similarly, only 16% of the families in 1935–36 had incomes above $2,000 whereas in 1942 almost 40% had incomes above this level.

Table III.—*Percentage Distribution of Aggregate Money Income and Expenditure of Consumers, 1935-36, 1941, and 1942**

(Preliminary national estimates including both urban and rural consumers)

Net Money-Income Class	All Families†			Aggregate Consumer Money Income			Aggregate Consumer Expenditure		
	1935–36	1941	1942	1935–36	1941	1942	1935–36	1941	1942
0 to $500	25	16	16	5	2	2	8	4	4
$500 to $1,000	28	19	16	15	7	5	18	8	7
$1,000 to $1,500	20	16	15	18	9	7	20	11	10
$1,500 to $2,000	11	14	14	15	12	9	15	13	12
$2,000 to $3,000	10	20	20	17	24	20	17	26	24
$3,000 to $5,000	4	10	13	11	18	19	10	18	21
$5,000 and over	2	5	6	19	28	38	12	20	22
Total	100	100	100	100	100	100	100	100	100

Source: Bureau of Labor Statistics and Bureau of Home Economics.

*Annual rate for 1942 based on first quarter.

†Includes families of two or more persons and single consumers.

Inasmuch as the rise in incomes tended to take families out of the smallest income groups, the families receiving $1,500 or less obtained a much smaller proportion of the aggregate consumer income in 1941 and 1942 than they did in 1935–36. As can be seen in the table, families with $1,500 or less received 38% of aggregate income in 1935–36 but only 14% in the early part of 1942. This does not mean, as is sometimes thought, that the low income families had failed to participate in the increase in income but rather that, by participating in the increase in income, they had been taken out of the smallest income groups.

Obviously the data in the table do not reveal what the increase in income had been according to the size groups which existed in 1935–36. In other words, we cannot tell whether persons who received $1,000 or less in 1935–36 gained more or less than persons who received $5,000 or more in 1935–36. The information which would answer questions of this sort simply was not available in 1942.

Although the data are too extensive to be presented here, mention should be made of the information on the size distribution of wage income that became available through the census of 1940. For some purposes the census income data is not as useful as smaller studies since it is restricted to wage income alone. However, the wealth of detail is so much greater than had ever been available previously that it is bound to become one of the most fruitful sources of information on the distribution of income by size. The data were being made available on a state basis, showing the distribution of wage income by sex, occupational group and industry. Furthermore, it was expected that tabulations would be prepared on a family basis as well as on the basis of the individual income recipient. This information could be obtained from the census bureau in Washington.

It might be mentioned also that the reduction in the exemptions under the income tax law, which would have the effect of requiring a vast new group of people to file income tax returns, would in a few years provide a new and most significant body of information on the distribution of income by size. It was anticipated that over 40,000,000 persons would be subject to tax on their 1942 incomes. This would, of course, cover the bulk of the aggregate consumer income and employed population so that the tabulations of income tax returns were expected to be the best source of information on the distribution of income by size.

State Distribution of Income Payments.—Information on the geographic distribution of income in the United States is provided by the department of commerce annual estimates of income payments to individuals in the various states. It may be seen from Table IV that the variations in both total and per capita income are substantial. These data relate to dollar income and consequently do not take account of geographic differences in the cost of living. The variations, however, are too large to be explained by this factor. The data bring out the lower levels prevailing in predominantly agricultural states, and the comparatively lower per capita income in the south as against the rest of the nation.

The importance of the prevalence of agricultural activity in an area in determining the level of per capita income is strikingly illustrated by the District of Columbia. This area stands highest

Table IV.—*Distribution of Income Payments by States*

State	Aggregates ($000,000)			Percentage Change in Total Income Payments		Per Capita Income Payments 1940* ($)
	1939	1940	1941	1939–41	1940–41	
United States	70,747	76,253	91,621	30	20	579
New England:						
Maine	400	430	514	29	20	508
New Hampshire	266	277	320	20	16	563
Vermont	170	180	207	22	15	501
Massachusetts	3,109	3,331	3,968	28	19	772
Rhode Island	478	511	621	30	22	717
Connecticut	1,314	1,461	1,840	40	26	855
Middle Atlantic:						
New York	11,369	12,086	13,854	22	15	855
New Jersey	2,808	3,117	3,737	33	20	886
Pennsylvania	5,829	6,291	7,542	29	20	635
East North Central:						
Ohio	4,151	4,466	5,544	33	24	646
Indiana	1,720	1,855	2,367	38	28	541
Illinois	5,209	5,654	6,712	29	19	716
Michigan	3,064	3,433	4,358	42	27	653
Wisconsin	1,563	1,652	2,011	29	22	526
West North Central:						
Minnesota	1,384	1,429	1,663	20	16	512
Iowa	1,176	1,159	1,421	21	23	457
Missouri	1,815	1,888	2,215	22	17	499
North Dakota	221	235	312	41	33	367
South Dakota	234	239	297	27	25	371
Nebraska	534	563	658	23	17	428
Kansas	695	743	915	32	23	413
South Atlantic:						
Delaware	214	251	303	42	21	940
Maryland	1,099	1,213	1,498	36	24	710
District of Columbia	809	876	1,034	28	18	1,063
Virginia	1,012	1,127	1,396	38	24	455
West Virginia	729	794	947	30	19	417
North Carolina	1,061	1,137	1,379	30	21	318
South Carolina	492	546	672	37	23	287
Georgia	899	979	1,206	34	23	313
Florida	825	912	1,055	28	16	481
East South Central:						
Kentucky	840	900	1,075	28	20	316
Tennessee	855	933	1,172	37	26	320
Alabama	680	759	985	45	30	268
Mississippi	427	482	605	42	26	220
West South Central:						
Arkansas	459	482	614	34	28	247
Louisiana	826	866	1,028	24	19	366
Oklahoma	793	830	976	23	18	355
Texas	2,545	2,711	3,230	27	19	423
Mountain:						
Montana	300	324	383	28	18	579
Idaho	222	237	280	26	18	452
Wyoming	147	152	186	27	22	607
Colorado	577	607	701	22	16	540
New Mexico	181	193	225	25	17	363
Arizona	232	231	289	24	25	463
Utah	251	274	325	30	18	499
Nevada	87	93	107	23	14	846
Pacific:						
Washington	1,009	1,118	1,444	43	29	644
Oregon	590	628	773	31	23	576
California	5,080	5,604	6,658	31	19	811

*Per capita income cannot be computed beyond 1940 because the extent of population shifts since that time is not known.

in the table of per capita income because it is entirely a metropolitan area, without an agricultural industry. It was known that other metropolitan areas would show even higher per capita income, particularly those dominated by manufacturing industries. As previously mentioned, of course, the high per capita income figure shown for the District of Columbia does not take account of the high cost of living in that area and the fact that there are many types of expenses required in urban communities which do not materially add to the standard of living.

The data in Table IV show that all states participated in the expansion of income that had been generated by the nation's rearmament effort. While the state gains in income differed fairly markedly both between 1939 and 1941 and between 1940 and 1941, the income of every state increased substantially. The fears expressed by some persons that the rearmament prosperity would be limited to the industrial states was not borne out by the facts. Thus, while many of the highly industrial states scored advances that were better than the national average, equally substantial increases were made also in important agricultural states. If one takes account of the fact that the states with the largest gains were affected either by unusual increases in population since 1939 or by unusually low levels of income in 1939, it can be said that the increase in income after 1939 was fairly equally distributed throughout the nation.

It was certainly evident by 1942 that the increase in income flows induced by the rearmament program in 1941 was not restricted to the few highly industrial states which received the bulk of the primary defense contracts. There were two reasons why incomes were distributed much more widely. In the first place, the primary war contracts failed to give an adequate geographic distribution of actual war production. Subcontracting and purchasing of materials were just as important and perhaps more so in the war production program than the points of final assembly which alone were indicated in the war contract. Through subcontracting and purchasing materials, therefore, the immediate repercussions of the primary war contracts were distributed widely throughout the nation.

Even more important upon the state distribution of income were the repercussions upon all industries flowing from government spending on war materials. For, as the incomes of persons in the war industries went up, such persons tended to spend more and more on all the products of industry and agriculture available, so that the earnings of persons all over the country were stimulated. (*See* also BUDGETS, NATIONAL; CENSUS, 1940; NATIONAL INCOME AND NATIONAL PRODUCT.) (M. GT.)

Weather: *see* METEOROLOGY.

Weber, Joseph M. (1867–1942), U.S. actor, theatre manager and member of the Weber and Fields burlesque team, was born Aug. 11 in New York city. At the age of 10, Joe Weber began his stage career with Lew Fields and managed several theatrical enterprises with him until 1904, when the two separated. Weber then ventured into theatre ownership in New York city, but he rejoined his old partner later. In failing health after the death of Fields in 1941, Weber died in Los Angeles, May 10, 1942. (See *Encyclopædia Britannica.*)

Weingärtner, Felix (1863–1942), Yugoslav-Swiss conductor and composer, was born June 2 in Zara, Dalmatia. A talented young musician, he studied music at the Leipzig conservatory in 1883. Franz Liszt saw great promise in the youthful composer and arranged to have Weingärtner's first opera, *Sakuntala,* produced at the Weimar court theatre in 1884. He subsequently became a conductor at the Koenigsberg theatre. His second opera, *Malawika,* was produced at the Munich court theatre in 1886. In 1891, he became kapellmeister in the Berlin royal opera and conductor of the Berlin symphony orchestra. His fame as a conductor grew steadily, and in 1908 he was invited to lead the brilliant Vienna opera. He made his first appearance in the United States as guest conductor of the New York Philharmonic. The following year he toured the country. He was head of the Basle conservatory in Switzerland, 1927–28, and director of the Vienna State opera, 1928–36. In 1937, he directed several Beethoven and Wagner concerts in Soviet Russia. Nazi Germany frowned upon the conductor's trip, and Weingärtner, who disapproved of Hitler, severed all connections with the Reich and made his home in Switzerland. He wrote many librettos and poems, several books on musical problems and edited many musical works. He died in Winterthur, Switzerland, May 7.

Welles, Sumner (1892–), U.S. undersecretary of state, was born Oct. 14 at New York city and was educated at Groton (Mass.) school and at Harvard. In 1922 he was U.S. commissioner to the Dominican Republic, and in 1924 he was President Coolidge's personal representative in Honduras, then in the throes of revolution. Welles was appointed assistant secretary of state April 6, 1933, and except for a short period as ambassador to Cuba in 1933 held this office until his appointment May 21, 1937, as undersecretary of state. In the spring of 1940 he undertook a "fact-finding mission" to Germany, Italy, France and Great Britain. During 1941 he held innumerable interviews with various European and Asiatic diplomats, with particular attention to the status of unoccupied France in its relationship to Germany.

Welles headed the U.S. delegation to the Pan-American conference which opened at Rio de Janeiro Jan. 15, 1942. In April 1942, when Vichy veered too close to the axis, he held up shipments of food and clothing to North Africa. An address of Oct. 8, in which he declared that Argentina and Chile were harbouring axis spies, had wide repercussions in South America.

Wellesley College.

A women's college in Wellesley, Mass., founded in 1870 by Henry Fowle Durant, Wellesley occupies 400 ac. bordering on Lake Waban. A four-year liberal arts college, Wellesley is pre-eminently for candidates for the B.A. degree, but offers also the degrees of master of arts, master of arts in education, master of science and a certificate in hygiene and physical education.

By government request the physics department offered a course in radio. At commencement in 1942 Madame Chiang Kai-shek, on the 25th anniversary of her graduation, was granted the LL.D. degree; the establishment was announced of the May-ling Soong foundation "to interpret China and the nations of the east to American college students."

For statistics of faculty, student enrolment, endowment, etc., *see* UNIVERSITIES AND COLLEGES. (M. H. McA.)

Wells, Carolyn

(? –1942), U.S. author, was born in Rahway, N.J. A successful writer of juvenile fiction and nonsense verse, she tried her hand at mystery stories and launched Fleming Stone, a fictional detective, on a career of crime investigation that led through scores of mystery books. Among her works were a number of anthologies, including *A Nonsense Anthology* (1902); *Technique of the Mystery Story* (1915); *The Technical Mystery Story* (1929); *The Rest of My Life*, an autobiography (1937), and some 80-odd mystery stories. Miss Wells died in New York city, March 26.

West Africa, British: *see* BRITISH WEST AFRICA.

Western Australia.

A state of the Australian commonwealth; area 975,920 sq.mi.; pop. (est. Dec. 31, 1941) 467,082. Chief city: Perth (pop. Dec. 31, 1940—including Fremantle) 228,000. Governor: (vacant in 1942); lieutenant governor: Sir James Mitchell.

History.—J. C. Willcock, the state premier, whose government remained in office throughout 1942, set up a new record for public service in the state. He had held ministerial office for more than 15 years. While the policy of the government was to assist the federal administration in its prosecution of the war, it strongly opposed the federal uniform tax proposals as an unnecessary and invalid incursion of state rights, and joined other states in contesting the validity of the federal legislation.

Consequent upon the demands on manpower arising from the war, unemployment was reduced to a minimum, and by the end of the year there was a distinct shortage of both skilled and unskilled labour in primary as well as manufacturing industries.

Education.—In 1939: state primary schools 844; average attendance 49,770. State secondary schools 5; average attendance 5,672.

Finance.—Revenue (1940–41), £A11,432,000; expenditure, £A11,421,000; debt outstanding (June 30, 1941), £A97,792,000.

Communication.—Roads (June 30, 1939) 29,722 mi. fit for motor traffic; railways (Dec. 1941), government, 4,381 mi.; motor vehicles licensed (Mar. 31, 1942): cars 32,364; trucks 23,652; cycles, 5,088. Wireless receiving set licences (Mar. 31, 1942) 92,861.

Agriculture and Manufacturing.—Production: wheat (1941–42) 37,500,000 bu.; wool (1940–41) 71,400,000 lb.; gold (1940) 1,191,481 fine oz. Industry and labour (1940–41): factories 2,056; employees 22,734; gross value of output £A21,824,974; unemployment (trade union returns) (March 1942) 1.7%.

(W. D. MA.)

West Indies.

An archipelago between South America and Florida, embracing the Greater Antilles (Cuba, Hispaniola, Puerto Rico and Jamaica, with lesser dependent islands) and the Lesser Antilles chain of small islands extending from the Virgin Islands to Trinidad, and including some other small islands. The area is approximately 99,000 sq.mi. The population (estimated at roughly 12,500,000 at the end of 1941) is three-fourths white and one-fourth Negroid in Cuba and Puerto Rico and 80% to 99% Negroid elsewhere, except in Trinidad, where East Indians comprise 40%. Languages: Spanish, English, French and Dutch. Religion: generally Roman Catholic. There are three republics in the area, one Netherlands, two French and six British colonies, and two United States dependencies.

History.—During 1942 the course of events in the West Indies was dominated by World War II and its effects, which overshadowed all else. With the exception of the French colonies, whose position was anomalous, the entire archipelago was not only at war with the axis powers, but a combat area as well. Submarine attacks and ship losses became commonplace. These, coupled with the extensive diversion of bottoms needed for war transport, served to disrupt trade seriously.

Trade, Production, Communication.—Normally, trade is mainly with the United States and Canada and, in the European colonies, with their respective metropolises. During 1942, however, this trade was materially reduced. Sugar, the most important crop, had been in abnormally heavy demand, but shipping shortage prevented export of a large portion of the crop. Cacao, bananas, spices and citrus fruits constituted practically the sole exports except in Trinidad and Curaçao, and to some extent in Cuba, where mineral exploitation is under way. Petroleum and asphalt are important in Trinidad, and some metals are found in Hispaniola and Cuba. Existence of bauxite deposits in Jamaica was reported in 1942. Curaçao is a leading world oil-refining centre.

External communication is by sea. The more important islands are directly connected with the Pan American Airways hemisphere network. (*See* also CUBA; CURAÇAO; DOMINICAN REPUBLIC; FRENCH COLONIAL EMPIRE: *French Possessions in America;* HAITI; HISPANIC AMERICA AND WORLD WAR II; PUERTO RICO; VIRGIN ISLANDS; WEST INDIES, BRITISH.)

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West Indies, British.

The several British islands in the West Indies have an area of 8,240 sq.mi. The total population in 1942 was estimated at around 2,300,000. No census had been taken since 1931, however, and in some colonies not since 1921. Racially, the population ranges from 75% to 99% Negro and mulatto, except in Trinidad, where East Indians comprise around 40% and Chinese 1%. The chief cities are the colonial capitals (*see* table on p. 760). Only Kingston and Port of Spain and, to some extent, Bridgetown are important in the West Indies as a whole.

Politically, the islands are administered separately or in groups as British crown colonies (*see* table); after 1940 the islands, with

British Guiana and British Honduras, had a common comptroller for development and welfare, with whom were associated some other officials charged with special duties. Each colony has a governor or other chief executive and subordinate officials appointed by the crown (for names of governors, *see* BRITISH EMPIRE).

The United States, under an agreement effected March 27, 1941 (supplanting the previous temporary one of Sept. 3, 1940) obtained several military, naval and air bases under 99-year lease. These comprised some 55 sq.mi. in Jamaica, including Portland Bight, its approaches and adjacent land areas, the Portland Ridge peninsula shoreline, the shoreline of Manatee bay and adjacent areas, Pigeon island (about 50 ac.), and two other small areas; four tracts in Trinidad aggregating about 32 sq.mi., along with special anchorage right in the Gulf of Paria, and wharfage facilities in Port of Spain; two tracts in Antigua, in and around Parham harbour (430 ac.) and $1\frac{2}{3}$ sq.mi. along Judge's bay shoreline; and six tracts (approximately 1,300 ac.) in St. Lucia, including Gros Islet bay.

History.—In 1942 the British West Indies were more acutely affected by war conditions than in either 1940 or 1941. For the first time actual hostilities were carried on within their territorial waters. Submarine sinkings and the diversion of ship bottoms for the transportation of supplies to overseas war fronts seriously impeded the exportation of products and sharply reduced the volume of imports.

Submarines were active in the Caribbean area throughout 1942, above all in the middle months. In September shipping anchored in Carlisle bay, Barbados, was attacked. Late in the year the undersea menace abated considerably, but was in no sense done away with. No official disclosures were made on the extent of submarine damage. It was clear, however, that British West Indian trade, interisland and external, was seriously disrupted.

To meet the war-caused shortage of imported foods, the islands undertook programs of food self-sufficiency. Thus, Barbados made it compulsory to devote fixed percentages of land area to food crops and livestock. Other colonies subsidized acreage put in foodstuffs and guaranteed minimum price returns. Licensing of imports curtailed or prevented use of shipping space for nonessentials, and to achieve maximum efficiency in the import of necessities, official buying pools were set up. Export of commodities needed for local consumption was forbidden.

In general the cost of living throughout the West Indies had risen sharply by 1942. In Trinidad and Tobago it was 65% greater than in 1935 (70% for foodstuffs), and in Jamaica 11.7% over Aug. 1939 (40.8% for food). Comparable figures for Barbados for the same period were 52% and 55%.

An additional war effect which began to be felt strongly by late 1942 was increasing unemployment. Earlier, the construction of military, naval and air bases initiated in Sept. 1940 by the United States had tended to offset adverse economic effects of the war in Jamaica, Antigua, Trinidad and St. Lucia, and indirectly in other islands. At times this development had even caused labour shortages. As completion of the bases neared, however, the declining employment brought repercussions, accentuated by the fact that the construction wages had been greatly in excess of local standards.

As an antidote to the acute economic ailments of the West Indian colonies, the British government undertook to purchase the entire crops of certain agricultural products, notably Jamaica's bananas, citrus and sugar, even when shipping space and available markets were entirely lacking. Likewise, through the West Indian Welfare fund of £1,000,000 annually, administered largely by the comptroller of development and welfare, advances were made for specific projects, especially those furthering agricultural diversification and self-sufficiency.

Long-range problems of the British West Indies were not neglected during 1942. The Anglo-American Caribbean commission met first in March to study political, economic and social problems, and continued its activities through the year.

Education.—There were about 1,338 elementary schools in 1942, with some 325,000 pupils, as well as secondary schools. Higher education was provided at Codrington college, near Bridgetown, Barbados, and at the Imperial College of Tropical Agriculture.

Finance.—The monetary unit is the pound sterling except in Trinidad. The Trinidad dollar (established in 1935) is valued at 4*s.* 2*d.* and is normally equivalent to the United States dollar (1942 value: approx. 83 cents U.S.). It is legal tender in Grenada, St. Lucia and the Leeward colonies, as well as in Trinidad and Tobago.

Trade and Communication.—Due to war conditions, particulars as to external trade were not available for publication in 1942, and were at best fragmentary for 1941 and often for 1940 as well. All reports for 1942 indicated a generally very sharp decline in volume, particularly in the bulkier products. In the five-year period 1934–1938, imports for all the British West Indies averaged $76,015,000 value, exports $64,154,000, rising to $78,344,000 and $70,796,000 in 1939, and $84,780,000 and $62,143,000 in 1940, with the great bulk accounted for by Trinidad. Not including Trinidad, imports were: 1934–38 average, $42,924,000; 1939, $46,329,000; 1940, $39,545,000; exports were, respectively, $33,891,000, $36,163,000 and $23,284,000. Trade was generally dominated by Canada, followed by Great Britain and the United States. Through 1939, foodstuffs made up 22% of all imports, textiles, manufactured goods and petroleum most of the balance. Exports were sugar and derivatives, 32.0%; petroleum (entirely from Trinidad), 31.0%; bananas (98.7% from Jamaica), 17.2%; cacao, 4.4%; spices, 2.6%; citrus fruits and other products, 2.5%. Sugar constituted 90% of the exports of Barbados and more than half those of the Leeward Islands and St. Lucia.

External communication in 1942 was by steamship and by air. Pan American Airways service to Jamaica, Antigua, Barbados and Trinidad was supplemented by British West Indian Airways lines to the last two islands and Tobago and by the "KLM" (Royal Netherlands Airways), linking Trinidad and Jamaica with Curaçao and Venezuela. Interisland communication was generally inadequate. Kingston, Bridgetown and Port of Spain are the principal ports of call. Only Jamaica (210 mi.) and Trinidad (123 mi.) had railways of any length in 1942. The Leeward colonies together had 78 mi. of railway. Roads were adequate for local needs.

Agriculture.—Nearly all the islands are heavy sugar producers, with Barbados, Antigua, St. Kitts, Nevis and the Virgin Islands primarily dependent on sugar. The total acreage in sugar in 1942 was approximately 204,571 ac. as follows: Trinidad and Tobago 67,000 ac.; Barbados 66,000 ac.; Jamaica 40,091 ac.; St. Kitts-Nevis 13,000 ac.; Antigua 12,900 ac.; St. Lucia 4,000 ac.; St. Vincent 1,380 ac.

More than 97% of the banana acreage, or 72,909 ac., in 1942 was in Jamaica, normally the world's largest single banana exporter, while St. Vincent, St. Lucia, Grenada and Dominica had 1,000 to 700 ac. each. Under war conditions, however, banana exportation practically ceased, necessitating an imperial compensation payment system.

Cacao (237,014 ac.) led in Trinidad and Tobago (210,000 ac.) and in Grenada (20,500 ac.). St. Lucia had 4,250 ac. in cacao in 1942.

A total of 106,425 ac. was in coco-nuts, largely in Trinidad and Tobago (52,500 ac.), with approximately 5,000 ac. each in

Area and Population Estimates, British West Indies

Colony	Area (sq. mi.)	Pop. (latest est. as of 1942)	Capital (with est. pop.)
Barbados	167	198,023	Bridgetown (70,500)
Jamaica and dependencies			
Jamaica	4,573	1,186,017	Kingston (76,986)
Cayman Islands	104	6,850	Georgetown
Turks and Caicos	169	5,522	
Leeward Islands			
Antigua (including Barbuda, 62 sq.mi. and Redonda)	171	35,527	St. John's (10,000)
Montserrat	32	13,760	
St. Kitts-Nevis (St. Christopher, 68 sq.mi.; Nevis, 50 sq. mi.; Anguilla, 34 sq.mi.)	152	37,579	Basse-Terre (8,000)
Virgin Islands (British)	67	6,364	Road Town (400)
Trinidad and Tobago (Tobago, 116 sq.mi., pop. 29,082)	1,980	502,401	Port of Spain (89,550)
Windward Islands			
Dominica	304	52,738	Roseau (8,000)
Grenada (including Carriacou, 13 sq.mi., pop. 9,358)	133	90,586	St. George's (6,500)
St. Lucia	238	71,232	Castries (9,000)
St. Vincent (including the Lesser Grenadines)	150	61,421	Kingstown
	8,240		

St. Lucia and St. Vincent, and 1,200 ac. in Dominica. Jamaica led in coco-nut export, with 17,494,213 out of a grand total of 27,142,438 nuts in 1940, followed by St. Vincent (3,348,351), St. Lucia (3,336,107) and Trinidad (2,603,337).

In 1941 around 22,000 ac. were planted in cotton, of which 18,066 ac. was the sea-island variety. In 1940 production was 7,791 bales (of 400 lb.). St. Vincent (6,450 ac.), St. Kitts-Nevis (5,000 ac.), Grenada (5,000 ac.), Montserrat (4,500 ac.) and Antigua (3,500 ac.) had the largest cotton acreage. The heaviest yield was in St. Kitts (259 lb. per acre).

Citrus fruits, especially oranges, limes and grapefruit, were grown in most of the colonies, with 11,695 ac. in citrus groves in 1941. Dominica (more than half of whose export values were made up by citrus fruits), St. Lucia, Trinidad and Montserrat accounted for most of the world's lime juice production.

Arrowroot made up two-thirds of the exports of St. Vincent, the dominant world producer (1940: 9,221,114 lb.). Spices were important, notably in Grenada, where nutmeg (1940: £79,596 value) and mace (£39,602 value) made up approximately half the exports. Jamaica was the sole source of pimento ("allspice") and an important ginger producer.

Jamaica provided 80% of the 1940 coffee production of 53,283 bags, Trinidad and Tobago practically all the remainder, with a slight but increasing volume from Dominica.

Mineral Production.—Except in Trinidad, where petroleum (1942 est.: 27,375,000 bbl.) and asphalt dominate economic life, and in Barbados, where some slight petroleum deposits are known to exist, the British West Indies lack mineral resources. Late in 1942 the presence of bauxite clay in Jamaica was reported.

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Westley, Helen

(1879–1942), U.S. actress, was born in March in Brooklyn, N.Y. She made her first stage appearance in New York city in 1897 and then went through the mill of vaudeville and stock performances until 1915, when she joined the Washington Square Players. One of the original founders of the Theatre Guild, she appeared in many Guild plays and established a reputation for character roles in such productions as *He Who Gets Slapped, The Adding Machine, Caesar and Cleopatra, The Guardsman* and *The Doctor's Dilemma.* In 1934 she went to Hollywood where she had featured parts in *Show-Boat, Death Takes a Holiday, Zaza, The House of Rothschild, Heidi* and *My Favorite Spy.* She died in Middlebush, N.J., Dec. 12.

West Virginia.

A state in the Appalachian mountain region in the eastern part of the United States, sometimes called the "Panhandle state" and sometimes the "Mountain state." West Virginia was formed from Virginia during the Civil War and admitted to the union June 20, 1863. Area, 24,282 sq.mi.; population (1940) 1,901,974, of which 1,742,320 were white (41,782 foreign born). Its total urban population was 534,292. Its capital is Charleston (pop. 67,914). Its other chief cities are Huntington (78,836) and Wheeling (61,099).

History.—The chief state officers in 1941–42 were: governor, Mansfield M. Neely; secretary of state, William S. O'Brien; treasurer, R. E. Talbott; auditor, Edgar B. Sims; attorney-general, Clarence W. Meadows. All except the governor were re-elected in Nov. 1940. For governor, Neely received 496,028 votes and D. Boone Dawson, 383,698. In June 1942 Attorney-General Meadows was succeeded by William S. Wysong who had been serving as president of the board of control.

Education.—Education is free in the public schools for all children between 6 and 20 years of age and is compulsory for all between 7 and 16. The pupil enrolment (net) in the 4,744 state elementary schools for 1941–42 was 302,230. In the 387 state high schools it was (net) 141,107. The number of teachers was 10,717 in the elementary schools and 5,402 in the high schools. The total state appropriation for elementary and secondary education in 1941–42 was $15,050,000 (the general school fund, $806,541).

The state supports seven teacher-training colleges which in 1941–42 had a total student enrolment of 4,182 and a total instructional membership of 321, and received state appropriations amounting to $1,133,050. It also supports the West Virginia university, which in 1941–42 had an enrolment of 3,865 (including summer), a total faculty membership of 280 and 50 assistants, and a total income of $2,957,599.

Public Welfare, Charities, Correction.—In Jan. 1941, a more extensive program of public assistance and relief was begun. The number of old-age, blind and dependent children assistance cases rose from 18,000 in July 1940, to 29,500 in July 1941 and to 37,191 in July 1942. The relief load grew from 12,775 to 14,347 and to 17,470 in Feb. 1942. The average grants of aid were also increased. For the year ending July 1, 1942 the total expenditure for old-age assistance was $4,448,973; for the blind, $247,376; for dependent children, $3,942,600. Including the cost of administration, the total cost of public assistance was $9,329,414. The total general relief fund was $3,395,779.

Communication.—In 1941–42 the state had about 4,171 mi. of steam railway (about 7,058 mi. including all sidings), 122 mi. of electric railway and an extensive system of improved highways (approximately 13,872 mi., of which 10,396 mi. were hard-surfaced). The total mileage of air lines in the state was 750 (450 miles passenger-carrying); there were 7 improved airports and 18 partially-improved landing fields. The total number of telephones was 198,000.

Banking and Finance.—On June 30, 1942, the total deposits of the 103 state banks and trust companies were $176,258,917. The total deposits of the 77 national banks in the state were $217,197,747. Resources of 22 federal savings and loan associations were $20,345,193. Resources of 38 state building and loan associations were $11,467,338.

State receipts for 1941–42 were $204,650,382; disbursements, $180,359,664; balance, July 30, 1942, $24,290,717. On July 1, 1942, the total state funded indebtedness was $73,963,000; the total amount of outstanding state road bonds was $71,213,000. Total state debt, gross, $73,963,000; net, $68,748,087.

Agriculture.—Total cash income from farm crops and livestock in 1941 was $50,573,000; income from government payments was $2,523,000. The number of farms by census of 1940 was 99,282 (acreage 8,908,803), valued at $269,827,285.

Acreage, Yield and Value of West Virginia Farm Crops, 1941

	Acreage	Yield	Value
Corn	397,000	12,307,000 bu.	$11,076,000
Wheat	105,000	1,628,000 bu.	1,807,000
Oats	74,000	1,776,000 bu.	959,000
Buckwheat	13,000	254,000 bu.	213,000
Hay (Tame)	733,000	818,000 tons	9,645,000
Apples	..	5,024,000 bu.	4,019,000
Potatoes (Irish)	33,000	3,795,000 bu.	3,150,000
Barley	11,000	258,000 bu.	181,000

Manufacturing.—In 1940, the state had 3,188 reporting industrial establishments, which employed 230,726 persons and paid $396,884,878.99 in wages. These plants had a total production of about $898,722,285.80. The chief industries were steel, glass, chemicals, petroleum refining, stone, potteries and porcelain, cement, lumbering, woodworking and flour.

Mineral Production.—In 1940 the oil production was 3,444,000 bbl., and in 1941 it was 3,378,000 bbl. In 1940 the natural gas production was about 188,751,000,000 cu.ft., which increased to 240,000,000,000 in 1941. In 1940 coal production was 126,619,825 short tons, in 1941, 140,944,744 tons. Coke production (bee hive only) increased from 216,943 tons in 1940 to 267,243 in 1941.

BIBLIOGRAPHY.—*West Virginia Bluebook* and various official departmental reports.

(J. M. CA.)

Wheat. World supplies of wheat, already the largest accumulations on record, increased still further in 1942 owing to larger production among major exporting countries, but more particularly because continued wartime restrictions on international shipments pyramided mounting carry-overs year after year in countries with surpluses. The United States carry-over July 1, 1942, was 627,000,000 bu. This, with the 1942 crop, estimated by the department of agriculture at 984,046,000 bu., gave the United States the largest wheat supply in its history. World production in 1942 was placed at 4,210,000,000 bu., compared with 3,980,000,000 bu. in 1941, 4,003,000,000 bu. in 1940 and 4,281,000,000 bu. in 1939. All estimates herein exclude the U.S.S.R. and China, for which no data were available. The 1942 wheat crop in 30 European countries was only about 40,000,000 bu. below the 1941 crop of 1,420,000,000 bu. This estimate, the U.S. department of agriculture pointed out, was from available indications not official. Central Europe, the Balkans and Denmark had in 1942 a still smaller crop than the below-normal harvest of 1941. Italy and Spain had "little change to increased" production in 1942 and generally there was improvement in France, Portugal, Belgium, the Netherlands and Sweden. Six Asiatic countries produced 585,000,000 bu. in 1942 compared with 598,000,000 bu. in 1941. The French possessions in North Africa had a short crop because of unfavourable weather and labour difficulties; 65,000,000 bu. in 1942 compared with 80,000,000 bu. in 1941. Estimates of southern hemisphere production placed the 1942 crop at 200,000,000 bu. in Argentina, 145,000,000 bu. in Australia and 15,000,000 bu. in the Union of South Africa; 1941 production, 224,134,000 bu. in Argentina, 166,700,000 bu. in Australia, 14,533,000 bu. in the Union of South Africa.

The more striking developments of the crop year were in Canada and Argentina. In Canada, the world's largest exporter of wheat, a record crop, 607,688,000 bu., was produced on the smallest acreage since 1925. In 1941, owing to mounting surpluses and continued wartime restrictions, the dominion adopted a policy of reduced wheat acreage, endeavouring to substitute other crops instead, and succeeded in reducing the crop from 540,190,000 bu. in 1940 to 311,825,000 bu. in 1941. Although the area seeded in 1942 was reduced 25%, favourable conditions produced the record bumper crop. The Canadian carry-over July 31, 1942, was 424,048,429 bu., not greatly less than the record carry-over of 480,129,311 bu. in 1941. The Canadian prairie provinces, with some 25,000,000 ac. particularly adapted to the growing of wheat, had developed a wheat economy that apparently was difficult to change to meet the exigencies of war. In Argentina, continued loss of export markets resulted in a severe shortage of storage space. Grain bags were prorated among producers by the government in 1942, since there was about half the number of bags available to supply the demand. A makeshift method of storing, "estiba-silo," was adopted, consisting of a circular wall of grain-filled bags, with loose grain in the space thus formed. The Argentina carry-over in 1942 was 184,600,000 bu. compared with 95,000,000 bu. in 1941.

The area allotted to the 1942 wheat crop in the United States was 55,000,000 ac. compared with 62,000,000 in 1941. Area seeded for the 1942 crop was 53,400,000 ac.; for the 1941 crop, 62,400,000 ac. The government's loan program had been an important price factor in wheat production in the United States since it became operative in 1938. The national loan rate to farmers for 1942 was $1.14 per bu. The rate was $0.98 in 1941. In 1940 it was $0.655; in 1939, $0.64; in 1938, $0.53 per bu. Net exports of U.S. wheat were 106,000,000 bu. in 1938–39. In 1939–40 they were 45,000,000 bu., and 30,000,000 bu. in 1940–41, with still further reductions for the 1941–42 crop year. World export of wheat and flour (in terms of wheat) were 638,000,000 bu. in 1938–39; 465,000,000 bu. in 1940–41. (*See* also FLOUR AND FLOUR MILLING.) (S. O. R.)

Table I.—*World Wheat Production, 1939–42*

	1942 bu.	1941 bu.	1940 bu.	1939 bu.
United States. . .	984,046,000	945,937,000	812,374,000	751,435,000
Canada	607,688,000	311,825,000	540,190,000	520,623,000
Mexico	15,800,000	11,709,000	13,337,000	14,771,000
Europe (30 countries) .	1,380,000,000	1,420,000,000	1,300,000,000	1,694,000,000
North Africa (4) .	112,000,000	121,000,000	113,000,000	149,000,000
Asia (6)	585,000,000	598,000,000	660,000,000	626,000,000
Argentina	200,000,000	224,134,000	299,458,000	130,773,000
Australia.	145,000,000	166,700,000	82,639,000	210,277,000
Union South Africa	15,000,000	14,533,000	15,600,000	15,310,000

Table II.—*U.S. Production of Wheat by States, 1942 and 1941*

State	1942 bu.	1941 bu.	State	1942 bu.	1941 bu.
Kansas . . .	206,775,000	173,332,000	Virginia. . . .	7,520,000	7,665,000
North Dakota	149,844,000	144,799,000	Maryland . .	5,986,000	7,245,000
Montana . .	73,783,000	68,239,000	Tennessee . .	5,234,000	5,415,000
Nebraska . .	69,908,000	36,222,000	Kentucky . .	5,194,000	7,125,000
Oklahoma .	57,370,000	48,610,000	Utah	5,010,000	7,027,000
Washington .	55,148,000	61,142,000	New Mexico. .	4,813,000	2,735,000
Texas . . .	47,783,000	68,239,000	Iowa	4,749,000	2,341,000
South Dakota	45,274,000	35,358,000	Wyoming . . .	4,288,000	4,805,000
Ohio	36,205,000	48,978,000	South Carolina	3,377,000	3,172,000
Colorado . .	27,848,000	25,036,000	Georgia . . .	2,530,000	2,196,000
Minnesota .	23,170,000	20,104,000	Wisconsin . .	1,717,000	1,362,000
Idaho . . .	20,770,000	27,850,000	West Virginia .	1,457,000	1,628,000
Oregon . . .	19,953,000	23,538,000	Delaware . . .	1,290,000	1,332,000
Michigan . .	15,322,000	16,286,000	New Jersey . .	1,175,000	1,120,000
Pennsylvania	15,301,000	16,897,000	Arizona . . .	575,000	392,000
Indiana . .	13,865,000	34,665,000	Nevada . . .	484,000	491,000
Illinois . . .	12,818,000	34,320,000	Arkansas . . .	242,000	315,000
California .	9,916,000	11,656,000	Alabama . . .	169,000	91,000
Missouri . .	9,035,000	18,036,000	Mississippi . .	161,000	297,000
North Carolina	8,014,000	7,347,000	Maine	40,000	36,000
New York .	7,559,000	6,646,000			

Production by states is as estimated Dec. 1, 1942, by the Department of Agriculture.

Whisky: *see* LIQUORS, ALCOHOLIC.

Whiteside, Walker (1869–1942), U.S. actor, was born March 16 in Logansport, Ind. He had already acted in many Shakespearean productions when he made his New York debut in 1893 as Hamlet. He starred in Zangwill's *The Melting Pot* in 1907, appeared in *Typhoon* with Florence Reed in 1912, and was cast as Mr. Wu in the play of the same name in 1914. He was last seen in New York in 1932 in *Three Men and a Woman* and before retiring from the stage three years later made a revival tour with *The Master of Ballantrae*. Whiteside died at Hastings-on-Hudson, N.Y., Aug. 17.

Wholesale Trade: *see* BUSINESS REVIEW.

Wickard, Claude Raymond (1893–), U.S. secretary of agriculture, was born near Delphi, Ind. on Feb. 28. After his graduation from Purdue university in 1915 he took over management of a farm near his birthplace. In 1933 he was appointed to the staff of the Agricultural Adjustment administration as assistant chief of the corn-hog division. On Feb. 1, 1940 he was appointed under-secretary of agriculture, and on Aug. 19, after the resignation of Henry A. Wallace, President Roosevelt nominated him secretary of agriculture. In March 1941 Wickard took charge of the production and distribution of food to Britain and her allies under provision of the lend-lease act. He pressed the "food for freedom" program with vigour and urged U.S. farmers to multiply their output of eggs, milk, tomatoes, beans, pork and other products. Food, he said, would be a prime factor in victory; on Sept. 23 he told a house of representatives committee that the U.S. should send Britain $1,000,000,000 in food before Feb. 1942 to prevent a British defeat.

On Dec. 6, 1942, President Roosevelt made Wickard war food administrator with full control over the nation's food program.

On Dec. 10, Wickard assured the nation that, despite wartime restrictions, the American people would have plenty of food.

Wilcox, John Walter, Jr. (1882–1942), U.S. naval officer, was born March 22 in Milledgeville, Ga. He was graduated from Annapolis in 1905 and from the Naval War college, 1924. During World War I he served with the Atlantic fleet and was on destroyer duty from 1919 to 1921. He was promoted to rear admiral in 1938 and was president of the navy department's inspection and survey board, 1940–41. Adm. Wilcox was placed on active sea duty in Nov. 1941 and on April 6, 1942, the navy department announced that he had been lost overboard in "heavy weather during normal cruising."

Wild Life Conservation: *see* Fish and Wildlife Service.

Wilhelmina (Wilhelmina Helena Pauline Maria of Orange-Nassau) (1880–), queen of the Netherlands, succeeded to the throne on the death of her father, William III, on Nov. 23, 1890, her mother acting as regent until Sept. 6, 1898 (see *Encyclopædia Britannica*). In 1901 she married Henry, duke of Mecklenburg (d. 1934), and their daughter Princess Juliana, who in 1937 married Prince Bernhard Leopold of Lippe-Biesterfeld, is heiress to the throne. In 1938 Queen Wilhelmina celebrated the 40th anniversary of her accession. Following the German invasion of the Netherlands, in May 1940, the royal family took refuge in England, Princess Juliana and her two daughters subsequently leaving for Canada while Prince Bernhard remained with Queen Wilhelmina, who established a government in exile and by her sturdy courage and the heartening messages broadcast to her subjects everywhere proved a source of inspiration to all Netherlanders. In 1942, Queen Wilhelmina visited Canada and the U.S.A., reaching Government House at Ottawa on June 18, and proceeding later to President Roosevelt's home at Hyde Park. On July 24 she paid an official visit to New York city, and on Aug. 6 she addressed a joint session of both houses of congress at Washington. She returned to London Aug. 26.

Willard, Daniel (1861–1942), U.S. railroad executive, was born Jan. 28 in North Hartland, Vt. Forced to leave agricultural college at the age of 18 because of serious eye trouble, young Willard went to work on his father's farm and later worked as track labourer for the Central Vermont railroad. His rise to president of the Baltimore and Ohio railroad, a post he held from 1910 until his resignation in 1941, came after long years of experience in all branches of railroading. He served in executive capacities with several of the country's leading railroad lines before taking over the presidency of the B. & O. He died in Baltimore, July 6.

Willkie, Wendell Lewis (1892–), U.S. attorney, business executive and politician, was born Feb. 18 in Elwood, Ind. After being graduated from the University of Indiana with an A.B. degree in 1913, he taught history in the high school at Coffeyville, Kan. In 1916 he received his law degree from the University of Indiana and joined his father's law firm in Elwood. During World War I he was a captain in the 325th field artillery in France. In 1929 he joined the legal staff of Commonwealth and Southern, a large utilities holding company. Four years later he was president of the company.

His nomination for the presidency by the Republican convention June 28, 1940, was described as a political "miracle." He was defeated by a substantial margin in the election of Nov. 5, 1940, although he received 22,333,801 votes.

Willkie went to England in Jan. 1941 and upon his return to the U.S. testified on behalf of the lend-lease bill. In the late summer of 1942, Willkie made a world tour as special representative of President Roosevelt, conferring with Churchill in London, Stalin in Moscow and Chiang Kai-shek in Chungking. On returning to the United States Oct. 26, he called for a second front to aid Russia and an Allied offensive in Burma to help China. But in espousing foreign policies "objectionable" to many Republicans, he had apparently lost the support of the party organization.

Willson, Beckles (1869–1942), Canadian author, was born Aug. 26 in Montreal. He worked as a journalist in the United States and England and later specialized as writer in colonial subjects, biography and history. He served overseas with the Canadian forces in World War I, becoming a lieutenant colonel in 1918. The last 20 years of his life he spent in London and Paris. He was the author of *Newfoundland, the Tenth Island* (1897), *The Hudson's Bay Company* (1899), *The East India Company, The New America, The Romance of Canada, George the Third* (1907), *Life and Letters of James Wolfe* (1909), *Nova Scotia* (1911), *The Life of Lord Strathcona* (1915), *Ypres: The Holy Ground of British Arms* (1919), *England: by an Overseas Englishman* (1922), and *Life of Edward Tuck* (1941). He died at Beaulieu-sur-Mer, France, Sept. 18.

Willstätter, Richard (1872–1942), German chemist and Nobel prize winner, was born Aug. 13 in Karlsruhe, Germany. After studying at the University of Munich, he was associated with the Polytechnic institute of Zurich, where he was professor of chemistry and director of biochemical research, 1905–12. He held a chair in chemistry at the Kaiser Wilhelm institute in Berlin, 1912–16, and later accepted a professorship at the University of Munich, where he pursued his researches in the field of albuminoids. Prof. Willstätter left Munich in 1924 to conduct research in enzymes and he was said to have revolutionized research in this field by developing a new methodology. In 1915, he received the Nobel prize for his research in chlorophyll and related vegetal colourants, and in 1932 he was awarded the Davy medal of the Royal society, London. In 1933, he was given the Willard Gibbs medal of the American Chemical society. He retired to Locarno in 1939 and his death was reported from that city on Aug. 3.

Wilson, Charles Edward (1886–), U.S. industrialist. was born Nov. 18 in New York city. After a meagre grade school education, he went to work when he was only 12 years old as a shipping clerk with the General Electric company. He worked his way up through the ranks until he became president of the organization on Jan. 1, 1940. Wilson was selected by Chairman Donald Nelson for the post of vice-chairman of the War Production board in full charge of production, Sept. 17, 1942. In Dec. 1942 he was made chairman of the Production Executive committee of WPB. On Dec. 1 he was also made chairman of the U.S.-Canada Joint War Production committee, succeeding James S. Knowlson.

Wilson, Sir Henry Maitland (1881–), British army officer, was the son of an old Suffolk family. He was educated at Eton, and received a commission in the Rifle brigade in 1900. Before he was 20 he was on active service in South Africa. During World War I he fought in France and Belgium; after the war, he held appointments at the Royal Military college, Sandhurst, and the Staff college, Camberley. In 1938 he was promoted lieutenant general and was sent to command Britain's army of the Nile in 1939. There, under General Wavell, he directed the advance which swept the Italian forces from Cyrenaica. After this campaign General Wilson was made G.O.C.-in-C. and military governor of Cyrenaica. Shortly after the publication of his appointment he led the United Kingdom and Empire troops under the orders of General Papagos in Greece. On a front of 60–70 mi. in eastern Greece he was faced by overwhelming German forces which, having broken through the Greek troops on his flank, seriously threatened to surround his little army. By skilful leadership he was able to extricate much the greater part of his force in accordance with the expressed wishes of the Greek government. After this, in June-July 1941, in a campaign lasting only five weeks, he led the Allied forces which thwarted Vichy's support for a projected nazi coup d'état in Syria. In Aug. 1942, he was appointed the first commander-in-chief, Persia-Iraq.

Wilson, John Arthur (1890–1942), U.S. chemist, was born Aug. 16 in Chicago. He studied at New York university and at the University of Leeds, England, and was honorary research assistant at the Procter International Research laboratory in Leeds. He was awarded the William H. Nichols medal of the American Chemical society, New York section, in 1931, for his work in colloid chemistry and its application to leather and sanitation. His research in the properties of leather led to his discoveries of new processes for tanning skins and treating leather. In addition, Dr. Wilson developed a new method for disposal of sewage for large cities. He died in New York city, Sept. 10.

Wilson, (Robert) Forrest (1883–1942), U.S. author, was born Jan. 20 in Warren, Ohio. He was graduated from Allegheny college, did post-graduate work at Cambridge in England and then entered newspaper work, working as a reporter in Cleveland and later as a Washington correspondent. He was a captain in the chemical warfare service in World War I and after the armistice was associated with the office of the assistant secretary of war in the preparation of historical data. In 1941, Wilson published a biography of Harriet Beecher Stowe entitled *Crusader in Crinoline*. This work was awarded the Pulitzer prize for biography on May 4, 1942. Forrest died on May 9, in Weston, Conn.

Winant, John Gilbert (1889–), U.S. diplomat, was born Feb. 23 in New York city. He attended Princeton university and in 1912 became a teacher of English and assistant rector at St. Paul's school. In 1917 he entered the United States air service, becoming captain of the 8th observation squadron in France. After the war he was elected to the New Hampshire legislature, serving in both the house and the senate between 1917 and 1923. In 1925, at the age of 35, Winant was elected governor of New Hampshire; he served three terms, 1925–27, 1931–33 and 1933–35. His administration was marked by numerous social reforms. He was assistant director of the International Labour office, 1935–38 and director, 1939–41. A wealthy New England aristocrat, a liberal Republican and a supporter of the New Deal program, Winant was named ambassador to Great Britain by Pres. Roosevelt, Feb. 6, 1941. In March 1942, Winant conferred with Roosevelt in Washington on war problems.

Windham, Sir Walter George (1868–1942), British motor car and aviation pioneer, made the first motor drive from London to Brighton and won several speed records in the early days of motoring. As early as 1909, Sir Walter envisaged an airmail service and had a letter sent to himself from France to England by plane, perhaps one of the first letters sent by air. Two years later he saw his idea materialize in the establishment of the British airmail service. Prior to World War II, he repeatedly warned his government to strengthen the air arm, and once the war was in full swing estimated that the United Nations needed about 1,000,000 planes to turn the tide to victory. He died in Builth Wells, Radnorshire, North Wales, July 6.

Windward Islands: *see* West Indies, British.

Wines. Since viticulture is largely a peace-time agricultural pursuit, it could not be expected to thrive in war-torn Europe during the period of World War II. Details regarding the quality and quantity of the 1940 and 1941 vintages in France, Italy, Germany and the Balkans were difficult to obtain. As for the 1942 harvests in the principal wine-growing countries, reliable information was practically impossible to secure.

France has always been the outstanding wine-producing country of the world, both in respect to quality and quantity. To what extent the vineyards suffered in 1942 through neglect or the lack of material to spray the vines and shortage of skilled labour was not made known, but reports came that the German authorities required that a substantial portion of the wine produced be distilled into alcohol for their war requirements. In view of military necessities and demands, it cannot be expected that even the rare Bordeaux Chateau wines and the magnificent Burgundies and Champagne wines were wholly spared this sacrifice to the German gods of war. Italy, too, had to yield to the demand for alcohol and a substantial part of her unusually large vintage doubtless was converted into spirits. No information was of course obtainable regarding the 1942 vintages of Germany, Austria, Hungary or any of the other countries of eastern Europe. The only really reliable European wine reports were from the Iberian peninsula.

Spain produced far less in 1942 than an average wine crop, but due to generally favourable weather and freedom from the ordinary vine and root diseases, the quality of the 1942 harvest was generally satisfactory. In the Jerez (sherry) district, the qualities were promising, although there was a shortage of sweet wines. Malaga on the south coast and the Rioja districts in the northern part of Spain reported satisfactory conditions with respect to both quality and quantity, but throughout Spain, prices advanced tremendously notwithstanding a heavy falling off in exports resulting from the war.

Portugal likewise reported the general absence of mildew, oïdium and the other vine diseases, but the scarcity of rain after March resulted in a small vintage, some wine growers harvesting only 60% of their normal production. This caused but little concern, as the export business suffered grievously owing to the shortage of shipping facilities. The Casa do Douro, the government office in control, authorized the production in 1942 of 25,000 pipes (140 American gallons each) of port wine, but it was doubtful whether more than 15,000 pipes of port wine would actually be produced, the balance remaining as table wine chiefly for home consumption.

The northern part of Africa, particularly Algeria and Tunisia, has been a large producer of wine, though of the coarser and cheaper qualities. Not less than 33⅓% of the 1942 vintage had been ordered by the German authorities in control to be distilled into alcohol for war requirements, and a substantial part of the balance was no doubt shipped out for consumption by the axis troops, while their officers refreshed themselves with what was saved of the better qualities of French wines.

Wine Production of the Principal Wine-Growing Countries of the World

In thousands of American Wine Gallons

1,000 American Gallons Equal 833⅓ British (Imperial) Gallons

Year	Approximate Production	Year	Approximate Production	Year	Approximate Production
	Algeria		France—Con.		Portugal
1939	**	1937	1,348,593	1936	97,335
1940	**	1938	1,520,085	1937	211,286
1941	383,000†		Germany	1938	287,568
	Argentina	1936	110,643		Spain
1937	208,320	1937	89,775	1937	427,285
1938	243,120	1938	87,045*	1938	420,000†
1941	200,000		Greece	1941	220,000
1942	201,036	1936	45,543		Union of South Africa
	Australia	1937	88,410		
1936	20,947	1938	106,181	1936	40,188
1937	16,196		Hungary	1937	37,210
1938	23,803	1936	119,122	1938	42,813
	Chile	1937	117,416		United States of America
1937	93,082	1938	85,548		
1938	94,342		Italy	1937	95,278
1941	61,000	1930	953,452	1938	102,017
	France	1935	1,208,996	1939	94,842
1930	1,102,788	1936	883,155	1940	93,245
1935	1,917,247	1937	892,526	1941	117,887
1936	1,036,875	1938	1,252,545	1942	75,000

Source: From the *Annual* of the Office International du Vin, the U.S. Tariff Commission and the Wine Institute of California.

*Including Austria 22,391,200 gal. and the Sudeten 2,362,500 gal.

**Not available.

†Estimated production.

The situation in the western hemisphere was more favourable, but even there the war took its toll. The United States government requisitioned fully one-third of the California grape harvest for the making of raisins for the armed forces and for lend-lease purposes, and it was expected that this year's harvest of California wines would show a loss of at least 40,000,000 American gallons of wine as against the 1941 vintage. In the face of a fast-increasing demand for American wines, due partly to improving qualities and judicious advertising, and partly to the almost total absence of European wines other than sherry and port, this loss of American wine production fell heavily upon the trade and was expected to result in a substantial shortage of American wines before the end of 1942.

The Argentine Republic and Chile were greatly expanding their production of wines. They produced some fairly good qualities, although few were outstanding. On the whole, they were inferior to the better grades of North American wines. The wine harvests in South Africa and in Australia which were finding substantial markets in Great Britain and other overseas countries suffered grievously through the loss of shipping facilities. (*See* also Liquor Control.) (A. W.)

Wisconsin. One of the north-central states, Wisconsin, popularly called the "Badger state," entered the union in 1848. Area, 56,154 sq.mi., of which 54,715 sq.mi. are land. The federal census of 1940 gave its population as 3,137,587, an increase of 6.8% over 1930. The urban population was 1,679,144 and the rural, 1,458,443. Only 24,835 of the population were not white. Foreign-born whites numbered 288,774, and whites with at least one parent foreign born, an estimated 910,420. Capital, Madison (pop. 1940, 67,447). The largest city, Milwaukee, had a population of 587,472, and other large cities are Racine (67,195), Kenosha (48,765), Green Bay (46,235), La Crosse (42,707) and Sheboygan (40,638).

History.—The impact of war found Wisconsin with 48,659 men in military service as of Dec. 1, 1941. The Wisconsin Council of Defense and its county councils, set up by the governor in Oct. 1940, took on increasing importance during 1942. R. S. Kingsley was chairman of the state council. The legislature did not meet during the year.

WALTER S. GOODLAND, Republican, who became acting governor of Wisconsin Dec. 30, 1942, after the death of Orland S. Loomis, Progressive, who had been elected to the office, Nov. 3

The election of Nov. 3, 1942, was marked by bitter discussion of the pre-war non-intervention attitude of Wisconsin members of the lower house of congress, but all were re-elected except Republicans L. D. Thill and J. L. Johns, and Progressive B. J. Gehrmann, who were defeated respectively by Democrats H. J. McMurray and La Vern Dilweg, and Republican A. E. O'Konski.

The state elections showed a Republican gain in the legislature, so that Republicans held 74 of the 100 assembly seats and 23 of 33 senate seats. The state officers were all re-elected save Governor J. P. Heil, Republican, who lost to Orland P. Loomis, Progressive, by a plurality of 100,000. Heil was criticized politically for allowing the Conservation commission to remove Commissioner H. W. MacKenzie, for his frequent absence from the capital at Madison, for his expenditures in the contingent fund and for his administration of civilian defense. The death of Governor-Elect Loomis on Dec. 7 raised a constitutional question as to his successor, and the supreme court on Dec. 29 decided that under the constitution Lieutenant Governor W. S. Goodland, Republican, should serve as acting governor for the full two-year term.

The chief officers of the state in 1942 were United States Senators Robert M. La Follette, Progressive, and Alexander Wiley, Republican; and Representatives (Republican) J. L. Johns, L. H. Smith, W. H. Stevenson, L. D. Thill, F. B. Keefe, R. F. Murray, (Progressives) Merlin Hull, B. J. Gehrmann, Harry Sauthoff, and (Democrat) T. F. Wasielewski. The state officers were J. P. Heil, governor; W. S. Goodland, lieutenant governor; F. R. Zimmerman, secretary of state; J. M. Smith, treasurer, J. E. Martin, attorney-general; and John Callahan, superintendent of schools. The chief justice of the supreme court was M. B. Rosenberry.

Education.—There were 7,442 elementary schools, 464 secondary schools, and 9 teachers' colleges in Sept. 1941. The enrolment was 368,352 in elementary schools and 161,577 in secondary schools (1941–42).

Public Welfare, Charities, Correction.—The number of cases receiving public assistance as of Aug. 1942 was as follows: general relief, 14,690; WPA, 5,800; old-age assistance, 53,575; aid to dependent children, 10,609; aid to blind, 1,899—a total of 75,787. Expenditures for public assistance in 1941 were as follows: general relief, $10,232,235; WPA (July 1940–June 1941) $30,956,107; old-age assistance, $14,973,783; aid to dependent children, $5,851,738; aid to blind, $563,597—a total of $73,070,184. The amount spent for public assistance from January through March 1942 was $15,318,679. Wisconsin's unemployment compensation law was passed in Jan. 1932. The benefit payments in 1941 were $2,927,466 as against $4,584,529 in 1940. The contributions for 1941 were $13,509,273; for 1940, $11,666,453. Wisconsin's 17 charitable, penal and allied institutions were operated during July 1940–June 1941 at a cost of $3,800,876.63 (less repairs, etc.). The average daily population in 1941 was 7,678.

Communication.—The number of miles of highways as of Jan. 1, 1942 was: 84,830 (towns), 2,402 (villages), and 5,886 (cities). The total was 93,118 mi. The expenditure on highways

Table I.—*Agricultural Production, 1942 and 1941*

Crop	1942 (est.)	1941
Corn (bu.)	98,728,000	91,125,000
Oats (bu.)	100,577,000	75,669,000
Canning peas (lb.)	...	230,040,000
Tobacco (lb.)	30,965,000	31,640,000
All tame hay (tons)	7,530,000	6,720,000
All clover and timothy (tons)	...	3,484,000
Alfalfa (tons)	...	2,698,000

during July 1941–June 1942 was $34,393,764.64. The total railway mileage was 6,639. The number of airports was 47. In Jan. 1942 there were 581,700 telephones.

Banking and Finance.—At the end of 1941 there were 470 state and 97 national banks. The number of credit unions was 605. The deposits in state banks totalled $522,790,386; the assets were $587,922,620. National banks had deposits of $633,133,000 and assets of $690,362,000. The credit unions listed assets of $13,534,592. There were 123 building and loan associations with assets of $117,158,836.

The state receipts during the fiscal year ending June 30, 1942 were $140,866,708. The disbursements were $126,866,529. The state had no outstanding bonded indebtedness in 1941, but its general fund was indebted to the common and normal school funds by $1,183,700. The state budget for state departments (excluding state aid to local units) during the biennium 1941–43 was $73,868,278, greater by $2,656,302 than the 1939–41 budget. The principal increases were for pensions, the University of Wisconsin and teachers' colleges. The principal decreases were related to relief and governmental expenses.

Agriculture.—The total value of agricultural products in 1941 was $201,602,000. The total acreage harvested was 9,725,500. The gross farm income was $468,000,000, an increase of 40% over 1940. About one-fourth of this rise was caused by increased production, and the rest by advanced prices. The land used in the production of cash crops was small compared with the land used for feed crops, a result of the state's great dairy industry. Principal crops are shown in Table I.

Manufacturing.—The total value of Wisconsin's manufactured products in 1939 was $1,604,507,356, placing it 10th in rank among the states. The wages paid were $251,946,993. The number of wage-earners was 200,897 (average for the year). Wisconsin, with an extremely diversified industry, ranked first in the manufacture of cheese, milk products, malt and canned peas in 1939. Principal industries, with value of products in dollars, are shown in Table II. The world crisis had, however, made these figures obsolete in 1942, though complete new ones were not available. Between June 1940 and March 1942 Wisconsin manufacturers received $925,000,000 in defense contracts. In Sept. 1942 an estimated 322,700 workers in manufacturing were receiving estimated weekly wages of $12,220,000.

Table II.—*Industrial Production, 1939 and 1937*

Industry	1939	1937
Motor vehicles	$162,080,952	$90,700,733
Paper and paperboard mills	101,302,409	97,933,597
Meat packing, wholesale	80,234,982	72,387,364
Tractors	68,493,029	(not given separately)
Malt liquors	53,445,756	42,710,425
Dairy products		
Cheese	52,900,812	54,252,393
Condensed and evaporated milk	54,810,935	57,354,882
Creamery butter	48,217,531	63,932,363

Table III.—*Value of Mineral Products, 1940 and 1939*

Mineral	1940	1939
Stone	$5,030,263	$3,564,045
Iron ore	3,290,389	3,526,980
Sand and gravel	2,304,197	2,616,204

Mineral Production.—In 1940 the total value of mineral production was $13,554,000, compared with $12,704,942 in 1939. Leading mineral products, in dollars, are shown in Table III.

(E. P. A.)

Wisconsin, University of.

An institution of higher education at Madison, Wis. More than 2,000 students received degrees at Wisconsin's June 1942 commencement, the 89th in the university's 92-year history.

The University went "all-out" in its efforts to aid the U.S. war program during the year. The University was training 1,200 sailors, 480 WAVES, 70 pilots, 30 cooks and bakers, and 30 diesel engine technicians for the navy; 40 glider pilots for the marines; 170 mechanics and 30 civilian wood inspectors for the army air forces. The university was the centre of the Institute of Correspondence study for both the army and navy; more than 6,000 registrations had been received from soldiers and sailors by the end of 1942. More than 2,600 young men were enrolled in the university's military training department. Under the federal engineering, science, management war training program, the university organized 500 classes, enrolling more than 10,000 students for special training in war industries to speed production. More than 100 of Wisconsin's scientists were lending their special knowledge to the solution of war science problems. The university's medical school was training specialists for the armed forces. Wisconsin was the first school in the nation to register completely its women students for nurses' training and other war work. The university's colleges of agriculture and engineering were serving Wisconsin's farms and factories to the utmost to aid America's greatly increased wartime production needs.

For statistics of enrolment, faculty, library volumes, etc., *see* UNIVERSITIES AND COLLEGES. (R. Fs.)

WLB: *see* WAR LABOR BOARD, NATIONAL.

Woman's Christian Temperance Union.

Seven seminars on alcohol education sent 50 trained specialists into teachers' colleges. The course on alcohol education offered in these seminars had been accepted by seven colleges for academic credit. The acceptance of brief courses for summer schools is increasing. Four motion pictures were in circulation. These dealt with the scientific, social and economic effects of alcohol. They were on high school and adult levels. Film strips for classroom use in the grades, dealing with health, safety and economics, were available. Exhibits and many varieties of visual demonstrations were but a few of the special features of the year. The weekly magazine, the *Union Signal*, a journal of social welfare, and the *Young Crusader*, a children's paper, were increasingly added to libraries, both public and school.

The national officers in 1942 were: Mrs. Ida B. Wise Smith, president; Mrs. D. Leigh Colvin, vice-president; Miss Lily Grace Matheson, corresponding secretary; Mrs. Margaret C. Munns, treasurer; and Mrs. Nelle G. Burger, recording secretary. National headquarters, Evanston, Ill. (I. B. W. S.)

Women Accepted for Volunteer Emergency Service.

The women's reserve of the United States naval reserve was established July 30, 1942, when President Roosevelt signed the necessary legislation. The purpose of this branch of the naval reserve was to relieve for sea duty officers and enlisted men serving in naval establishments located within the continental United States. An advisory educational council composed of seven nationally known leaders in women's education was appointed to assist the bureau of naval personnel in drawing up requirements for the women's reserve and in planning for the training of its members. WAVES, the unofficial designation of the corps, was derived from the classification letters W-V(S) used by the navy department to classify the officers: Women Accepted for Volunteer Emergency Service.

President Mildred Helen McAfee (*q.v.*) of Wellesley college took the oath of office, Aug. 3, 1942, and thereby became lieutenant commander, U.S.N.R., director of the women's reserve, first woman naval officer in the history of the United States. During August, 16 administrative officers were commissioned to assist Lieutenant Commander McAfee, and a training school for officers, the Naval Reserve Midshipmen's school (WR), was established at Smith college, Northampton, Mass. This school opened officially Oct. 6, 1942. A branch of the school at Mount Holyoke college, South Hadley, Mass., opened Nov. 10, 1942.

Training schools capable of accommodating 2,200 enlisted personnel were established Oct. 9, 1942, at the University of Wisconsin, Madison, Wis. (radiomen); Indiana university, Bloomington, Ind. (storekeepers); Oklahoma Agricultural and Mechanical college, Stillwater, Okla. (yeomen). Arrangements were completed or were in the process of completion in 1942 for the training of enlisted personnel at the Georgia State College for Women, Milledgeville, Ga. (yeomen); Naval Training school, Norman, Okla. (aviation machinist's mates and aviation metalsmiths); Naval Training school, Memphis, Tenn. (aviation machinist's mates); Naval Air station, Atlanta, Ga. (Link trainer instructors); Naval Air station, Lakehurst, N.J. (parachute riggers and aerographer's mates); naval hospitals at Bethesda, Md. and San Diego, Calif. (medical specialists).

Basic training for enlisted personnel was given in 1942 at Iowa State Teachers college, Cedar Falls, Ia. A large naval training school was established at Hunter college. The Bronx, New York city. This school, capable of accommodating more than 5,000 recruits at a session, was to be utilized for the basic training of the greater part of the enlisted members of the corps.

At least 25,000 billets in the navy were open to women in 1942. Enlisted women served in regular naval ratings, such as aerographer's mate, aviation machinist's mate, aviation metalsmith, parachute rigger, pharmacist's mate, radioman, storekeeper, specialist (photographer), yeoman and seaman (Link trainer instructor, duplicating machine operator, telephone operator, file system clerk, chauffeur, information and escort clerk, mail room clerk and messenger).

No legal limitation was placed on the number who might be enlisted in the women's reserve. The size of the corps was determined by the needs of the navy department. Women received the same pay as men of equal rank and the same benefits as civil service personnel. They were given no military authority over male personnel and were instructed not to marry men in the naval service. (E. Re.)

Women's Army Auxiliary Corps.

The Women's Army Auxiliary corps (WAAC) was created by act of congress to make available to U.S. national defense the knowledge, skill and special training of U.S. women. Congressional action was completed May 14, 1942, and an executive order establishing the corps was signed by the president on May 16.

The purpose of the corps was to replace able-bodied enlisted men in noncombatant activities. At the end of 1942 there were nearly 100 specific job classifications which the WAAC was performing for the army and the army air forces, or had been requested to perform.

The corps was the first women's organization, exclusive of the Army Nurse corps, authorized to serve with the army of the United States, and the first authorized military organization for women.

The enrolment ages were set at 21–45 years, the term of service for the duration of the war and not to exceed six months thereafter.

Members in 1942 performed only noncombatant duties, in zones of operation as well as in the United States. Nomenclature for grades differed from that of the army, but equivalent pay was provided, for equal rank and grade. When the corps was first established, pay was set in amounts corresponding to old army pay rates, but a pay equalization bill to conform to revised army pay was enacted by congress and signed by the president on Oct. 26, 1942.

Grades for members of the corps, with corresponding army grades, were established as follows:

WAAC Officers	*Equivalent Army Rank*
Director	Colonel
Assistant Director	Lieutenant Colonel
Field Director	Major
First Officer	Captain
Second Officer	First Lieutenant
Third Officer	Second Lieutenant
WAAC Enrolled Members	
Chief Leader	Master Sergeant
First Leader	First Sergeant
Technical Leader	Technical Sergeant
Staff Leader	Staff Sergeant
Leader	Sergeant

TRAINEES of the Women's Army Auxiliary corps in group calisthenics at Fort Des Moines, Ia., in the summer of 1942

Junior Leader	Corporal
Auxiliary, First Class	Private, First Class
Auxiliary	Private

All members in 1942 took basic training, corresponding to training for army personnel with the omission of training in tactics and weapons. Specialist training was given also, in army administration, motor transport, baking and cooking, and communications, as well as other subjects. An intensive officer candidate course was given to officers before they were commissioned.

The First WAAC Training centre at Fort Des Moines, Ia., was opened July 20, 1942; the Second Training centre at Daytona Beach, Fla., on Dec. 1, 1942, and the Third training centre at Fort Oglethorpe, Ga., on Jan. 25, 1943.

Special training was given members at various army schools. Administrative specialist schools were established at colleges throughout the country, utilizing their excess capacities.

Limited at first to 25,000, the corps was increased to 150,000, the limit set in the creating act by executive order on Nov. 20, 1942. Within six months from the day the WAAC was created, requests by various branches of the service for members of the corps totalled this full amount.

The director of the WAAC in 1942 was Mrs. Oveta Culp Hobby (*q.v.*).

Women's Auxiliary Ferrying Squadron: *see* LOVE, NANCY HARKNESS.

Women's Clubs, General Federation of.

The General Federation of Women's Clubs in 1942 focused its activities on war service. Among the major projects were programs on conservation of fruits and vegetables, sugar rationing, gasoline rationing, probing and improving housing situations of war workers, training women for industry, home nursing and first aid, nutrition in wartime, venereal disease control, health of youth. Purchase of war bonds by clubs and club women was a major contribution to the war effort.

Special studies prepared for clubs by national headquarters included pamphlets on "The United States of America" (printed in Spanish and English), "The United States—Her Territories and Possessions," "Canada," "Mexico," "United States of Brazil," "Australia and New Zealand," "Netherlands East Indies," "India," "Women in War Service."

A series of art programs including prepared lectures on, and reproductions of, paintings and sculptures in the National Gallery of Art was made available to clubs.

The 1942 war service program of the general federation began with a national defense forum held in January at the Mayflower hotel, Washington, D.C. Heads of the civil government, the army and the navy and one thousand club leaders from all parts of the United States participated in forum discussions on military defense, civilian defense, defense of the U.S. economic system and defense of the western hemisphere.

Western hemisphere solidarity was the theme of the 51st annual convention held in Fort Worth, Tex., April 27–May 2, 1942. Statesmen and educators from Latin America and the United States participated in four afternoon forums on Latin America and its international relations, economic problems of Latin America, women in the national and international life of the American republics, education and inter-American cultural relations. Women leaders of Canada addressed the convention.

The General Federation is a federation of 16,500 clubs and organizations in the U.S., its territories and 26 foreign countries, representing a total membership of more than 2,000,000 women.

Mrs. John L. Whitehurst of Baltimore is president for the 1941–1944 triennium. The organization issues a monthly magazine—*General Federation Clubwoman.* National headquarters is at 1734 N street, Northwest, Washington, D.C. (S. A. W.)

Wood, Grant (1892–1942), U.S. artist, was born Feb. 13 in Anamosa, Ia. His father died when he was a boy, and he worked at a multitude of jobs to help support his family. In 1911, he went to Minneapolis to study handicrafts and worked on the side to pay his tuition. After World War I, he joined the great hegira of American artists to Paris and studied at the Julian academy. Wearied with talk about the supremacy of French art, he went back to Iowa to paint native American scenes. However, he did find some aridity in American culture, and he portrayed this barrenness with a sardonic brush on many of his canvasses. Among his best known works are "American Gothic," "Daughters of the Revolution," and "Dinner for Threshers." His last paintings included two landscapes, "Summer in Town" and "Summer in the Country." Wood, who joined the art staff of the University of Iowa in 1934, was made professor of fine arts in June 1941. In Jan. 1941 he became art director of *Encyclopædia Britannica.* He died Feb. 12 in Iowa City.

Wool. Estimates of sheep in the world during 1942 were figured at 700,000,000, growing 3,600,000,000 lb. of wool. The Australian clip was computed at 1,086,000,000 lb.; South America, 700,000,000 lb.; Union of South Africa, 261,000,000 lb. United States imports of apparel wool totalled 600,000,000 lb. in the first ten months of 1942 compared with 688,000,000 lb. during the same period in 1941. Average monthly consumption in the first six months in 1942 amounted to 91,002,000 lb. contrasted with 79,639,833 in 1941 for the first half of the year.

It was estimated that 800,000,000 lb. of grease wool, domestic and foreign grown, were required solely for U.S. government orders placed during the calendar year of 1942, an increase of 500,000,000 lb. over 1941. Contracts for the equipment of 10,000,000 soldiers were awarded during 1942, which included 32,000,000 wool uniforms and between 16,000,000 and 17,000,000 overcoats. These contracts specified up to 100% domestic grown wool, with approximately 75% of the 1942 clip being used for army apparel.

The use of 100% wool for civilian needs was restricted during the year. During the period from Aug. 3, 1942 through Jan. 31, 1943, worsted manufacturers were permitted to use not in excess of 25% of such basic poundage for the manufacture of fabrics and yarns of any wool content, and an additional amount of wool owned, not in excess of 30% of such basic quarterly poundage, for fabrics containing not more than 65% wool. For woollen manufacture, an amount of wool not in excess of 5% of such basic quarterly poundage could be used for the manufacture of fabrics and yarns, with an additional amount of wool not in excess of 25% of such basic quarterly poundage for the manufacture of fabrics and yarns containing not more than 65% wool.

A reciprocal trade treaty between Peru and the United States, signed on May 7, 1942, was proclaimed officially on June 29 by President Roosevelt in Washington, D.C., and President Prado y Ugarteche of Peru in Lima. This treaty included the reduction in duty of alpaca, used extensively in uniforms. The agreement between the United States and Uruguay, wherein the United States agreed to purchase from Uruguay a part of the 1941–42 and 1942–43 wool clips, was ratified in Washington on Nov. 23, 1942. In substance it covered the purchase of 30,000 bales of the older clip and 37,500 bales of the newer clip, if the latter be unsold by June 1, 1943.

In Dec. 1942 the president issued executive order No. 9280, authorizing and directing the secretary of agriculture to assume full responsibility for and control over the U.S. food program (wool being included). Many believed that this order would be instrumental in the department of agriculture's assuming jurisdiction over and possibly purchasing the 1943 wool clip. The government's stock pile of wool was announced to be 450,000,000 lb., principally of Australian, New Zealand and South African wools, including 5,000,000 lb. from South America. Of this, 33,000 bales, or 11,000,000 lb., of Australian wool were sold by public auction in Boston, Mass., during December. In addition to this holding, there were 225,000,000 lb. in storage intended for transshipment to the United Kingdom.

The War Production board's general imports order M-63, covering government control of shipping space for the importation of strategic materials, including wool, required wool importers to obtain the necessary authorizations to import wool. Import licences were granted only on grades of wool, including certain types of alpaca and wool-wastes, suitable only and deemed necessary and appropriate in the public interest and to promote the national defense. Amendments of this order included the granting of import licences for wools finer than 44s in grade. According to this order, it became necessary for importers first to apply for authorizations to import wool in amounts sufficient to cover their expected purchases for a 60-day period. (*See* also SHEEP; TEXTILE INDUSTRY.) (C. M. AN.)

Woolton, Frederick James Marquis, 1ST BARON OF LIVERPOOL (1883–), British social economist and business man, was born Aug. 24 and was educated at Manchester grammar school and Manchester university, where he gained a research fellowship in economics. To study the problem of poverty at first-hand he became warden of the university settlement in Liverpool. As part of his work there he started the first dental clinic for children in Liverpool, and five years afterwards he and his wife started the first pre-natal clinic in the city. During World War I, medically rejected for active service, he was given a post in the war office. Later he became secretary of the Leather Control board, and as part of his work there introduced the standard boot, of which 3,000,000 pairs were put into circulation.

After undertaking the reorganization of the Boot Manufacturers' federation he went to America to study industrial conditions. On his return he joined the board of Lewis's Ltd., the departmental store; in 1927 he became managing director, and in 1934 he was elected chairman.

Early in 1939 he was invited to take charge of the war office (later ministry of supply) organization for clothing and equipping the troops in preparation for war. In April 1940 he became minister of food, in which office he was responsible for many extensions of rationing and price control.

Work, Hubert (1860–1942), U.S. politician, was born July 3 in Marion Center, Pa. He was graduated from the University of Michigan medical school in 1885, practised medicine in Colorado and served in the medical corps during World War I. Work entered politics in 1908 when he served as delegate-at-large in the Republican national convention. He was first assistant postmaster general during the Harding regime, 1921, became postmaster general in 1922 and succeeded Albert Fall as secretary of the interior, 1923. He continued in this office during the Coolidge administration, but resigned his post in 1928 to become chairman of the Republican national committee and to head the Hoover election campaign. He later retired to Denver, Colo., where he died Dec. 14.

Work Projects Administration: *see* FEDERAL WORKS AGENCY.

Works Agency, Federal: *see* FEDERAL WORKS AGENCY.

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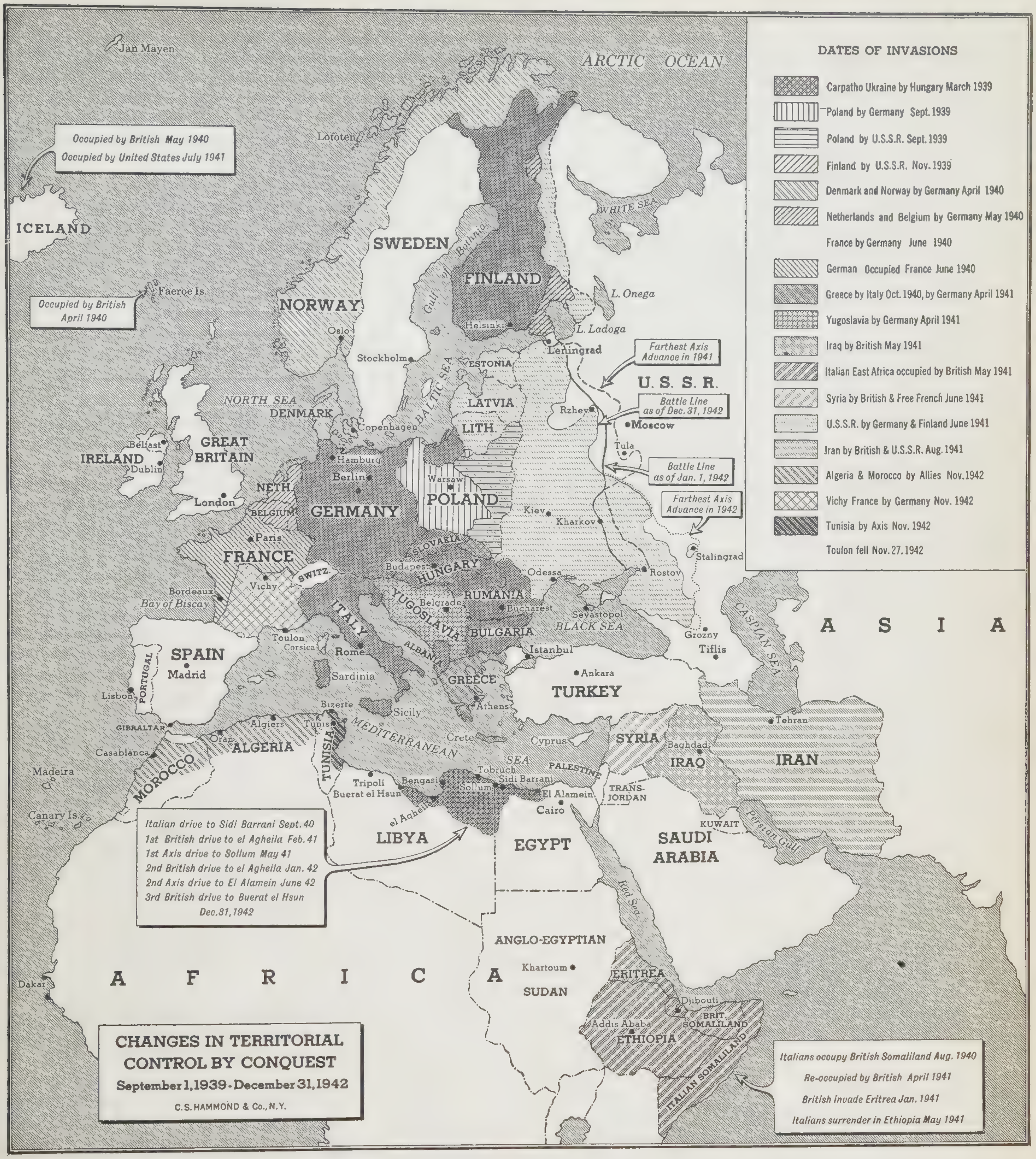
I.—INTRODUCTION

The Japanese attack on Pearl Harbor extended World War II, theretofore confined to the continents of Europe and Africa, to the western hemisphere, Asia, Australia and Oceania—the entire globe. In global war all battlegrounds are interrelated; defeats or victories on one front produce more or less decisive repercussions on other fronts, no matter how remote; a successful U-boat campaign in the Atlantic can stall a contemplated British offensive in the North African desert; a Japanese drive into the southwest Pacific can compel the United States to withdraw naval units needed to convoy supplies to Russian armies, which in turn, may be forced to withdraw deeper into the interior.

In this global conflict, the axis powers at the outset had certain definite advantages: interior positions, shorter supply lines, better-trained and better-equipped armies, and total mobilization of their peoples in the war effort. Conversely, the United Nations, with the exception of the U.S.S.R., were not psychologically or materially prepared for an all-out struggle. Britain, the United States and Russia were separated from each other by vast expanses of water. China was virtually landlocked after the fall of Burma. The United Nations navies were dispersed over seven oceans; their military supply lines were long and tenuous; their armies—again excepting Russia—lacked adequate mechanized equipment, air power and training. But the United Nations had one great and definite advantage—the virtually limitless industrial potential of the United States, whose giant production facilities were harnessed to the war effort immediately after Japan's aggression in the Pacific.

The Japanese blitzkrieg in the Pacific was no casual or fortuitous matter. It was part of the axis grand strategy, long and carefully planned, to prevent allied interference with the joint schemes of conquest drawn up by Germany and Japan. The ultimate goal of the axis was to prevent the military coalition of Britain, the United States, Russia and China. Japan drew the task of weakening Anglo-American naval power by compelling its dispersal over both the Atlantic and Pacific. Germany's part was to mobilize all the resources and manpower of conquered Europe to crush Russia, and at the same time to prevent the allies from launching an invasion of Europe. The United Nations, on the other hand, were compelled to maintain strong defensive positions in Russia and the British Isles, and to fight delaying actions in the Pacific until they could build up a war machine capable of wresting the initiative from the axis.


DATES OF INVASIONS
Carpatho Ukraine by Hungary March 1939
Poland by Germany Sept. 1939
Poland by U.S.S.R. Sept. 1939
Finland by U.S.S.R. Nov. 1939
Denmark and Norway by Germany April 1940
Netherlands and Belgium by Germany May 1940
France by Germany June 1940
German Occupied France June 1940
Greece by Italy Oct. 1940, by Germany April 1941
Yugoslavia by Germany April 1941
Iraq by British May 1941
Italian East Africa occupied by British May 1941
Syria by British & Free French June 1941
U.S.S.R. by Germany & Finland June 1941
Iran by British & U.S.S.R. Aug. 1941
Algeria & Morocco by Allies Nov. 1942
Vichy France by Germany Nov. 1942
Tunisia by Axis Nov. 1942
Toulon fell Nov. 27. 1942
Occupied by British May 1940
Occupied by United States July 1941
Occupied by British April 1940
Farthest Axis Advance in 1941
Battle Line as of Dec. 31, 1942
Battle Line as of Jan. 1, 1942
Farthest Axis Advance in 1942
Italian drive to Sidi Barrani Sept. 40
1st British drive to el Agheila Feb. 41
1st Axis drive to Sollum May 41
2nd British drive to el Agheila Jan. 42
2nd Axis drive to El Alamein June 42
3rd British drive to Buerat el Hsun Dec. 31, 1942
Italians occupy British Somaliland Aug. 1940
Re-occupied by British April 1941
British invade Eritrea Jan. 1941
Italians surrender in Ethiopia May 1941
CHANGES IN TERRITORIAL CONTROL BY CONQUEST
September 1, 1939 - December 31, 1942
C.S. HAMMOND & Co., N.Y.
ARCTIC OCEAN
ICELAND
SWEDEN
NORWAY
FINLAND
U. S. S. R.
GREAT BRITAIN
IRELAND
GERMANY
POLAND
FRANCE
SPAIN
ITALY
TURKEY
ASIA
AFRICA
LIBYA
EGYPT
SAUDI ARABIA
IRAN
IRAQ
SYRIA
ALGERIA
MOROCCO
TUNISIA
ANGLO-EGYPTIAN SUDAN
ETHIOPIA
ERITREA
ITALIAN SOMALILAND
MEDITERRANEAN SEA
BLACK SEA
CASPIAN SEA

Japan's surprise attack in the Pacific gave the axis powers the upper hand during the first eight months of fighting in 1942. In the far east, the Japanese were sweeping through the southwestern Pacific. In Europe, German armies recovered quickly from the Russian winter offensive of 1941–42 and were driving a mighty offensive toward the Caucasus. In Africa, Rommel's armies cancelled the British gains of early 1942 with a powerful drive into Egypt. But by late summer, the United Nations, catching up in their war preparations, were strong enough to abandon delaying actions for the offensive. In August, the United States marines invaded the Solomons. The threat created by this action suspended Japanese expansion in the far east. In October, the British Eighth army launched an offensive in Egypt. On Nov. 8,* American and British armies in great force occupied French North Africa, and several weeks later the Red army launched its great offensive against weakened German armies on the eastern front.

Although the allies were attacking vigorously in Asia, Africa and Europe as the year ended, Germany and Japan were still strong and far from beaten. But the "blitzkrieg," the strategy of lightning operations designed to overwhelm the enemy's forces and obtain a quick decision, which was exemplified by the German surprise attacks on ill-equipped and ill-prepared nations, appeared to have lost its potency. The United Nations were quickly drawing up to parity with the axis in quantity and quality of war materials and were now prepared for emergencies.

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*The first landing of the U.S.—British forces occurred at about 1:00 A.M. on Nov. 8, Algerian time. All dates in this article are given in accordance with the time of the localities where the described events took place.

II. WAR IN THE PACIFIC

On Dec. 7, 1941, Japan set in motion a synchronized land, sea and air blitzkrieg in an effort to make all Asia tributary. The Japanese won the strategic initiative at the outset because they were able to select their objectives and strike at the moment of their own choosing. The broad objects of their strategy for the conquest of the Pacific were:

(1) Total destruction of allied naval and air power in the Pacific and the concomitant neutralization of allied naval bases.
(2) Speedy occupation of Malaya, Burma, the Philippines and the East Indies, rich in natural resources necessary to establish self-sufficiency for the island empire.
(3) Consolidation of territorial gains, and prompt development of strongly fortified defenses to resist the inevitable allied counteroffensives.
(4) Subjugation of China and exploitation of her vast industrial resources.

The Japanese naval thrusts in the Coral sea, and the landing of troops in New Guinea, Dutch Timor and New Britain, pointed toward Australia as a major object of Japan's strategy of conquest. But vigorous allied counteraction in these areas compelled the Japanese to readjust whatever plans they may have had in that direction and to convert their new island outposts into an outer defense belt guarding the newly won prizes in Oceania.

The Malayan Campaign.—The object of the Japanese campaign in Malaya was the capture of Singapore, keystone of British naval power in the far east. This great fortress possessed a 50,000-ton floating dock which could cradle the largest battleships, numerous smaller docks, a formidable array of huge coastal defense guns, and four large airfields which were counted on to give the base adequate protection from air attacks. The Japanese knew that so long as this mighty base remained in allied hands, the combined Anglo-U.S. fleets could prevent projected moves to the south.

The British command in Malaya, holding to the optimistic view that Japan would not dare risk a war in the Pacific, based its strategy on the assumption that should war start, Singapore would become the chief allied base, from which the Anglo-U.S. fleet would seize the initiative to strike at the Japanese heartland itself.

This strategy was severely jolted by the Pearl Harbor attack, which immobilized the United States Pacific fleet. An even more serious blow to Singapore itself was the sinking on Dec. 10, 1941, of the "Prince of Wales" and the "Repulse," the loss of which deprived the fortress of its chief weapons for offensive operations. These twin disasters wrought a complete change in Singapore's function in allied war strategy. Overnight, the great British naval base had been stripped of its power and reduced to a land base of limited defensive strength. Furthermore, the Japanese overland attack from Thailand revealed the inherent weakness of this naval citadel—Singapore had been designed to repel an attack by sea, not by land. Few of its guns and fortifications faced the Malayan mainland, because the British command had considered an invasion through the jungles from the north to be impossible. They had insisted that the Malayan east coast would be the principal theatre of operations; the west coast was not envisaged as a possible zone of war. But the Japanese sent their invading land forces through the "impassable" jungles of the west coast as well as along the eastern shores of Malaya. Operating from bases in Thailand, Japanese troops landed at Singora and Patani above Malaya's east coast and struck across the Kra isthmus, severing communications between Malaya and Burma. These forces advanced down the level western shoreline. Crisscrossed with good roads that fed the rich rubber and tin regions, this terrain was admirably suited for a war of movement.

Simultaneously, Japanese shock troops landed on the east coast at Kota Bharu, a few miles south of the Thai frontier, capturing the airfield there on Dec. 9, 1941. Synchronized with the land attacks, a Japanese air blitz severely damaged the principal Malayan airfields, destroying more than half of the R.A.F. aircraft, which were surprised on the ground. The Japanese thus rapidly won air superiority at a low cost.

The Japanese then intensified their drives down both coasts. The column on the western shores, equipped for amphibious operations, waded easily through alternate expanses of swamplands and rice paddies and filtered through the tangled jungles. They outflanked the British armies around Alor Star, in Kedah province, compelled the British garrison to evacuate the naval base on Penang island, and seized a mining centre in Perak on Dec. 28. The eastern column, moving rapidly down the coast from Kota Bharu, captured the airdrome at Kuantan, 200 miles to the south, on Jan. 4, 1942.

Efforts to halt the Japanese torrent were unsuccessful. On Dec. 26, 1941, the British, in alarm, appointed Lt. Gen. Sir Henry Pownall to replace Gen. Sir Robert Brooke-Popham as commander-in-chief of British armies in Malaya. Japanese armies, meanwhile, reinforced with fresh troops, pressed their advance down the western Malayan shore. On Jan. 7, 1942, a tank thrust breached British lines along the Slim river and the invading armies poured through the resulting gap. Outnumbered and outmanoeuvred, the tiring British abandoned both Kuala Lumpur and Port Swettenham. Australian reserves thrown into action temporarily diverted a Japanese spearhead toward the inland jungles. But on Jan. 17 the Australians were hurled back and the enemy crossed the Muar river and advanced toward Kluang. The Japanese east coast armies based at Kuantan, receiving more reinforcements, took Mersing, a coastal point 75 miles from Singapore. The fall of Mersing and Kluang ended the hope of holding any portion of the mainland. A rearguard force was then assigned to fight a delaying action while the bulk of the British army retreated toward Singapore. On Jan. 31, the weary and footsore British crossed the Strait of Johore, and the causeway linking Singapore island with the mainland behind them was dynamited. The siege of Singapore had begun.

Numbering about 60,000 men, the British army was exhausted by seven weeks of constant fighting. On the other side of a shallow stream a half-mile wide was massed a Japanese force of about 100,000 troops. Singapore's defenses were pitiably weak. Only a few of its big coastal defense guns were turned around to face the invaders. Japanese air raids had disabled most of the other guns. Massing their artillery in a semicircle around the Strait of Johore, the Japanese opened a bombardment of the British position. On Feb. 8, the invaders, protected by an intensive land and air barrage, swarmed across the Strait of Johore, and within 48 hours they drove the British out of the northwestern half of the island. On Feb. 14, the Japanese closed in on the beleaguered naval base from three sides. Crowded into a small area already packed with terror-stricken refugees and under heavy air bombardment, their water supply destroyed, and no possibility of reinforcements, further resistance seemed hopeless. The Japanese terms for unconditional surrender were accepted on Feb. 15, and some 60,000 British imperial troops laid down their arms. The "impregnable" fortress of Singapore had been reduced in two weeks; the Japanese had won one of the most impressive victories in their history.

The rapid conquest of Malaya was effected by the use of un-conventional methods of warfare adapted to jungle climate and terrain. Instead of using frontal assaults in traditional World War I style, the Japanese soldiers split up into small parties, and the individual instead of the group became the fighting unit. The Japanese would slip into the jungle, often disguised in British or native costumes, filter through the gaps in the British lines, and would ambush the defenders from the rear. Under constant pressure of these harrying tactics, the British did not have time to consolidate their positions or to establish a stabilized defense line. The British troops had neither experience nor training in jungle fighting, and the swiftness of the Japanese advance precluded development of a technique of defense.

The attitude of the British colonial administration toward the natives was in no small degree responsible for the Malayan débacle. For example, at Penang the British authorities refused to evacuate anyone but Europeans; Malays, Chinese and Indians were left to fend for themselves. This shortsighted as well as ungallant action embittered many Malays; thousands of them turned against the British, joined the invaders and played an important role in fifth column activities.

A third factor was the want of foresight among Britain's military and colonial leaders in Malaya. British failure to grasp the meaning of total war was illustrated by the invariable reluctance of the military and the colonial administration to order their retreating forces to destroy property which might be useful to the enemy when captured. Thus, the stocks and harbour installations of Penang were reported to have fallen to the Japanese virtually intact. On one occasion, Malayan officials announced the British troops had completely destroyed the Kuantan airdrome before evacuating it. Several days later, the R.A.F. was sent over the airfield to bomb the hangars which were described as "undamaged." After the first month of fighting, the British troops applied the scorched earth policy with more vigour; but it was then too late. British strategy, unable to shake off the torpor of the "too little and too late" attitude, had been inadequate to save from the Japanese an indispensable naval base and the richest rubber and tin area in the world.

The Battle of the Philippines.—The paralyzing blow dealt to U.S. naval power at Pearl Harbor made defense of the Philippines impossible. The immobilization of the United States Pacific fleet dashed all hopes of getting reinforcements and supplies to the outnumbered American and Filipino troops in the islands. As a result of the attack on Pearl Harbor and the terribly effective raids on the American airfields in the Philippines, Japan immediately won both air and naval supremacy. Now practically immune from aerial or naval attack, the Japanese poured troops into the Philippines, and the conquest of the islands became certain. Thus from the very beginning of the battle of the Philippines, Gen. MacArthur's army was compelled to fight a delaying action which could end only in its destruction, in the hope of slowing the Japanese advance toward the richer prize to the south, the Netherlands East Indies.

MacArthur's forces, consisting of about 7,000 American and 75,000 Filipino troops, were concentrated chiefly on Luzon island, keystone of the commonwealth's defense system. This army had little mechanized equipment, only a few pieces of artillery and inadequate air support. The small U.S. Asiatic fleet, based at Cavite in Manila bay, gave the defending forces a semblance of naval support, but could never have been expected to offer successful resistance to the powerful Japanese naval forces operating in the Pacific.

Japanese planes launched the attack on the Philippines on Dec. 8, 1941, with a sudden and devastating raid on the principal airfields in Luzon and Mindanao, destroying the majority of the American craft on the ground.

Simultaneously with this air attack, Japanese troops landed on the island of Luzon and established three beachheads. American and Filipino units were able to smash the first Japanese landing parties at Lingayen gulf. But on Dec. 22, some 80,000 Japanese troops landed again in the Lingayen area from 80 transports, drove back the defenders and established secure beachheads. Another large invading force was also landed at a point 130 mi. southeast of Manila. Both of these armies launched a drive to converge on the Philippine capital and encircled MacArthur's heavily outnumbered units. MacArthur, however, eluded the trap by evacuating Manila which fell on Jan. 2, 1942, and withdrew his forces to the rugged and difficult terrain of the Bataan peninsula. Although the American-Filipino forces on Bataan were outnumbered by five to one, they were in an excellent position for a prolonged stand. The big guns of Corregidor fortress in Manila bay co-ordinated their fire with MacArthur's few pieces of artillery to help hold the enemy at bay.

The siege of Bataan began on Jan. 3. On Jan. 11, MacArthur skilfully parried an attack on his right flank, inflicting heavy losses on the Japanese. Another attempt to break through his lines was crushed on Jan. 19, and 10 days later headlong Japanese infantry assaults, against both flanks simultaneously, were broken up by fierce artillery fire. On Feb. 2, an invasion force which assembled opposite Corregidor was smashed by a sudden bombardment from the fortifications, while on Feb. 3, small U.S. motor torpedo boats zigzagged through Subic bay, torpedoing Japanese transports and attacking a warship in Manila bay.

Throughout February and March, MacArthur was able to hold his lines intact. But Japanese reinforcements kept pouring into the Bataan area, and it became evident that a major attack was in preparation. The position of the defending forces was serious. They were depleted by heavy casualties. Their battered equipment was reduced to a handful of tanks and a few cannon. Most of his American and Filipino units were exhausted by 12 weeks of constant fighting without air support. Their air force consisted of a few patched up pursuit planes. Even if they could get aerial reinforcements, there were no airfields in the small Bataan sector nor supplies of gas, bombs or ammunition. It was impossible for supplies to come through from the outside, since the American fleet remained immobilized as a result of the damage sustained in the Dec. 7 attack at Pearl Harbor.

Malaya and Java conquered, the Japanese determined to concentrate on the campaign in the Philippines. In March, Gen. Yamashita, the conqueror of Singapore, replaced Gen. Homma in command of the Japanese forces in the Philippines. Yamashita reinforced his troops with veterans of the Malayan and Dutch East Indies campaigns. In late March, he demanded the surrender of Gen. Jonathan Wainwright, who succeeded MacArthur after the latter was ordered to Australia. Wainwright refused and the battle went on.

Yamashita opened the campaign on March 28 with a heavy bombardment of American lines. Three days later, Japanese infantry units, covered by a barrage of shellfire from warships offshore, forced a breach in the Bataan lines. Tank units widened the gap, while Japanese aircraft harried Wainwright's rear lines, disrupting communications. Waves of Japanese shock troops poured through the crumbling defense lines on April 8 in the fiercest attack of the Bataan campaign. Wainwright's eastern flank collapsed under this smashing blow, and on April 9, the Japanese overran the entire Bataan sector. Of Wainwright's entire force of 43,000, some 36,000 were captured, killed or wounded in this battle. Wainwright himself, leading a force of 7,000 soldiers, marines and sailors and some 3,000 civilian refugees, escaped from the Bataan trap and fled to Corregidor. Although Wainwright was determined to hold out as long as possible in Corregidor, the position of the island fortress was hopeless. It was completely cut off from outside aid and was surrounded by a huge force. Without hope of reinforcement in men, guns, food or medicine, the exhausted garrison was subjected to nerve-shattering daily bombardments. Early in May, the Japanese attack on the fort began. Heavy guns emplaced in the mountains of Mariveles on the Bataan peninsula maintained a terrific bombardment of the "Rock," destroying the island's beach defenses. Japanese landing parties then stormed the fortress and took it in an all-out assault on May 6. After 26 days of siege, Corregidor's sick and starving garrison surrendered. With the fall of Corregidor, the Japanese had conquered the last principal point of resistance in the Philippines, although American and native guerrillas still fought in the more remote islands.

The Battle of the East Indies.—In the carefully designed pattern of Japan's strategy to establish a "co-prosperity sphere" in Asia—Tojo's equivalent to Hitler's "New Order" in Europe—the battles for Singapore and the Philippines were mere preliminaries. The major objective was the East Indies. Conquest of this rich archipelago would give Japan the largest oil wells and refineries in the far east, one-third of the world's rubber supplies, and the bulk of the world's quinine. The islands were also rich in copra, spices, coffee, rice, timber and other tropical products.

Japan's plan was (1) to effect landings on the outer islands—Netherlands New Guinea, Ceram, Celebes and Borneo, (2) then strike at the inner chain—Timor, Flores, Sumatra and Bali, and (3) then launch their final all-out assault against fabulous Java, richest island of all. In preparation for this campaign, the Japanese massed a huge fleet of troop transports, smaller warships and aircraft carriers in the waters of French Indo-China. Since the fighting power of the Anglo-American fleets was taxed to capacity in the Philippines, Malaya and Burma, the main burden for the defense of the Netherlands East Indies rested on the Dutch.

The Dutch army consisted of about 100,000 native and white troops, the bulk of whom were concentrated in Java, nucleus of the Indies defensive system. Its air force, small but efficient, consisted of about 200 bombers and 200 fighter planes. The army, however, was woefully weak in mechanized equipment. The Dutch East Indies navy, comprising four cruisers, six destroyers, 18 submarines and a large number of motor torpedo boats, was joined by the United States Asiatic fleet and by British units; but their combined strength proved inadequate to hold the sea routes against the invaders. Because of the limited strength of their seapower in the Pacific, the allies concentrated their efforts on protecting Java. After the Pearl Harbor catastrophe, the Dutch decided on an aggressive naval policy. The small Netherlands naval forces carried the war to the Gulf of Siam and in the first week of fighting sank at least six troop transports. They kept up this astonishing average throughout the first six weeks of fighting. But losses suffered by the small Dutch navy were irreplaceable, and after two months of war its effectiveness noticeably diminished.

Japan launched its invasion of the outer rim of the East Indies archipelago on Dec. 17, 1941, with landings on Sarawak, a British protectorate on the northwest coast of Borneo. The British, anticipating the attack, had ordered the destruction of Sarawak's oil fields and had then withdrawn their garrison, which was too small to put up any effective resistance. The initial Sarawak skirmish was followed by Japanese landings on the Philippine island of Mindanao and by the occupation of the port of Davao on Dec. 20. The conquest of Davao gave the Japanese command of the Celebes sea, and a base from which they could extend their operations to the channels controlling the approaches to the outer islands. Four days later, Japanese troops landed at Kuching, capital of Sarawak, thus occupying the entire protectorate.

The Japanese then directed their attention to the Dutch islands. On Jan. 10, 1942, two convoys moved southward from newly conquered Davao. One landed troops on Tarakan, oil refining island off the east coast of Borneo. The other landed forces at Manado, chief town of the Minahassa peninsula of Celebes. The Dutch fought back furiously. Shore batteries sank two Japanese destroyers off Tarakan, while Netherlands bombers damaged two cruisers. The defenders of Tarakan were overwhelmed on Jan. 12, but not before they had robbed the Japanese of the fruits of their victory by destroying all the oil wells and refineries on the island. After 11 days of fighting, marked by stubborn Dutch resistance, the Japanese won control of the peninsula.

After securing a foothold on Celebes, Japanese planes were sent to "soften" allied resistance in New Guinea and the Bismarck archipelago by heavy bombing raids. Japanese troops then landed in these islands on Jan. 23, and quickly occupied Rabaul in New Guinea and Kavieng in New Ireland. This thrust extended Japanese power far to the east and brought them to within easy striking distance of Australia. The extension of the Japanese tentacles eastward also perilled the allied supply routes to Java and Australia. Japan now had footholds on both the western and eastern fringes of the outer islands. But Japanese efforts to drive a wedge through the centre were temporarily halted when an American-British naval force trapped a large convoy in the Strait of Makassar, a narrow sea inlet between Borneo and Celebes, and sank at least one-third of the Japanese ships after a violent three-day battle, Jan. 24–26. (See *Naval Warfare in the Pacific*, p. 785.)

This blow, however, proved to be only a temporary setback. Even while this naval battle was going on, the Japanese troops landed at Balikpapan in Borneo and Kandari in Celebes. On Jan. 29, new enemy forces established beachheads at Pemangkat on western Borneo and captured Pontianak on Feb. 1, thus broadening their foothold on the western coast of Borneo. On Jan. 31, another force invaded Ambon (Amboina). This rapid investment of key points on the outer rim gave the Japanese air bases from which to strike at Java, Dutch stronghold. On Feb. 3, a force of 70 Japanese planes struck at Soerabaja, principal Dutch naval base on Java, severely damaging the base and crippling the adjacent airfields. Japanese air raiders then fanned out over Sumatra, Java and Dutch Timor, smashing at Dutch airdromes. Outnumbered by the invading air fleets, the allied air forces were unable to halt the Japanese and were slowly pared down by the process of attrition.

Japan's drive to conquer the outer islands was resumed on Feb. 10. A new convoy steamed through the narrow Straits of Makassar and landed a force at Makassar, on the southeastern finger of Celebes. Simultaneously, Japanese forces in Borneo drove to the south, capturing Bandjermasin on Feb. 12. The seizure of these two points gave the Japanese complete control of the Straits of Makassar, and airfields subsequently established there were within bomber range of Soerabaja, only 300 mi. away.

The invaders then launched a concerted attack on Sumatra. On Feb. 14, some 700 Japanese parachute troops alighted at Palembang, important oil centre in southeastern Sumatra, but were promptly mopped up by the defending garrison. Undismayed by the failure of the paratroop offensive, the Japanese landed in force the next day near Palembang. Although outgunned and outnumbered, one Dutch force held off the Japanese invaders while demolition squads in the rear blew up all wells, storage tanks and refineries before it withdrew. The Japanese proceeded to establish footholds on the southern tip of the island and won control of the western shores of Sunda strait, only a few miles from Java itself. Moving in from their bases on Borneo and Celebes, the Japanese, on Feb. 20, occupied Portuguese Timor.

Portuguese protests against this invasion were politely ignored. On the same day another Japanese detachment invaded Bali. Separated from Java only by a narrow channel, less than a mile across, Bali fell on Feb. 23 and Java was between the jaws of a Japanese vise. The invaders meanwhile proceeded to mop up the remnants of Dutch forces on Sumatra, Bali, Borneo and Celebes, and then massed warships, troop transports and planes on the newly won bases in these islands for the final drive on Java.

The American and Dutch commands decided to risk their combined fleets in a desperate gamble to break the enemy ring around Java. On Feb. 27, the smaller allied fleet challenged a large convoy of Japanese troopships escorted by strong naval detachments. After a two-day running battle, nearly the entire allied force was destroyed. This staggering defeat sealed the doom of Java. The enemy convoy got through safely, and the Japanese invaded Java on the night of Feb. 28. An estimated five divisions, numbering between 60,000 and 75,000 men, had been landed during the five-day period following the initial onslaught. This force separated into three spearheads, aimed respectively at Batavia, the capital, Bandoeng (Bandung), the Dutch military headquarters, and Soerabaja, the naval base. Protected by overwhelming air support, the triple-pronged drive moved with unexpected speed. Batavia fell on March 5 and the defenses of Bandoeng collapsed on March 7. By March 10 Soerabaja had fallen, and virtually all resistance in Java had ceased. The Japanese claimed that 98,000 allied troops, including about 5,000 Americans, British and Australians, were taken prisoner on Java.

The Dutch and Indonesian troops fought with courage and stubbornness, but they were no match for the invaders. The Japanese had numerical superiority, better-trained armies, more armoured equipment and a smoothly-working communications system that permitted a steady and abundant flow of supplies to reach their armies, and above all, naval and air supremacy. Allied failure to break the Japanese naval blockade and to get supplies into Java was regarded as one of the factors responsible for the loss of the Netherlands East Indies. Some Netherlands Indies officials, complaining bitterly over the delay in sending aid to Java, asserted that 1,000 additional planes would have turned the tide of battle in the southwest Pacific in favour of the allies.

The Burma Campaign.—The Japanese invasion of Burma did not get under way until Jan. 15, 1942, five weeks after the Pearl Harbor attack. Although the position of Burma was a potential threat to the Japanese flank in Malaya, the British command was unable to mass enough men and material in this theatre to exploit this situation. Furthermore, British strategy was not geared to wage an offensive war. Thus, the Japanese were enabled to ignore the Burma front until their footholds in Malaya were solidly established.

Nevertheless, Japan had not overlooked the possibility of an eventual drive into Burma. While the struggle for Malaya was still in its initial stages, the Japanese poured a steady stream of reserves and supplies into their Thailand bases. When it became evident that Japanese forces in Malaya were adequate to bring that campaign to a successful conclusion, the bulk of the reserve divisions in Thailand were turned against Burma. Japanese bombers then opened the way with heavy raids on British airfields at Rangoon and Moulmein, following the Japanese concept that control of the air was an essential factor in land operations.

On Jan. 15, 1942, a Japanese land column moving from Thailand struck across the frontier, penetrating Tenasserim province, the narrow Burmese "appendix" with a 600-mi. coastline on the Bay of Bengal. By Jan. 18 this column had occupied Tavoy, thus slicing Tenasserim through the middle. Another column to the north then marched across the Thai frontier in a push toward Paan, a small town on the east bank of the Salween river about 40 mi. north of Moulmein. Threatened by this flanking movement, the small British garrison in this area fell back toward Moulmein and the Salween. The Japanese objective was to envelop Moulmein in a pincers movement and thus win control of the coastal areas of Tenasserim. This was temporarily blocked, however, by the brilliant defensive operations of the American Volunteer Group, nicknamed the "Flying Tigers." This small but superbly trained group of American fliers, who had volunteered to fight in China's air force, was ably aided by British pilots. The A.V.G. and the R.A.F. fought gallantly against odds of five to one. But lacking reinforcements and facilities for replacements, this combined air force was never strong enough to compensate for the weakness of the defending ground armies, outnumbered and outgunned by the invaders.

The Japanese launched their drive against Moulmein on Jan. 30. They converged on the city from three sides and occupied it on Jan. 31, after the British withdrew in haste to escape encirclement.

The capture of Moulmein furnished the Japanese with a base for an offensive against Rangoon, 200 mi. away by the winding coast roads. Meanwhile, the northern column at Paan, after two weeks of seesaw fighting, was able to secure a bridgehead on the western banks of the Salween river. The army at Moulmein then swung northward through Martaban, about 20 mi. away, and joined the northern column at Thaton, a rail junction. Again, on Feb. 15, the British had to retreat westward to escape encirclement, to a new line at the Bilin river.

In bridging the Salween, the Japanese had ousted the British from the strongest natural defense position in southeastern Burma. The Salween was a deep stream three miles wide at its mouth; the Bilin was shallow and narrow and afforded few natural barriers for defensive operations. Moreover, the British were fast tiring, while the Japanese were receiving fresh reinforcements. On Feb. 17, the Japanese struck anew with a concerted air and land attack against the Bilin river line. The weak British defenses collapsed; once more the British imperial armies retreated to the west, this time to the Sittang river. It was now clear that Rangoon was doomed; the civilian population fled the city, and on Feb. 25 British authorities set fire to the city. Everything of possible use to the Japanese, including millions of dollars worth of American war supplies which had been destined for China, went up in smoke.

The jaws of the Japanese pincer were closing on the Burmese capital. A British force at Toungoo, 102 mi. to the north, struck at the enemy flank in a successful diversion which delayed the closing of the trap, and enabled the Rangoon garrison to withdraw and to join British armies now concentrating in the Prome area. Rangoon itself was occupied by the Japanese on March 8. The thorough destruction of the city showed that the British were learning a bitter lesson—that the scorched earth policy had to be applied firmly and with decision, or the advantage would accrue to the enemy, as in Malaya.

The fall of Rangoon jeopardized the allied hold on the Burma road, over which flowed the major portion of allied war supplies to China. Early in January, the Chungking government, alarmed at the speed with which the Japanese force had penetrated nearby Malaya, implored the British to permit Chinese divisions to join in the defense of Burma. The British command temporized, fearing that the Burmese, opposed to the entry of Chinese troops into the country, would revolt. Chungking's offer was tentatively rejected. But when the Japanese swept into Moulmein, the British command underwent a change of heart. In February, one Chinese brigade appeared in the Shan states in upper Burma, to which they had marched on foot from Yunnan province, 1,000 mi. away. But it was not until after the fall of Rangoon that Chinese armies were "allowed" to share in the defense of Burma. On March 19, Gen. Joseph W. Stilwell, United States military adviser to Chiang Kai-shek, was placed in command of the Fifth and Sixth Chinese armies in Burma.

The entire Japanese land force in Burma was believed not to have exceeded four or five divisions. The air force probably numbered 450 planes in all. Opposing them in the first half of the campaign were two British imperial divisions, later bolstered by a crack division of the Indian army, and a combined R.A.F. and A.V.G. force of less than 150 planes. Although the two Chinese armies—each equivalent to a Japanese division in numbers—had only a fraction of the firepower of a Japanese division, they were composed of battle-tested regulars. The British imperial divisions, however, were spotty in composition. Many of the units consisted of tough veterans from England, who fought with courage and skill; but many more were made up of raw native levies captained by volunteers from British colonial firms with no military training or experience, let alone knowledge of jungle warfare. Around Moulmein, the Japanese staged imitation attacks by tossing exploding firecrackers near the defenders' positions; terrorized, the native battalions fled in panic.

The unfriendly attitude of the native Burmese population to the British colonial administration was another drawback. Japanese propaganda broadcasts urged the Burmese to join the Japanese in freeing the country of its British "despots" and in making Asia "safe" for Asiatics.

Enemy air raids over British airfields increased in intensity as the second phase of the Burma campaign opened in late March. The air force of the allies suffered losses in planes and equipment which were irreplaceable, and their ground forces were thus deprived of air support. Seizing the initiative, the invaders hammered the British units at Prome on the Irrawaddy river and the Chinese armies at Toungoo on the upper Sittang. Battered by a heavy aerial attack, and outflanked by a Japanese column which cut the communications above them, the Chinese withdrew to the north on March 25. At the same time, a Japanese flanking manoeuvre at Prome compelled the British to abandon Prome on April 2. By the middle of April, the British had fallen back to Magwe, the last important oil centre held by the allies in the far east. The British blew up the Magwe wells, set fire to the storage tanks and refineries and abandoned the city on April 16. A Japanese flying column, however, had skirted around Yenangyaung to the north and cut off the retreat of the British force. At this crucial moment, the Chinese near Toungoo fiercely attacked the Japanese column from the rear, while British tanks and infantry formed a flying wedge and crashed through the Japanese lines in a frontal assault; but neither the Chinese nor the British possessed sufficient firepower to establish a stable defensive front. After this diversionary manoeuvre, the Chinese retired to a point 75 mi. below Mandalay and the British fell back to the Chindwin valley in preparation for a full retreat to India.

While the British and Chinese forces were fighting a desperate rear-guard action in eastern Burma, the Japanese opened another front in west central Burma. The allied position was now hopeless. The British armies, hammered and harried in weeks of unremitting battle, had been whittled down to mere skeleton forces. The Chinese, lacking adequate arms, had suffered severe casualties.

The third Japanese drive, launched on April 15 from the Thailand base of Chiengmai, surged into the southern Shan states and engaged a Chinese army which had been immobilized there for three months. But this army was spread too thinly over a 400 sq.mi. area to offer serious resistance. Heavily bolstered with armour and planes, the Japanese pierced the tenuous Chinese line at Loikaw, circled its eastern flank at Taunggyi and reached Lashio, the Burma road terminus, on April 28. The Japanese columns driving up the Irrawaddy entered Mandalay on May 1. Chinese armies north of Mandalay, however, fought a holding action despite a Japanese flanking manoeuvre from the east, and helped cover the retreat of the British up the Chindwin valley. In ensuing engagements, the Chinese were cut to ribbons, as the remnants of two British and one Indian division sacrificed their equipment and staggered to safety across the Indian border, after a gruelling retreat through the mountains of western Burma.

The Battle of New Guinea.—New Guinea and the nearby islands of New Britain, New Ireland and the Solomons, held a prominent position in the Japanese strategy for conquest of the southwest Pacific: (1) they were important as stepping-stones for a possible thrust into Australia and (2) they were bases from which Japanese warships could halt or impede the flow of U.S. convoys bearing war supplies to the far east. Australia would be isolated if the Japanese could cut the sea lanes linking her with the United States, and the United Nations would lose a key base for future operations against Japan.

On Jan. 23, 1942, the first enemy thrust into this island cluster was launched. Japanese transports, under heavy warship and plane convoy, landed troops on New Britain, New Ireland and the Solomons, meeting bitter resistance. The invaders rapidly consolidated their newly won positions, repaired harbours and constructed airfields, and then rested to await Tokyo's command to push farther east.

After the collapse of Java, the push to the southwest Pacific was resumed. On March 8, a Japanese fleet landed troops at Salamaua and Lae, neighbouring ports on the northeast coast of New Guinea. Forty-eight hours later, they made a landing at Finschhafen, a small harbour 65 mi. up the coast from Salamaua. The Japanese met no resistance from the shore (the small Australian garrison had been evacuated some weeks before), but they were heavily attacked by U.S. and Australian air forces. Japanese bombers in turn raided Port Moresby, main allied air base, on the under side of New Guinea. A Japanese invasion armada tried to circle the eastern tip of New Guinea in an attempt to land at Port Moresby, but bomber attacks compelled it to retire before reaching Milne bay.

Elimination of Port Moresby became Japan's first objective in New Guinea. On March 19 a force trained in jungle warfare started to move across the island in a drive against Port Moresby. They sloughed through roads a foot deep in mud and climbed the treacherous, vine-tangled slopes of the Owen Stanley mountains, whose major peaks were more than 13,000 ft. high. The Japanese reached the Markham valley by May, but they were bogged down by rains that flooded the mountain gaps, and were compelled to return to their bases at Salamaua and Lae. Japanese scouts meanwhile had found a better and shorter road—a narrow jungle path linking Buna, a shore point 140 mi. southeast of Salamaua, with Port Moresby. The Japanese then made fresh landings at Gona, a tiny mission centre in northern Papua, and also seized neighbouring Buna, an outpost composed of six houses. A small Japanese force of about 2,500 then started over the Buna road toward Port Moresby. Japanese tactics were similar to those used in Burma and Malaya. Groups of snipers filtered silently through the matted jungles to ambush the Australian force from flank and rear. Constantly threatened with encirclement, the defenders retreated. By Sept. 1 the Japanese had battled their way over the Owen Stanley mountains and were moving rapidly down the southern slopes of the range in pursuit of the Australians. At the end of three weeks the invaders had marched through Kokoda and Kagi, two tiny mountain villages, and were nearing Port Moresby.

But they had underestimated the difficulties of shipping supplies and food through New Guinea's jungles. The advance units had pushed ahead too quickly and their supply carriers could not catch up with them. Exhausted by the rapid pace of their advance, by lack of food, by dysentery and malaria, the Japanese were obliged to halt their drive at positions only 32 mi. from Port Moresby.

On Sept. 25 the Australians launched their first major offensive in New Guinea. The tactics for this campaign were planned by Gen. MacArthur; Gen. Thomas Blamey of the Australian army was land commander. Determined not to commit the error of outrunning their native supply carriers, they pressed forward with caution and set up supply dumps in the rear. On Oct. 5, Australian soldiers took Kagi. A month later, on Nov. 2, they recaptured Kokoda.

The fatigued Japanese forces then regrouped in positions within easy supply reach of their bases at Buna and Gona. But their plans for a strong stand were disrupted by the arrival of thousands of American soldiers. Some of these fresh forces had crossed the rain-drenched mountain gaps along corduroy roads hacked out of the jungle by allied engineers. The majority, however, had been flown to New Guinea from Australia in a great fleet of air transports.

The allied command solved the difficult logistical problems involved in feeding and supplying these relatively large forces by organizing the supply system on a smoothly functioning land and air basis. Native carriers alternated with light motorized equipment—such as "jeeps"—in shipping supplies overland while a fleet of transport planes flew equipment to the advanced outposts. The movement of supplies by air was facilitated by the discovery of a natural landing strip near Buna.

The Japanese were then treated to a bitter dose of their own jungle tactics. Australian and American jungle "specialists" penetrated the Japanese lines while infantry supported by tanks and mortars hammered Japanese flanks into retreat. The Americans and Australians effected a junction and then closed in on Buna and Gona. The Australians entered Gona on Nov. 24, while the Americans advanced to positions a mile from Buna.

The fighting around Buna was of the utmost intensity. No quarter was asked or given. In a last-ditch stand at Buna beach, the Japanese entrenched themselves in pill-boxes constructed of palmetto logs. These crude fortifications, with walls as much as seven feet thick and bristling with machine guns, discouraged frontal assaults since small arms and mortars were ineffectual in this new kind of trench war; the allies brought up 13-ton tanks which eventually destroyed this fortification system. The Japanese resisted fiercely. One Japanese pill-box with 100 men held out for 90 minutes under the combined assault of three tanks which poured 150 shells into their palmetto refuge. The Australians had encountered similar difficulties at Gona.

Australian and American troops captured Buna village on Dec. 15. Both forces then mopped up enemy units still holding out in nearby Buna Mission.

The Papuan campaign came to a close on Jan. 22, 1943, with the capture of Sananda Point. The allied forces virtually annihilated the forces of Gen. Tomitaro Horii, estimated at 15,000 men. In the final drive on Sanananda, 725 Japanese were killed; only 117 surrendered. The allied losses in the Papuan campaign were about half the Japanese casualties.

Although the Japanese had lost Papua, they still held strong points on New Guinea island at Salamaua and Lae in the province of Northeast New Guinea.

The Solomon Islands Campaign.—On Aug. 7, 1942, United States marines landed in the southern Solomon islands in the first genuine allied offensive in the Asiatic theatre of operations since the outbreak of war.

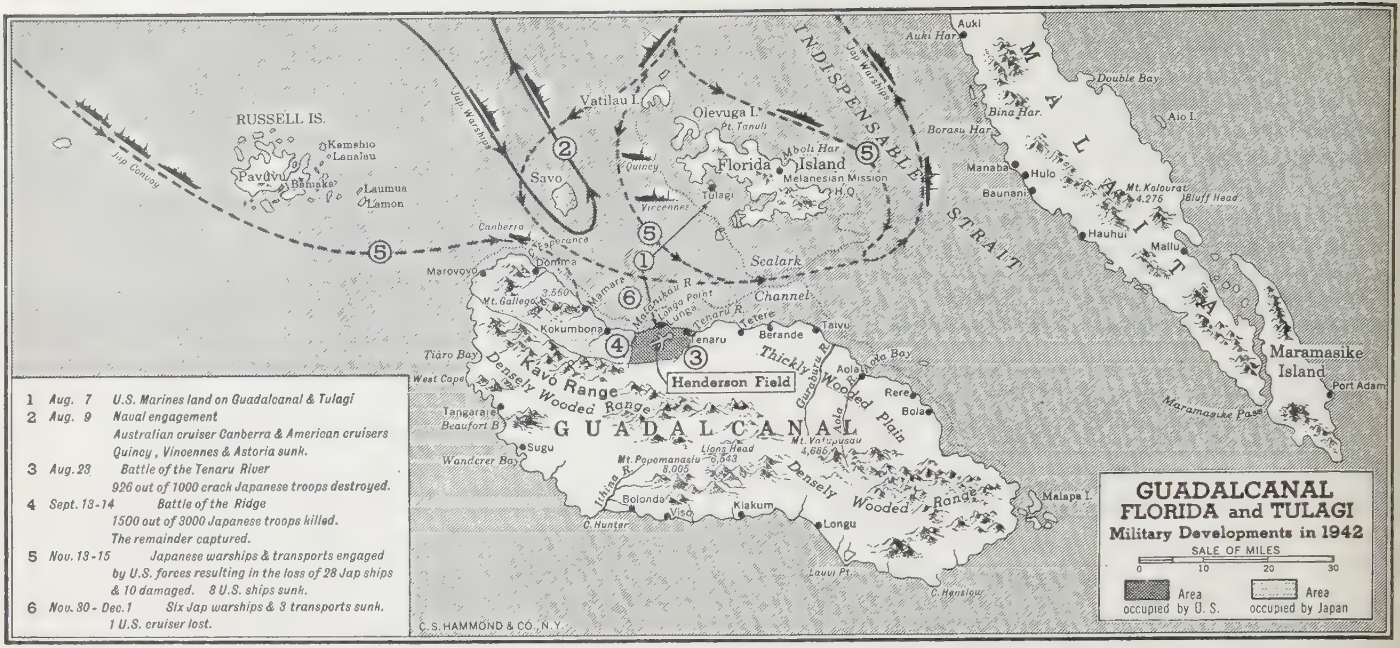
The Japanese had invaded the Solomons about six weeks after Pearl Harbor; their purpose was to establish air and naval bases on these tropical isles from which Japanese aircraft and warships could cut the flow of ship-borne war supplies from the United States to Australia. The American offensive was designed to thwart Japan's plans; the United States intended to establish footholds in the Solomons for eventual offensive operations against the enemy's naval strongholds at Bougainville and Truk farther north.

Well organized teamwork between the United States ground, sea and air forces facilitated the landings in the Solomons. Warships laid down heavy barrages on the islands to screen the approaching troop transports. Carrier-based planes and army bombers softened the Japanese bases. A division of marines, supported by special shock battalions, then streamed toward the beaches in self-propelled steel barges. They rapidly secured a beachhead on Guadalcanal island, captured an almost complete Japanese airfield there, and seized the smaller islands of Tulagi, Gavutu and Tanombogo. The first Japanese units on Guadalcanal were subdued easily, but those on Tulagi and Gavutu fought desperately. The marines were compelled to kill the entire garrison of 1,200 on Gavutu and 600 on Tulagi. Not one surrendered.

The marines won their initial footholds with relative ease and at low cost in casualties. If the Japanese were taken by surprise by the operations of the marines, the American naval forces were completely stunned by the fierce Japanese counterblows. On the night of Aug. 8–9, a Japanese cruiser force slipped into the channel between Guadalcanal and Tulagi, caught allied naval patrols off guard, and sank four allied cruisers. This defeat, one of the worst in the Pacific war, was clear proof that the Japanese did not intend to relinquish their hold on the islands without a stiff fight. (See *Naval Warfare in the Pacific*, p. 785.)

The Japanese then launched a spirited land, sea and air offensive to dislodge the marines from the Solomons. Big bombers, based at airfields in the northern Solomons and at far-off Rabaul, subjected the American beachhead on Guadalcanal and Henderson field to daily bombings. Japanese naval units and submarines continually raided American supply ships. At night, Japanese soldiers were landed on the fringes of the American positions, to harry the marines continuously. But the marines clung tenaciously to their jungle beachhead; tanks patrolled the beaches in search of Japanese landing parties while "tommy-gunners" cleaned out snipers and mopped up isolated enemy jungle nests. On Aug. 20

HENDERSON AIRPORT on Guadalcanal in the Solomon Islands, one of the most fiercely contested fields of World War II, as it appeared shortly after its seizure by U.S. marines early in Aug. 1942


GUADALCANAL
FLORIDA and TULAGI
Military Developments in 1942
SALE OF MILES
0 10 20 30
Area occupied by U.S.
Area occupied by Japan
1 Aug. 7 U.S. Marines land on Guadalcanal & Tulagi
2 Aug. 9 Naval engagement
Australian cruiser Canberra & American cruisers Quincy, Vincennes & Astoria sunk.
3 Aug. 23 Battle of the Tenaru River
926 out of 1000 crack Japanese troops destroyed.
4 Sept. 13-14 Battle of the Ridge
1500 out of 3000 Japanese troops killed.
The remainder captured.
5 Nov. 13-15 Japanese warships & transports engaged by U.S. forces resulting in the loss of 28 Jap ships & 10 damaged. 8 U.S. ships sunk.
6 Nov. 30 - Dec. 1 Six Jap warships & 3 transports sunk.
1 U.S. cruiser lost.
RUSSELL IS.
Pavuvu
Savo
Vatilau I.
Olevuga I.
Florida Island
Tulagi
INDISPENSABLE STRAIT
MALAITA
Maramasike Island
Sealark Channel
Henderson Field
GUADALCANAL
Kavo Range
Densely Wooded Range
Thickly Wooded Plain
Jap Convoy
Jap Warships
C.S. HAMMOND & CO., N.Y.

an attempted Japanese landing on Guadalcanal was broken up, with the slaughter of all but 30 of a Japanese force of 700 men. Three weeks later the marines repulsed three more attempts to storm their positions on Guadalcanal. Hundreds of the invaders were chased into the shark-infested waters, although many escaped into the jungle to harass the American rear lines.

Of invaluable aid in helping the marines cling to their toehold on Guadalcanal was the small but efficient air force based at Henderson field. Enjoying qualitative if not quantitative superiority, American fighters and bombers accounted for more than 150 enemy planes in the first five weeks of battle, shooting them down at the rate of four and five to one. The bomber wing also gave Japanese warships and troop transports in the Solomons a terrific pounding. Torpedo planes and long-range bombers sent at least 20 ships to the bottom in the first six weeks. Many Japanese warships were badly damaged by American bombs, while the shores of Guadalcanal and Tulagi were strewn with the burned out shells of Japanese troopships that had been set afire by accurate American bombings, and beached.

Yet the Japanese, who had men and ships to spare, kept on coming. Their naval force was larger, their lines of supply shorter. By Oct. 15 Japan's numerical superiority in men and ships began to tell. Japanese forces landed in broad daylight for the first time on Guadalcanal, only 15 mi. from the American lines. Hitherto, strong American units and constant air patrol made such ventures virtual suicide. But the U.S. task force, its strength depleted by the losses in the battle of the Savo sea and by the departure of damaged ships to ports of repair, was hard-pressed to hold its own. Heavy Japanese guns were also landed and brought close enough to shell the United States beachhead. The position of the marines became critical. Although they had received small reinforcements of regular army troops, replenishment of supplies was uncertain in view of the constant Japanese naval and air patrol. Toward the end of October the Japanese launched a new and heavier land, sea and air attack on Guadalcanal. On land, the army and marine forces repelled the ground attacks. Japanese bombs caused some damage to Henderson field, but marine and naval aviators retaliated with bomb-hits on two cruisers.

In November the Japanese massed for an all-out attempt to smash the American grip on Guadalcanal. This time it was another story. Many of the damaged American warships had been repaired and the strength of the task force in the Solomons was increased by new units. More supplies were reaching the Guadalcanal garrison, army and marine reinforcements had landed to replace the original forces, worn by 12 weeks of constant fighting, and large air reinforcements were on the way.

The sea battle for control of the Solomons was joined Nov. 13. After three days of violent action, the Japanese were decisively defeated. While the naval engagement was still in progress, the marines wiped out half of a Japanese force of 1,500 men in a battle at the jungle fringes of Henderson airfield.

The decisive naval victory helped to consolidate the American ground positions on the Solomons. The crisis had passed, and the army and marines speedily consolidated their positions for the next step—eviction of the remaining Japanese on Guadalcanal. Still determined to hold the Solomons, the Japanese reinforced their airdromes at Reketa bay on Santa Isabel island, and Buin on Shortland island, and established a new air base on Munda in the New Georgia group. These three bases brought Japanese fighter and bomber planes within easy striking distance of Guadalcanal.

The expertness of the Japanese soldier in jungle technique made him a tough fighting man, difficult to beat. His personal courage was great; he would advance into marine cross-fire despite the certain death that faced him. At jungle warfare, he admitted few equals and no superiors. He was crafty and skilled in camouflage. Many of the Japanese smeared their hands and faces with green paint and wore capes of coco-nut husks to blend with their surroundings. Snipers hid themselves in palmetto fronds; they lashed themselves to trees with belts to steady their aim. These methods of attack, though new to the marines, were soon mastered. Such fanaticism was of limited usefulness in certain types of offensive operations, but refusal to withdraw when this was justifiable resulted in extremely heavy casualties. Major General Vandegrift, commander of the marines in the Solomons, estimated that 7,000 Japanese were slain in the first four months of fighting. Only 700 marines were reported killed in this same period. By Feb. 10, 1943, all Japanese in this area had been either annihilated or captured.

The China Theatre of War.—After Pearl Harbor, war supplies that normally would have gone to the Chinese armies were siphoned off to the allied forces desperately striving to halt the Japanese tide of conquest in the Pacific. Although British and

American supplies shipped to China were never adequate, they were substantial and helped considerably to keep Gen. Chiang Kai-shek's armies fighting effectively. The scarcity of allied shipping also complicated the problem. Chungking, confident that Britain and the United States would divert the Japanese attacks, made no changes in its basic strategy—to fight a grim war of attrition. The stubborn fighting spirit of the Chinese continued to be a great contribution to the allied cause. Their refusal to admit defeat after five years of war compelled the Japanese to tie up at least one-third of their forces in China.

At the beginning of 1942 the Japanese military force in China, including the armies of the various puppet regimes, numbered between 600,000 and 800,000. This force was well equipped with tanks, heavy artillery and planes. The Chinese had 5,000,000 men in the field and about 15,000,000 men in reserve units or in training camps. In addition, a guerrilla force estimated at 800,000 men harassed Japanese communications while another 600,000 regular army troops, organized into self-sufficient units, also operated in the Japanese spheres of influence. These vast armies, however, had few planes, little heavy artillery and hardly any motorized equipment. Despite these serious handicaps, the Chinese armies killed or wounded about 1,000,000 of the enemy in the first five years of war with Japan. China's own casualties, according to Chungking estimates, amounted to 3,000,000 soldiers and civilians. But her reservoir of manpower was five times greater than Japan's.

Despite their poor equipment, China's armies proved in Jan. 1942 that they could win battles on a shoestring. Barely two weeks after the outbreak of the Pacific war, the Japanese launched a new drive to take Changsha, a Chinese stronghold astride the important railway linking Hankow and Nanking. The Japanese wanted this road to shorten land communications with their bases in Thailand and French Indo-China. Two previous attempts to dislodge Chinese armies from the city had failed. This time, the Japanese massed an army of 100,000 veterans for the third trial.

The Chinese dodged the initial Japanese frontal assault against their Sinchiang river lines on Dec. 23, 1941, and let the Japanese roll through to Changsha's outer defenses. On the night of Dec. 31, the Japanese attacked the peripheral defenses of Changsha. After three days of battle, one Japanese column succeeded in piercing Changsha's northern walls but was repulsed before it could consolidate its gains. Meanwhile, the Chinese columns outside the Changsha battle area formed a giant pocket about the Japanese army. The Japanese army besieging Changsha found itself besieged in turn. Caught between heavy cross-fire, the Japanese regrouped in wedge formation, broke out of the trap on Jan. 15, 1942, and fled to the north. Their casualties were heavy. Chungking said 57,000 Japanese were killed or wounded in this battle alone. Tokyo's version of the Changsha battle was that the Japanese forces had withdrawn from Changsha after "accomplishing their objectives."

But Chinese elation over the results of the Changsha battle was dampened by the rapid deterioration of the British defenses in Burma. The fall of Burma would give Japan control of the Burma road, thus depriving China of its only good overland supply link with the allies. In late February two Chinese armies sent into Burma made a futile effort to help the British save the day. The British were driven into India, the Chinese armies were thrown back across the Burmese frontier into Yunnan province, and on April 29 the Japanese entered Lashio and severed the Burma road.

The Japanese capture of Lashio and the cutting of the Burma road virtually isolated China; the few alternate roads to India were mere camel paths in comparison. The road to the soviet union via Turkestan was still functioning, but Russian war supplies to China had dwindled since the German invasion of Russia. The United States air force ran a shuttle service from India to China, but transport planes then could not compete with motor caravans in freight capacity.

After the battle of Lashio a Japanese spearhead swung up the Burma road, forded the Wanting river and crossed the frontier into Yunnan province on May 5, 1942. The Japanese pursued the Chinese to Chefang, about 20 mi. east of Wanting, and then halted.

Two weeks later the Japanese started an offensive into the still unconquered provinces of southeastern China. Apparently, the motive behind this new drive was supplied by Gen. "Jimmy" Doolittle's spectacular raid on Tokyo, on April 18, a month before. In describing the raid, President Roosevelt said that Doolittle's raiders had been based at "Shangri-La." Convinced that "Shangri-La" was located in Chekiang or Fukien province, Japanese bombers launched an intensive series of attacks on airfields there.

The land drive got under way May 19. Four columns based near Hangchow bay struck southward along the Chekiang-Kiangsi railway leading to Kinhwa, 100 mi. away. Nine days later, on May 28, the Japanese occupied Kinhwa, seized the airfield at Chuhsien (which was within bombing distance of Formosa) on June 7, and occupied Chuhsien on June 10. The loss of the railway increased China's difficulties of getting supplies from the coast. Other Japanese columns driving from the east and north threatened what remained of the Chekiang-Kiangsi railway. The Japanese wanted this road in order to establish a continental rail haul from Chosen all the way to Singapore.

No sooner had the Japanese gained control of the Chekiang-Kiangsi line than they moved west to sever the Kiangsi-Hunan line, a feeder to Chinese forces operating in the Changsha zone. Two columns converged on Feng-cheng; unable to break through the Chinese lines there, they abandoned their attempt to reach the rail line and withdrew to the north.

By the middle of July the Japanese offensive in southeastern China had come to an abrupt halt. The Chinese embarked on a counteroffensive. Japanese forces were thrown out of their positions southeast of Foochow, and on Aug. 19 the Chinese recaptured the walled port of Wenchow. Another Chinese drive along the Chekiang-Kiangsi railway resulted in the recapture of Chuhsien and Lishui on Aug. 29. The small American air force in China, which included many members of the former American Volunteer Group, provided the attacking Chinese armies with invaluable, although limited, air support in the new drive. By the end of August the Chinese had dislodged the Japanese from a 100-mi. stretch of the railway.

In the fall of 1942 the armies of both sides in the Chinese theatre of war marked time. Chungking sources explained this lull in activities as an indication that large Japanese armies were being withdrawn from China in preparation for an attack on Russia's Siberian provinces. These sources added that the Japanese were waiting for a decisive German victory in the west before launching an attack against Siberia. Russia, however, failed to collapse.

As the year 1942 came to a close, the Chinese were still very much in the fight despite the loss of the Burma road and their desperate supply problem. They had reoccupied many areas formerly held by the enemy, through their own efforts and because, in many cases, the Japanese were compelled to withdraw troops for fighting in other zones of the widely extended Pacific battlefront. The Japanese, however, still held the main coastal areas and the majority of the railroads and principal highways.

One cheering prospect for China was the extensive activity of the U.S. air forces in China. Ranging far and wide, the big U.S. bombers hammered military objectives in such Japanese-held centres as Hankow, Canton and Hongkong. For the first time in five years, the Japanese no longer swept the skies over China unchallenged.

Action in the Aleutians.—In June, 1942, a Japanese force landed on the outermost islands of the Aleutians and brought the war to the Pacific shores of the western hemisphere. The attack on the Aleutians was launched simultaneously with the Japanese sea and air offensive against Midway island. Originally, it was intended merely to divert American naval strength to the Bering sea, and thus prevent units of the U.S. Pacific fleet from outflanking the fleet of Japanese warships heading for Midway. Once established in the Aleutians, however, the Japanese did not leave.

Strategically, Japanese operations in the Aleutians had great nuisance value. This invasion compelled the United States to divert men, ships and planes needed in other theatres of war to the Alaskan seas to prevent further Japanese incursions. The islands also threatened the tenuous communications link with Russia via the Bering straits. In case Russia were drawn into the Pacific war, Japan could easily intercept American supply ships from these outposts.

The invasion of the Aleutians started June 3, when planes from a Japanese carrier raided Dutch Harbor, U.S. naval post on Unalaska island. This manoeuvre screened the landing of Japanese troops at Attu, Agattu and Kiska islands. Attu and Agattu were barren rocks protruding from the Arctic waters. Kiska was larger, had fair possibilities for anchorage and some relatively flat areas for construction of an airfield. The Japanese met no opposition, as the three islands were virtually unoccupied save for a few navy weathermen stationed there.

The United States made no major effort to dislodge the Japanese from their Aleutian footholds during 1942. After early alarms had died down, it was estimated that the Japanese had no more than 3,000 men on the three islands, and it appeared unlikely that they could extend their conquests to the Alaskan panhandle. However, a large enough naval and air force was sent to Alaskan bases to make life miserable for the Japanese. Operating in close coordination, American submarines struck at Japanese warships and transports anchored off Kiska while army and navy planes subjected the invaders to a terrific overhead pounding. These attacks were so effective that the Japanese lost 10 warships, including six or seven destroyers, in the first 90 days of the systematic sea and air raids. In addition, 24 other vessels were damaged in this same period. On Sept. 1 the United States forces moved closer to the Japanese bases by occupying one of the Andreanof islands, midway between Dutch Harbor and Kiska. A month later, the United States navy reported that the Japanese had abandoned Attu and Agattu.

Why the American forces had not reoccupied Kiska was not clear at the end of 1942.

III.—THE RUSSIAN THEATRE OF WAR

January to May, 1942.—In Jan. 1942 the Russian armies were on the offensive all along a snowbound battlefront 2,000 mi. long. In the north, a German drive to encircle Leningrad had been turned back at the gates of the city. In the central zone, the Germans had lost the battle of Moscow and were in retreat. In the south, reich troops were falling back west of Rostov. The Germans were astounded at the "resurrection" of the Russian armies. As late as Oct. 3, 1941, a German press statement had said the Red army was "crushed." The Germans had terribly underestimated the Russian fighting ability and did not expect the Russians to fight so well nor to have the number and quality of their own modern tanks, planes and guns.

German strategy was not prepared for a winter campaign, and the reich's military machine stalled in the first snows. Heavy drifts blanketed the luftwaffe's airfields, grounding most of the nazi planes and immobilizing the famed panzer divisions which had not been prepared for operations in snow and freezing cold. Thus the Russian winter robbed German strategy of its most potent weapon, the co-ordinated plane-tank arm, whose mobility, speed and firepower had torn big gaps in the Russian lines during the summer and fall of 1941. The Russian forces, however, were adapted for fighting on the icebound steppes and plains. Many of the Red army tanks had been "winterized" for combat on the snows. Added mobility was gained for troops by skis, horses and aero-engined sleds; the latter served as self-propelled mounts for machine gun units and light artillery.

The regulation German uniform, not designed for the rigours of a Russian winter, was particularly inadequate for the winter of 1941–42, the coldest in 150 years. Soviet medical authorities reported that thousands of wounded nazi troops died of gangrene, caused by frostbite. Dr. Goebbels stressed the plight of the reichswehr in a broadcast on Dec. 20, 1941, when he appealed to the German people to donate their furs and warm clothing for the troops on the Russian front. The Russians, on the other hand, were provided with uniforms heavily quilted with sheepskin, and the soldiers were supplied with salves and greases specially prepared to relieve frostbite. This contrast in the personal equipment of the two armies emphasized the amazing lack of preparation by the Germans for a winter campaign. Hitler had been confident that he would be in Moscow before the first snow fell.

The German retreat, however, was not a rout, but a deliberate withdrawal to a winter line, which had been decided upon after the reich command recognized that its troops were too tired for further offensive operations. The invaders, holding the bulk of their territorial gains, established an elaborate series of defenses, behind which a railway network constituted their supply routes to the rear. The key points in this defense system were generally the railway junction cities interconnecting German lines from Leningrad to the Black sea. The principal rail hubs in nazi hands on the northern front were Dno, Velikie Luki and Staraya Russa; on the central front, Kalinin, Mozhaisk, Vyazma, Rzhev and Kaluga; to the south, Orel, Kursk and Kharkov. In order to hold these strong points, the Germans established a concentric system of defenses called "hedgehogs." Under this system a large town, strongly garrisoned and heavily fortified, became the central core of resistance. Outlying villages also strongly fortified encircled the central core. Any attempt to penetrate and reduce these strongly fortified outposts would expose the attackers to intense crossfire. The "hedgehogs," designed to hold out against prolonged sieges, enabled the Germans to transfer many divisions to bases deep in the rear for rest and reorganization in preparation for a summer offensive.

The big Russian offensive started on Nov. 29, 1941. On that date the German armies which had occupied Rostov, gateway to the Caucasus, a week before, were thrown out of the city by Marshal Timoshenko's forces. This successful operation was followed by similar Red army offensives all along the front. A week later, on Dec. 6, soviet columns in the central zone launched a surprise blow at the heavily motorized nazi divisions closing in on Moscow. The Germans had enveloped the Moscow area on three sides, their lines extending in a wide arc from Kalinin on the northwest, around through Mozhaisk to the west, and back to Tula on the south. Russian tank units swept across the snows and hurled back surprised German forces near Tula while other soviet columns hammered back the German wedges in the centre. On Dec. 16 the Germans had to evacuate Kalinin, a vital rail junction, and on Jan. 20, 1942, the Russians recaptured Mozhaisk, one of the nazi "hedgehogs," after a furious 18-day battle. The force of the Russian blows folded back the German wings enveloping Moscow, straightened the central front considerably and removed the immediate threat of an attack on Moscow. At the same time the Russians operating from Kaluga, another recaptured "hedgehog" stronghold, drove north in an attempt to encircle Vyazma, but were stopped by fierce German resistance. A third Russian column, operating from bases 150 mi. northwest of Moscow, surged through the German defenses in the Valdai hills, capturing Kholm and Toropets and threatening the railway junction of Velikie Luki. Meanwhile, the Red army columns from Mozhaisk by-passed Rzhev, drove to the south and hammered a deep wedge into German lines 100 mi. south of the city. The Russian objective was to close a pincer around the Rzhev-Vyazma pocket. Again German resistance stiffened and after weeks of seesaw struggle, a German lever pried open the jaws of the Russian pincer.

On the northern front, the Russian drive to lift the siege of Leningrad was meeting with less success. On Dec. 9, 1941, soviet forces recaptured Tikhvin, which marked the easternmost point of German penetration on this front, and took Volkhov four days later. Thereafter, the Russians struggled vainly to slice off the long German arm circling the city on the south from the Gulf of Finland to Lake Ladoga. (*See* also FINLAND.) The enemy had a solid defense line and were determined to hold it. At a point 120 mi. south of Leningrad, the Russians succeeded in late Feb. 1942 in surrounding a German force estimated at 96,000 men, holding the rail town of Staraya Russa. The Germans, however, rushed supplies and food via air transport to the besieged garrison, and at the end of March a German relief column from the west broke through the Russian lines, opening a supply corridor to Staraya Russa. The Russians, meanwhile, renewing their drive from the Kaluga area, punched a wedge into nazi positions between Smolensk and Vyazma and captured Yukhnov, another "hedgehog," on March 5. They were unable, however, to widen this breach or to disrupt nazi communications in this area.

On the southern front, Timoshenko's forces were racing in pursuit of German armies fleeing Rostov. By Dec. 5, 1941, the Russians had isolated the German garrison holding the seaport of Taganrog. But although Timoshenko's forces had advanced 115 mi. beyond Taganrog by Jan. 15, 1942, they were unable to reduce this nazi citadel.

Activity flared on the Crimean front on Dec. 30, 1941, when a Russian force seized Kerch and Theodosia after a surprise attack on the peninsula via the water gap separating Crimea from the western Caucasus. A Russian attempt to extend the drive westward and relieve the siege of Sevastopol was thwarted by vigorous German counterblows. On Feb. 2, Moscow admitted that soviet troops had been driven out of Theodosia.

As the winter wore on, German resistance wore down the power of the Russian offensive, and by March 15 the Red army advance had ceased. The German hedgehog system had successfully absorbed the shock of the soviet drives, and the important rail centres of Velikie Luki, Staraya Russa, Vyazma, Rzhev, Bryansk, Orel, Kursk and Kharkov were still in German hands. The Russians had failed in their ultimate objectives: the German armies were still besieging Leningrad on three sides; the drive on the central front had failed to pierce through the German main line of resistance. The offensive on the southern front had resulted in a spectacular victory at Rostov, but the major object—the relief of Sevastopol—was not realized.

On the credit side, however, the Russians had turned back the nazi tide from Moscow, Leningrad and the Caucasus, and had inflicted on the wehrmacht its first major defeat in World War II. The Germans were compelled to relinquish their grip on 100,000 of the 500,000 sq.mi. of territory they had conquered in their initial thrust into Russia; and the legend of the German military invincibility, so carefully fostered by Hitler, was destroyed. While Russian losses were held at a minimum during the winter warfare, their casualties for the first 12 months of fighting were huge. On June 22, 1942, the Russians admitted that they had lost 4,500,000 men in dead, wounded and captured. On July 2, 1942, the nazi high command said 337,342 German soldiers had been killed or listed missing in the first year of the Russian campaign, but no mention was made of the number wounded. The Russian figures were regarded as reasonably accurate; the German high command, it was believed, had deliberately minimized its casualty figures to conceal the appalling losses from the German people.

Both sides suffered heavy losses in material. But German industry was still capable of replacing the wehrmacht's losses. And although the Russians lost fully one-third of their industries and mineral resources in western Russia and the Ukraine to the invader, they had moved entire factories, lock, stock and barrel, to the Urals after the German invasion of the western Ukraine. This mass evacuation, combined with the tremendous expansion of the Urals industrial region, helped replace part of their losses.

As the spring thaws set in, turning Russian roads into oceans of mud and bogging down all military operations, the Russians made repeated calls to their allies to open a second front in Europe. British and American convoys were running the gauntlet of submarine packs in the Arctic seas to unload supplies at Murmansk, but this material aid was inadequate in the face of Hitler's impending summer offensive. The Russians insisted that only a second front could stave off disaster.

May to November, 1942.—The German summer offensive of 1942 was launched at the end of June. But the German high command had begun its preparations for this major effort back in the winter of 1941–42, even as reich troops were in retreat on the ice-bound Russian front. The "hedgehog" fortifications enabled the Germans to hold their winter line with a minimum of troops. A large number of divisions, particularly the panzer units—which had been badly mauled in the battle for Moscow—were reorganized and given long periods of rest. Most of Germany's large reserve forces were called up and readied for action and the satellite states of Italy, Hungary, Slovakia and Rumania were "requested" to contribute levies for the big push.

Exact figures of the size and potential strength of the opposing forces were not available. It was estimated, however, that the entire German army numbered about 300 divisions, of which between 180 and 200 were deployed on the eastern front, with the remainder garrisoned at strategic points in western Europe. In addition, the satellite states contributed 20 to 30 divisions for operations in Russia. Germany had some 25 to 30 panzer and motorized divisions, as well as the major portion of the luftwaffe, ready for the big assault. In manpower, Germany was believed to have a slight advantage over Russia. The soviet union had twice the population of the reich, but Hitler, by the use of enforced labour from conquered countries, transferred German farmers and workers to military service. Russia, on the other hand, had lost a large section of its population in the first summer of the war and was hard-pressed to maintain a balance between the manpower needs of its armed forces and those of its war industries.

In terms of quality, the tanks, artillery and aircraft of the Red army were equal to the best equipment of the German war machine. The wehrmacht, however, had substantial superiority in quantity.

In the air, the luftwaffe had overwhelming superiority, although to some extent soviet air power was bolstered by shipment of American and British planes. The Russian Black sea fleet was superior in strength to axis naval concentration in that inland sea.

Economic as well as military considerations were of paramount importance in determining the direction of the German summer offensive. Hitler's principal objective was the Caucasus, whose rich oil fields at Baku, Grozny and Maikop produced more than 80% of Russia's total output of crude oil. Germany's synthetic oil industry and the Rumanian wells produced enough petroleum to meet the reich's barest minimum requirements, but no margin for safety.

In their blueprint for conquest of the Caucasus, German strategists narrowed their field of offensive operations to the southeastern front. Their plan was to drive through the northern Caucasus and slice it off from the Russian mainland. The complete destruction of Russian military power was an essential prerequisite to the success of this plan. Another goal was the severance of allied supply routes to Russia. To accomplish this task, German submarines would intensify their attacks on allied convoys to Murmansk, while the wehrmacht would lash through the Caucasus mountains and seal the Iran frontier, the "back door" route by which allied supplies were shipped into the soviet union. Unable to match the wehrmacht in quantity of mechanized equipment, Russia's strategy had to be purely defensive. Its main points were (1) to prevent the Germans from smashing through the Russian lines and starting a war of movement; (2) alternatively, if this plan failed, to wear down reich manpower and material by process of attrition.

Move No. 1 in the nazi grand strategy for conquest of the Caucasus called for the elimination of the Russian islands of resistance at Kerch and Sevastopol in the Crimea, potential threats to the German southern flank. The offensive for this purpose started on May 8, 1942, with intense aerial attacks and bombardments on the Russian positions on the Kerch peninsula. Four days later, a German spearhead broke through the fortified Russian positions. Kerch itself fell to the invaders on May 23. The fall of Kerch cleared the way for a drive on Sevastopol, and on June 7 the Germans launched a massive assault against this soviet citadel, which had been under land siege since Nov. 1941. But Sevastopol proved a hard nut to crack. Its land approaches were ringed by a belt of fortifications 12 mi. in depth, and were studded with a mass of bunkers, gun emplacements and minefields. An intense land and air bombardment opened the way for German tank-led infantry columns which penetrated the outer belt. But the Russians fought back with incredible ferocity, exacting a heavy toll in casualties for every foot gained. On July 1, German and Rumanian forces, breaching the inner fortifications, stormed into the city itself and mopped up the remnants of the Russian garrison.

NAZI SOLDIERS entering Stalingrad during the epic siege of 1942

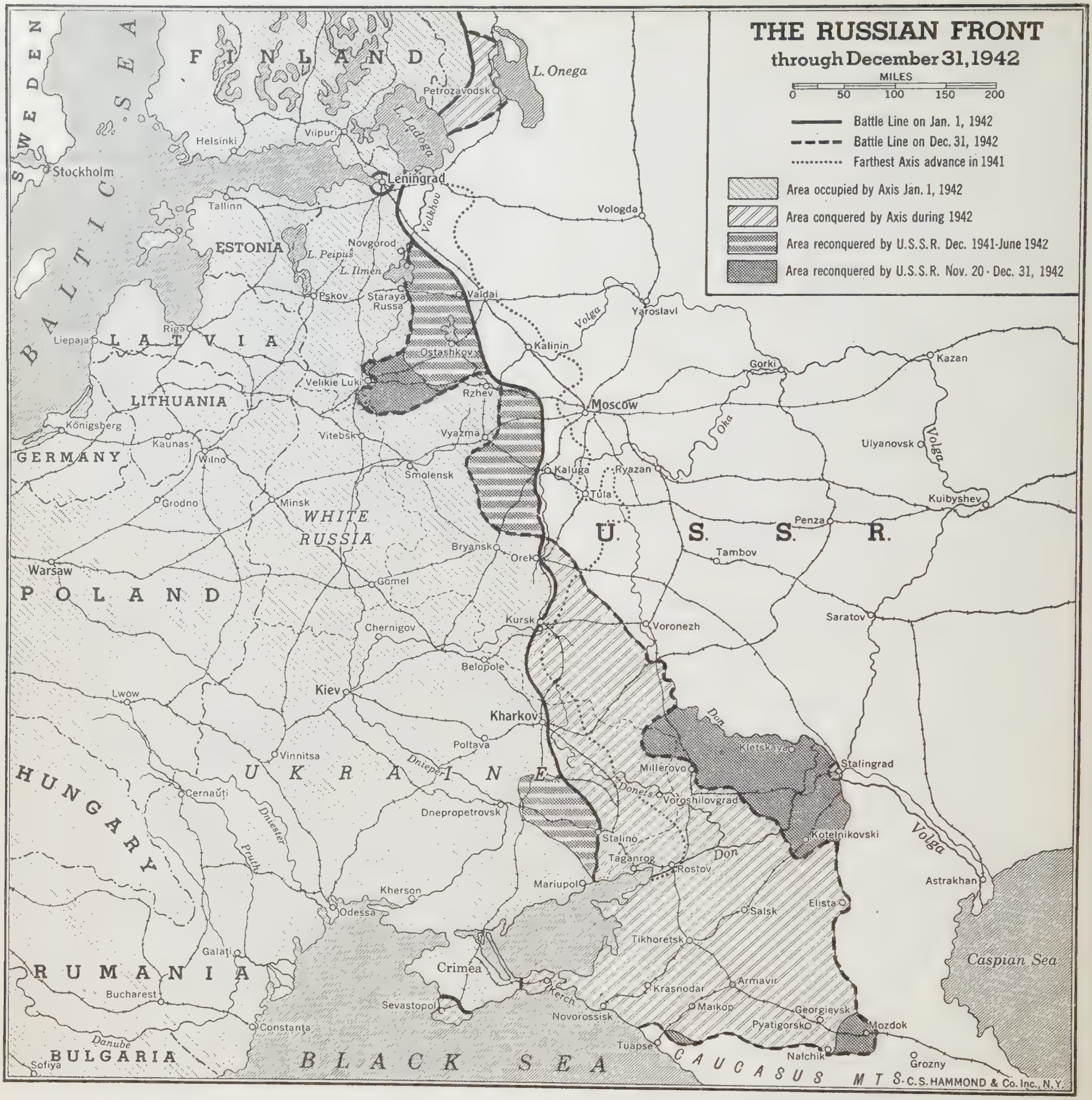
The Russians did not let the assaults on Kerch and Sevastopol go entirely unchallenged. On May 13 soviet armies in the Donets basin opened a drive on Kharkov in a manoeuvre to divert German strength from the Kerch attack, and penetrated the outer defenses of the German lines. On May 19 the Germans struck back at the southern end of the Russian flank, compelling Red army detachments to withdraw rapidly to avoid encirclement. By May 30 both operations, preludes to the greater struggle to come, had reached a standstill. The resistance of the Russian garrison in Sevastopol was not futile. By prolonging the battle for 25 days, the Russians upset Hitler's timetable for the big drive to the south.

A week before the axis took Sevastopol, Hitler opened his drive to the Caucasus. On June 25 German columns overran Russian positions on the Donets river southeast of Kharkov, captured Kupyansk and set the great offensive rolling. Three days later, the Germans unleashed a companion drive north of Kharkov. Striking from bases at Kursk, a large armoured force crushed Russian defenses and sped westward. One tank column struck straight toward Voronezh while another swerved to the south toward Rossosh. By July 5, these armoured spearheads had advanced 100 mi. Pounded by air and land, the Russians defending the Voronezh sector withdrew to the east, unable to stem the powerful nazi tank thrusts. The German armoured divisions then crossed the Don river; established bridgeheads on the eastern bank, raced toward Voronezh 10 mi. farther east, and invested part of the city. The Russians, meanwhile, regrouped their forces and staged a fierce counterattack at the German right flank. Surprised by this unexpected blow, the Germans halted to protect their flanks. The Russian momentum hurled the Germans back across the river and prevented the invaders from cutting the railroad linking Moscow and Rostov.

Failing to unhinge the Russian defense anchor at Voronezh, the Germans attacked in great force at Russian weak spots in the south, between Kharkov and the Don. Three spearheads flung toward Rostov and the great bend of the lower Don made rapid progress. The northern arm captured Rossosh. By July 12 the central spearheads had reached the Don at Boguchar, while the southern spearhead surged through Millerovo and occupied Voroshilovgrad shortly afterwards. In the first 20 days of their drive, the Germans advanced more than 225 mi., occupying a large slice of territory in southeastern Russia. The Russian armies, powerless to halt the sweep of the armoured columns, fought delaying actions.

On July 20, 1942, German columns were fighting their way east to the Volga and south into the Caucasus. One spearhead sped along the northern rim of the great Don curve and surrounded Kletskaya. Another filtered through Russian defenses on the southern rim; and on July 25 the Russians admitted that this force had succeeded in establishing two bridgeheads across the Don river at Tsimlyansk. Below the Don bend, German tank columns deliberately avoiding a frontal assault on Rostov, flanked the city from the east and compelled the Russian garrison to withdraw, in order to escape annihilation. On July 27 the Germans marched into Rostov (the third time the Caucasus gateway had changed hands in World War II to that date), and also occupied nearby Novocherkassk. The German column which took Rostov then split into three spearheads which fanned southward into the Caucasus, seizing railway junctions, ports and naval bases. Hundreds of dive bombers blasted the Russian positions and provided an effective cover for the advancing tank-led columns. Parachute troops landed behind the Russian lines in an attempt to disrupt communications, and troop transports disgorged machine-gun units and small tanks behind the Russian rear lines. The Russians, however, calmly ignored these terror tactics and fought a stubborn delaying action. They skilfully avoided encirclements, withdrew their entire tank forces after the fall of Rostov, and retired in good order.

By Aug. 9 the armoured legions of the reich, driving into the Caucasus, had captured Maikop, but it was an empty prize as the Russians filled the



oil wells with concrete before evacuating the city. Two weeks later another German column veering toward the southwest Caucasus captured Mineralne Vodi in a thrust that threatened the Grozny oil fields. The German juggernaut gained momentum, and at the end of August advance tank units had reached the slopes of the great Caucasus wall. Georgievsk, on the road to Mozdok, had fallen; Mozdok itself was threatened. German columns passed through Pyatigorsk on the road to Ordzhonikidze. By Sept. 1, 1942, the Germans were in control of a great triangular-shaped segment of the Caucasus. The base of the triangle extended from Novorossiysk on the west to points beyond Salsk on the northeast. The apex was the town of Georgievsk.

As Baku, the centre of Russia's richest oil regions, appeared to be within the grasp of the nazi mechanized columns, Russian resistance suddenly hardened. Fierce Russian counterattacks slowed the German push toward Nalchik. The striking power of the panzer units was reduced by inadequate supplies resulting from over-extended communications. The Russians, fighting a defensive war in a mountainous terrain suitable to attrition tactics, continually slashed the narrow nazi-held supply corridor. As winter came to the Caucasus peaks and passes, it was becoming apparent that the nazi strategy—to march straight through to Baku before winter—had been unsuccessful. By Oct. 1 the Germans in the Caucasus faced the bleak prospect of another Russian winter.

Meanwhile, German armies to the north drove a new series of wedges into the Russian defenses in the big Don bend. The Russians, however, refused to give battle in this area, which was a natural pocket and therefore adaptable to panzer tactics, and withdrew beyond the bend toward Stalingrad. The two German columns, circling both the northern and southern rims of the Don bend, converged. Below the bend, a third column, driving southeastward in an effort to cut the Volga at Astrakhan and also sever the round-about rail communications linking Stalingrad to this Black sea port, was stopped at Elista, 200 mi. short of its goal. But by Aug. 17 the Germans were in complete possession of the Don bend. Two weeks later, strong armoured columns crossed the Don river at the apex of the bend, and panzer divisions gradually moved in on Stalingrad.

As the battleground shifted toward Stalingrad, the Russians attempted a diversion on the central front far to the north with an attack on Rzhev that started Aug. 11. Although the Russians were able to advance about 30 mi. and to inflict heavy casualties on the Germans, they were stopped short of their goal and failed in their main objective—to compel the Germans to divert troops from Stalingrad.

Home of Russia's great tractor and tank plants, Stalingrad and its industrial suburbs spread out for nearly 20 mi. along the western banks of the Volga river. Its capture would enable the Germans to sever the last rail link with the Caucasus, and to separate the Russian armies in the Caucasus from those in the north. The Germans would thus gain control of the Volga, a vital transportation artery; and Russia's armies would be compelled to fall back beyond the river's east bank.

The battle for Stalingrad began with the German crossing of the Don.

On Aug. 22–24 the Germans established a solid foothold on the river's east bank and their main striking force warily approached the 30-mi. deep defense belt outside Stalingrad. For the final onslaught against Stalingrad the Germans massed an estimated 40 divisions, strongly bolstered by tank units and an air fleet of 1,000 planes. Against this force, the Russians decided to make a final stand behind Stalingrad's protective chain of fortifications and depended on their great quantity of heavy artillery to repel the invaders.

The Germans opened a massive plane-tank assault on Stalingrad's outer defenses in late August. Dive-bombers poured tons of explosives on the defense belt. Tanks then bludgeoned their way through softened spots in the city's defenses and were followed up by droves of infantry units. But Russian soldiers and marines, joined by armed peasants and civilians, fought with unprecedented stubbornness, hurling back wave after wave of German troops trying to penetrate the city and reach the Volga. Sheer weight of numbers finally enabled the Germans to conquer several districts on both the north and south sides of the city. The luftwaffe was then called in to crush all resistance in Stalingrad with a deluge of bombs. Bombs virtually rained on the city. Russian officers were quoted as saying that at one time, at least 1,000 German planes shuttled back and forth over Stalingrad, dumping their bomb cargoes with monotonous regularity and then going back for more. Few buildings were left standing, but the luftwaffe tactics boomeranged. The defenders converted every ruined house, every pile of debris, every crater into an improvised fortress. The streets were piled so high with rubble or pocked so deeply by bomb-craters that tank operations became impossible. Resourceful Red army troops concealed behind crumbled ruins at strategic points would decimate attacking Germans with deadly cross-fire. The Russians fought for every street, every house, every stairway. Still the Germans staggered forward, but their gains were measured in yards. On one day, the Germans would capture a row of houses; the next day, the Russians would recapture it. Toward mid-September, the Germans intensified their pressure and battled their way into the central part of the city. Reinforcements were rushed to the defenders via the Volga, and the Germans were hurled back. By Oct. 1, the German forces were tiring; the finest of the wehrmacht's shock troops had been slaughtered, but the resistance of the Russians appeared stronger than ever. On Oct. 8 a cryptic communiqué of the German high command admitted the futility of taking the city by storm and said that heavy artillery, instead of troops, would be used to batter Stalingrad into submission. By the end of October, picked Red guard units gradually circled the city, moving from the defensive to the offensive, as the Russians were preparing a massive drive to encircle the reich armies in Stalingrad.

Anticipating the Russian counterblow, the Germans sought to divert soviet strength from the besieged city with an attempted drive toward Ordzhonikidze in the Caucasus. Nazi tank columns drove beyond Nalchik, but a Russian force, showing unexpected strength, routed the tank column and slew 5,000 Germans. This futile operation was a pitiful anticlimax to Hitler's grandiose bid to conquer the Caucasus and was the final phase of the great German summer offensive of 1942.

Casualties on both sides during the five-month campaign were enormous. On July 16 a Moscow communiqué asserted that German casualties for the two-month period from May 15 to July 15 totalled 900,000; Russian casualties were put at 399,000. A German high command version of casualties, issued Aug. 12, said 1,044,741 prisoners had been captured since the spring of 1942. One estimate of losses in the battle of Stalingrad said that total Russian casualties at the height of the battle were 6,000 daily; the German dead alone were placed at 2,000 daily. In the struggle for territory, the Germans had won control of a vast area roughly the size of Texas, which, added to the previous German gains, gave Hitler control of 700,000 sq.mi. of Russia. But the wehrmacht paid a very heavy price for these gains. In addition to depletion of their manpower, the German armies had expended a vast amount of war material. A Russian general in charge of a Stalingrad sector said that the wehrmacht had had 26 panzer divisions in full action at the beginning of the offensive, but that 14 had been destroyed or crippled in the ensuing battles. In order to maintain the momentum of their big push, the Germans were compelled to weaken their North African force with disastrous results. Most important of all, the German mechanized armies had failed to destroy the Red army. Even in retreat, the soviet troops battled superbly, withdrawing in order, and the Russian general staff proved quite willing to relinquish territory if the cost of holding it would involve excessive casualties.

November 1942 to January 1943.—The remarkable recuperative powers of the Red army were demonstrated by the vigorous offensive of Nov. 1942. This operation came as a distinct surprise to most military observers; the prevalent view was that the Russian striking power had been critically if not hopelessly impaired in resisting the great summer offensive of the nazis. The Russian strategy, however, had been to keep casualties down to a minimum, and in the campaigns of the Caucasus and the Don bend the Russians withdrew rather than risk heavy casualties in futile resistance. Only at Stalingrad did the Russians hold their ground, since the Volga waterway was indispensable to continued soviet participation in the war. It can now be seen that the Russians were intent on saving their manpower in preparation for a second winter counteroffensive. After the Stalingrad battle, there was reason to believe that the Germans withdrew many battered divisions from Russia for rest and reorganization, which would indicate that Hitler again proposed to hold a stabilized line for the winter.

The goal of Russian strategy was (1) to reconquer the territory lost in the summer of 1942, and (2) to break the main German line by destroying its anchor positions. Were they to be deprived of their "hedgehog" fortifications, the Germans would have great difficulty in launching a third offensive in 1943. Their anchor positions on the northern front were Schlusselburg (commanding the approaches to Leningrad), Dno and Velikie Luki. German defense strongholds on the central front were Rzhev, Vyazma, Orel and Kursk. On the southern front they were Kharkov and Rostov. The Germans also held the key Caucasian cities of Salsk, Tikhoretsk, Armavir, Kushchevskaya and Krasnodar.

After the American landings in North Africa in Nov. 1942 the rumour went through Europe that Hitler had withdrawn 40 divisions from Russia to defend the Mediterranean zone. High Russian officers, however, were quoted as saying that the Germans had sent additional infantry and tank divisions into Russia after the North African campaign had started. The diversion of some luftwaffe squadrons to the Mediterranean arena, it was said, was a normal procedure, as the first winter campaign demonstrated that the German air force was not adapted to winter warfare. The Russians did not tend to belittle the strategic importance of the North African campaign, since it gave promise that the allies really contemplated an invasion of Europe which would relieve German pressure on Russia.

On Nov. 22 the Russians launched a sweeping offensive to flank the German armies in the Stalingrad pocket by a broad enveloping movement. One Russian prong moved rapidly around the north rim of the Don bend; another around the southern rim. The columns then converged, cutting the Stalingrad railroad to Rostov. The columns then continued westward and surrounded German troop concentrations in a series of pockets by similar pincer operations. At the same time a third column fought its way down the railroad to Novorossiysk. At the end of the first week, 26,000 Germans had been killed and 24,000 others were captured. On the southern edge of the Don elbow, the advancing Red armies took Kalach, on the northern arm; Serafimovich also fell. German observers said the Russians were employing an "endless stream" of tank columns in the big push. And Russian forces in Stalingrad now turned the tables on the Germans; the besiegers became the besieged.

As the southern offensive gained momentum, the Red army launched another drive on Nov. 28–29, far to the north to reduce the troublesome German pocket at Rzhev-Vyazma on the central front. Three spearheads cut the Rzhev-Smolensk railroad, another encircled the German fortress of Velikie Luki. By Dec. 1 it was obvious that the Russian drives, first regarded as only local operations, had developed into major attacks.

The Red army then opened a third large offensive in the Voronezh sector on Dec. 15. One column moved to the southwest, 150 mi. due east of Kharkov. By mid-January 1943 this force was hammering the flank of the German garrisons protecting Kharkov, and had blocked a possible enemy pincer drive to cut off the Russian spearhead moving toward Kursk. As a result of the loss of Rossosh, German positions in the Voronezh sector became untenable, and on Jan. 26, 1943, a German communiqué admitted the evacuation of Voronezh "in order to shorten the front." Driving along the railroad connecting Voronezh and Kursk, the Russians flanked Kursk on the north and then attacked the city in force. The defenses of Kursk collapsed, and its capture was announced on Feb. 9, 1943. This was a victory which approached in importance the Russian triumph at Stalingrad. The Germans had held Kursk since Nov. 11, 1941, and had converted it into one of the strongest points on the formidable Orel-Kursk-Kharkov hedgehog line which defended the western flank of the Don basin. It was also a vital rail junction, and its capture made feasible gigantic flanking movements against Kharkov in the south and Orel on the north. Kharkov fell on Feb. 16, 1943.

The Red army launched a fourth offensive on Jan. 4, 1943, to reconquer the Caucasus. Russian detachments, moving up the road from Ordzhonikidze, overwhelmed German forces holding Nalchik, and recaptured the city. Thus by the beginning of 1943, four soviet offensives were moving at full speed toward the German winter line.

The main blow of the Red army fell in the Stalingrad sector and the related Don bend, 20 mi. to the west. The immediate objective was to surround and destroy the German armies in this vast area; the ultimate goal was the capture of Rostov, which would cut off the last avenue of escape by land for the German armies in the Caucasus. Strong tank and motorized artillery columns pressed giant pincer movements against both flanks of the German armies in the Stalingrad-Don bend region. On Dec. 29, 1942, Moscow communiqués reported that the soviet column pressing forward from Kalach took Kotelnikovski, 100 mi. southwest of Stalingrad. Ten days later the Russians had turned the flank of Hitler's army of 330,000 troops in the Stalingrad area; the remaining German forces squeezed their way out of the closing Russian pincers and retreated through the Don valley. On Jan. 17, 1943, Moscow announced that Millerovo, a rail junction less than 100 mi. northeast of Rostov, had been retaken as the northern claw of the Russian pincer curled closer to the gateway of the Caucasus. The Russians had now drawn a tight ring around German armies in the Stalingrad pocket, and had closed another loop around the remnants of reich columns in the area to the west. This manoeuvre deprived the luftwaffe of air bases from which to fly supplies and food to the trapped Stalingrad armies. German troops in the ruined city, running short of food and bullets, burrowed into cellars and lived on short rations. But they fought on grimly and refused to surrender.

Meanwhile, the Russian offensive west of Rzhev had resulted in the capture of Velikie Luki, another hedgehog fortress. The Russians, announcing the capture of the town on Jan. 2, 1943, said that the entire German garrison of 75,000 had fought to the last man. The Germans, however, denied the Russians had taken Velikie Luki. On Jan. 11, Russian forces opened a drive to relieve the siege of Leningrad. A week later, the Russians had captured Schlusselburg and Sinyavino and had carved out a land corridor nine miles wide which gave the city an overland supply route to Moscow.

The Caucasus front, too, was becoming a graveyard of German hopes. On Jan. 2, 1943, a Russian column cut off the German wedge at Elista. Farther south, Russian columns were driving the exhausted German armies back along the roads which had been the scenes of nazi triumphs in the summer of 1942. On Jan. 11, 1943, the Russians announced the capture of Georgievsk, Mineralne Vodi and Pyatigorsk. Russian armoured divisions then fanned out, capturing Armavir on Jan. 23, and Tikhoretsk on Jan. 31. Maikop, the great oil centre, was also retaken on Jan. 31. By Feb. 8 the Russians had reoccupied most of the key cities on the Caucasian shores of the Sea of Azov, and two armies were converging on Rostov.

In Stalingrad itself, the Russians were proceeding systematically with the extermination of what was left of the German armies. On Jan. 31, Moscow announced that a nazi pocket just west of that city had been wiped out and that a German field marshal and his staff and 18,000 troops had been captured. On Feb. 2, a soviet communiqué said that the last remnant of the Stalingrad force had surrendered. Thus one of the greatest and bloodiest battles in history ended in a Russian victory. In Germany, four days of mourning were decreed for the loss of 330,000 men who were captured or killed in Stalingrad.

IV.—AIR WAR OVER EUROPE

In early 1942, Britain's war plants had recovered from the effects of the German air blitz, and the R.A.F., strengthened by increased production and by aircraft sent from the United States, was gathering strength to launch a sustained aerial offensive on the reich. The R.A.F. intended to subject German industry to the same kind of air war that the luftwaffe had waged over Britain, and to hit the reich so severely that the luftwaffe would be compelled to withdraw planes from Russia to protect the home front. Britain's leaders had made it clear that while the United Nations were not yet ready to open a second front in Europe, the projected aerial offensive would be offered as a substitute until allied armies would be sufficiently strong to invade the continent.

The R.A.F. tested its offensive power by day and night raids over the reich and German-held territory during January and February, although bad flying weather reduced these operations to "experimental" preliminaries. On March 3 the R.A.F. staged its first big raid of importance with a two-hour attack on the Paris suburb of Billancourt that left most of the huge Renault works in ruins. Reconnaissance photographs taken immediately after the raid revealed that the British bombs had virtually destroyed the industrial potential of this plant, an important source of tanks and trucks for the wehrmacht. Four days later, R.A.F. squadrons dealt a similarly damaging blow to the Matford works in Poissy.

As the murky weather over western Europe cleared, the British intensified their aerial offensive. Bombers roared over the Rhineland and Ruhr with great frequency, and ports, U-boat bases, nazi shipyards and shipbuilding centres were special targets. The length of the air raids was extended. On April 14 British bombers hammered reich industrial and rail centres without a stop for nine hours. More bombers participated in night raids, and there was an increasing proportion of heavy bombers with relation to fighters. Toward the end of April as many as 600 planes were participating in a single daylight operation. British aerial tactics during this period tended toward concentrated mass attacks on a single target rather than on the dispersal of bomber strength over a multitude of scattered objectives.

The R.A.F. raids on Luebeck and Rostock provided striking demonstrations of the effects of concentrated mass bombings. On March 26 R.A.F. planes dropped 340 tons of explosive and incendiary bombs on the Baltic port of Luebeck in a three-hour raid, destroying half of the old town with its port facilities and setting fire to industrial plants. On April 24 British bombers devastated the port of Rostock, whose dock facilities and war plants became a raging inferno. Guided by the great fires of the first raid, the R.A.F. bombers returned on three successive nights. The cumulative destructive power of 800 tons of bombs dropped in these four days of constant aerial attacks reduced the city to ashes. In both the Luebeck and Rostock raids, it was believed that large quantities of war materials and supplies destined for the Russian front had been destroyed.

The Germans retaliated against the raids on Luebeck and Rostock with attacks on the unprotected cathedral cities of England, such as Exeter, York, Bath and Canterbury. These attacks, called the "Baedeker raids" indicated that the luftwaffe did not want to spare bombers for raids on England while preparations were under way for the great offensive in the east.

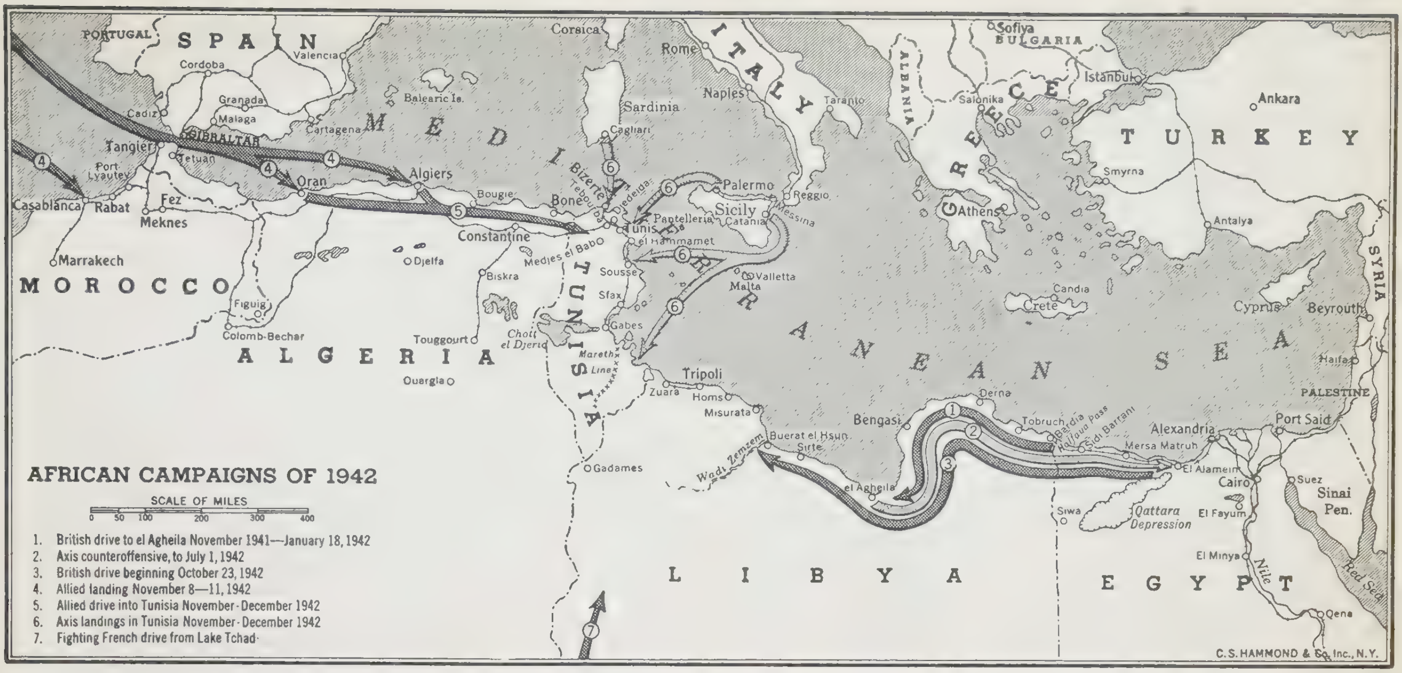
The British then experimented with long-distance bombing expeditions, and their long-range bombers ventured deep into the heart of Hitler's Europe. R.A.F. bomber squadrons, operating from bases in southeastern England, raided the Skoda armament works in Pilsen (Czechoslovakia), and also made attacks on war plants in Turin, Genoa and Milan. Germany, however, still remained the principal objective of the British aerial offensive, and raids on Rhine and Ruhr cities increased in frequency and strength. Starting May 4, R.A.F. planes bombed Stuttgart for three nights in succession. Mannheim was the target for another mass raid on May 19, when a big bomber force dropped more than 40,000 incendiary bombs over the Rhine city's chemical and munitions plants.

The number of R.A.F. bomber and fighter planes employed in mass raids rose steadily, reaching a peak with the great raid on Cologne on May 30. On that night 1,130 planes of all types attacked Cologne. Bombers came in every few seconds from different levels and in the short space of 90 minutes laid down 3,000 tons of bombs on the city. A great section of Cologne's metropolitan district was razed, and whole industrial areas were devastated. Forty-eight hours later, an armada of 1,036 planes struck at Essen, home of the famous Krupp armaments works, setting huge fires in the industrial regions circling the city. British losses in both raids were relatively low; 35 planes failed to return from the attack on Cologne and 44 from the raid on Essen. Against both targets, the R.A.F. used the big two-ton "block-buster" bombs. The British found by experience that precision bombing at night, particularly over targets heavily defended by anti-aircraft, was both ineffective and costly. For this they substituted mass bombings over a target, depending for results more on the weight of bombs dropped than on accuracy. The block bomb was an efficient projectile for use in concentrated raids because of its tremendous concussive power. Meanwhile, the air offensive grew in weight and frequency as the German armies prepared to launch their offensive in Russia. The 1,000-bomber raid was a successful experiment—a preliminary operation to determine the course of the aerial blitz in the future—but disappeared from British air strategy after the Cologne and Essen attacks. The reasons were simple—Britain then lacked the facilities and replacements to stage daily 1,000-plane raids over the reich. It was necessary to maintain a balance between the size of the raids and the limits of available facilities and replacements. After the Cologne and Essen raids, however, British air armadas of between 200 and 600 planes became a commonplace instead of a rarity. Improvements in the speed, distance and bomb-load capacity of heavy bombers compensated to some degree for the four-figure raids. Two-ton bombs were being replaced by four-ton "block-busters," whose concussion crushed steel and concrete structures which would have been able to withstand less devastating explosions. Many of the raids on German cities in the late summer and fall of 1942 were nearly as effective in destructive power as the Cologne and Essen raids, although less spectacular.

Some of the chief targets for R.A.F. raids during this period were the submarine yards and Diesel engine plants which were the backbone of Germany's continued U-boat warfare against allied convoys. It was expected that such an effort would slow down production of submarines. Attacks continued against Germany's transportation system and war factories with the further object of interrupting the flow of supplies to the Russian front.

The participation of the American air force in the aerial offensive against Germany and the occupied countries extended the scope and variety of allied raids. Prior to the arrival of American crews and planes, the British had tried daylight precision raids, but only on an experimental basis. Operational details of both the British and American ships had not been disclosed at the end of 1942, but it was generally agreed that the R.A.F. bombers were designed for night mass bombings and were too heavy and too slow for daylight raids on specific targets. The newer models of the U.S. Flying Fortresses and Liberators, however, were well suited for this type of flight. These large craft, heavily armed and armoured, had both speed and high "ceilings." The Flying Fortresses were put through their first test on Aug. 17 when, escorted by a heavy guard of R.A.F. fighters, a squadron of the fast American bombers raided Rouen. The United States bombers showed remarkable accuracy in hitting their targets and had adequate firepower to fend off challenging German fighter planes. On Oct. 9 the American bombers staged their first big raid against enemy objectives. Some 115 Fortresses and Liberators, accompanied by 500 fighter craft, launched an all-out aerial blitz on the locomotive and steel works at Lille in northern France. Refusing to fight with the speedy allied escorts, swarms of German fighter planes charged straight at the bombers. The American bombers, however, bristling fore and aft with rapid-fire guns and cannon, shot down at least 48 of the attacking craft, probably destroyed 38 others and damaged 19 more. The Americans claimed that only four of the Fortresses were lost in this battle.

TROOPS DEBARKING from an invasion barge on a British beach after the Allied raid on Dieppe Aug. 19, 1942


AFRICAN CAMPAIGNS OF 1942
SCALE OF MILES
0 50 100 200 300 400
1. British drive to el Agheila November 1941—January 18, 1942
2. Axis counteroffensive, to July 1, 1942
3. British drive beginning October 23, 1942
4. Allied landing November 8—11, 1942
5. Allied drive into Tunisia November-December 1942
6. Axis landings in Tunisia November-December 1942
7. Fighting French drive from Lake Tchad
PORTUGAL
SPAIN
MOROCCO
ALGERIA
TUNISIA
LIBYA
EGYPT
ITALY
ALBANIA
GREECE
BULGARIA
TURKEY
SYRIA
PALESTINE
MEDITERRANEAN SEA
Corsica
Sardinia
Sicily
Malta
Crete
Cyprus
Gibraltar
Tangier
Casablanca
Rabat
Oran
Algiers
Bizerte
Tunis
Tripoli
Bengasi
Tobruch
Alexandria
El Alamein
Cairo
Suez
Sinai Pen.
Red Sea
Nile
C.S. HAMMOND & Co., Inc., N.Y.

In the late fall of 1942 the R.A.F. suddenly extended its aerial onslaught to Italy. On Oct. 22, a day before the British Eighth army launched its big push to drive the Germans out of Egypt, 200 R.A.F. bombers attacked Genoa. Several days later similar attacks were launched against the industrial cities of Milan, Savona and Turin. The purpose of the R.A.F. attacks was to blast supply bases and communication lines serving the axis armies in Egypt. On three successive nights they made the 1,400-mi. round trip to the industrial and port cities of northern Italy, pounding Turin, big arms centre, Milan and Savona. Genoa alone was blasted six times by British bombers shuttling back and forth over the Alps. The British block bombs levelled 27 ac. of the dock area and large parts of the industrial and business districts. The R.A.F. then turned its attention on Turin, striking at the city in three heavy raids on Nov. 20, Nov. 28 and Dec. 28. Meanwhile, United States Liberator bombers from bases in the middle east theatre of operations struck at Naples on Dec. 4, damaging piers, breakwaters and warships in a high-altitude raid on the Italian port.

It has been said that the great British air offensive of 1942 was at least as destructive to axis morale as to axis war production. The German people were profoundly shocked by the R.A.F. raids which took heavy toll of civilian casualties. They had been led to believe the assurances, made so confidently by nazi propagandists and leaders during 1940 and 1941—when the Germans were riding the crest of victory—that the reich would be immune to aerial attack. The Italians, too, were terrified by the unexpected rain of death from the skies, and their morale slumped dangerously. But the aerial blitz failed to disrupt German war production and communications to a sufficient degree, or to divert enough luftwaffe planes from the Russian front, to stop the German offensive. One estimate said that the British blitz probably slowed up German production by 15% to 20%.

V.—COMMANDO OPERATIONS

British Commando operations in 1942 shifted from the coast of Norway to the Atlantic shores of Occupied France. The initial raids in 1942 were limited to hit-and-run operations; their objectives were to destroy material of value to the enemy, to collect information and to shake German morale. On Feb. 27, a small Commando unit slipped through German defenses on the French coast and destroyed a nazi radio detector station at Bruneval, thus facilitating a subsequent R.A.F. attack on industrial plants in the Paris area. Commando forces staged a more ambitious expedition on March 28, when a naval detachment drove an old destroyer into St. Nazaire harbour and rammed it into the lock gates. Commandos accompanying the expedition surged ashore, blew up the inner lock gates and demolished dock and shipyard installations. Meanwhile, the five tons of delayed action explosives packed in the destroyer's bow blew up, wrecking the main lock gates and sinking the warship to block the entrance. A number of French residents, who mistook the raid for an actual invasion and helped the Commandos, paid with their lives. The Germans executed 20 hostages of St. Nazaire in reprisal.

The Dieppe Raid.—The Commandos staged two minor forays on the French coast in the Boulogne area, in an effort to probe the strength of German coastal defenses for the subsequent large-scale raid on Dieppe. This raid was launched in force against the strongly fortified port on the northern coast on Aug. 19. At dawn, an allied convoy escorted by destroyers, approached the shores. A striking force of 5,000 Canadian troops, accompanied by British Commandos and smaller detachments of American Rangers and Fighting French, streamed toward the beaches in self-propelled landing barges. Small tanks also were landed, and the entire operation was covered by an air force of 1,000 planes. But the German garrison in Dieppe, warned by the crew of a nazi tanker which had sighted the allied convoy, was not taken by surprise. As the allied forces were landing, they were raked by German batteries, which had been placed on hills overlooking the beaches. Long-range guns farther inland decimated the troops struggling to get ashore while a few Stuka dive-bombers which succeeded in penetrating the strong allied plane escort sank a number of the landing barges. A few of the outlying German batteries on the flanks were destroyed by the attackers, who occupied the fortified casino and part of the lower town. The fighting raged for nine hours; then the attacking forces withdrew to the beaches, embarked and returned to England.

Nearly half of the entire attacking force was lost in the Dieppe raid. Canadian casualties alone totalled 3,350 or 67% of the entire forces. The aerial battle that raged over Dieppe engaged the largest number of planes since the battle of Britain. The British admitted losing 98 of their own craft, but claimed the certain destruction of 92 German planes and estimated that twice that number had been damaged.

Only 7,000 allied troops in all were employed in the Dieppe attack, which was regarded as a full-dress rehearsal for the long-heralded second front in Europe. Evidence that the Dieppe battle was merely a raid was seen in the following broadcast to the French people a few minutes before the fighting started:

"This is the B.B.C. speaking to you from London. American Rangers and British Commandos are fighting on your soil. *BUT DO NOT HELP THEM.* This is *NOT* an invasion. It is only a raid. France and her allies will need you on the day of liberation, so do not betray yourselves to the Germans. *DO NOTHING NOW.* This is *NOT* an invasion."

VI.—NORTH AFRICAN CAMPAIGNS

In Jan. 1942 the British imperial armies were moving across the desert sands of Cyrenaica in a drive which had started on Nov. 18, 1941, from El Sollum, a British base near the Libyan border. British tank columns pursuing Marshal Rommel's German-Italian armies, lifted the siege of Tobruk, recaptured Bengasi and by Jan. 2, had entered the port of Derna. At the beginning of this offensive, Marshal Rommel retreated toward Libya rather than risk a showdown battle with the superior British forces. But by the middle of January the British drive was bogging down at Cyrenaica's western borders. Some quarters attributed this abrupt halt of the British in the African desert to over-extended supply lines. Others thought that withdrawal of veteran Australian units, which had been sent to the far east, had forced the British to stop the projected drive into Libya. Rommel utilized this breathing spell to reinforce his armies with new tanks and more planes, and launched a counteroffensive against British lines at Mersa-el-Bregha on Jan. 22. The British, exhausted by their 400-mi. march across the desert, were driven back across the Cyrenaican coastal hump. On Jan. 29, Rommel's panzers reoccupied Bengasi, but 10 days later fresh British reinforcements checked his advance at Tmimi, 70 mi. west of Tobruk. The main British force then dug in on a line extending from El Gazala on the coast road to Bir Hacheim, a desert outpost. Here a stalemate developed.

During this lull, the axis resumed attempts to knock Malta out of the war. From this small island base, only 60 mi. from Sicily, British aircraft and submarines constantly harried axis supply ships and air transports bound for Africa. In March the axis mobilized 600 planes in Italian airfields and launched an intensive aerial assault on Malta, bombing the island day after day until Malta became known as the most heavily bombed place in the world. This British island base, in the first 28 months of the war, was bombed about 3,000 times. But the bombings could not knock Malta out of the war, or destroy it as an air base. Although the British still clung grimly to the island, the axis air and sea blockade seriously reduced its efficiency. One of the royal navy's difficult problems was that of getting through to Malta. While this problem remained unsolved, Rommel hurled his Afrika Korps against the British lines on May 26. His drive was not originally intended as a thrust toward Alexandria and Suez. It was started in the "hot" season, when fighting exhausts even veteran desert soldiers.

The axis drive in Africa was probably a diversion designed to draw supplies destined for Russia to the African front at a time when the Germans were preparing to launch their big offensive in the Caucasus.

In the first 15 days of fighting, the British held their ground behind their fortified line, extending from El Gazala on the sea, inland to Bir Hacheim. On June 11, however, the Free French garrison holding Bir Hacheim, the southern anchor of the British line, was forced to withdraw after an 11-day siege. This freed a major portion of Rommel's strength, and he now threw the whole weight of his forces at the British line covering the approaches to Tobruk. In an attempt to counter Rommel's growing offensive power, Gen. Ritchie, commander of the British Eighth army, struck out with a force of 300 tanks at the enemy's flank at the southwest. Plunging ahead recklessly, the British, on June 13, blundered into an ambush prepared by the Germans. When night fell the British had lost all but 70 of their tanks.

Rommel never gave the British an opportunity to redress this error. His Afrika Korps smashed quickly ahead, rolled up the British line northward from Bir Hacheim to El Gazala. By June 20 the British forces, robbed of most of their tank power, were in full retreat. The British again decided to make a stand at Tobruk. But Rommel launched an all-out tank and plane assault against the desert citadel before the British had time to consolidate their positions, and on June 21 captured Tobruk, its defending garrison of 25,000 British imperial troops, and great stores of equipment. The British Eighth army, which had lost half of its original strength and a large part of its equipment, retreated in haste toward Egypt. Rommel, expert in the war of manoeuvre, did not give the British a breathing spell. His panzer divisions chased the British across the Egyptian frontier. Gen. Sir Claude J. E. Auchinleck, who had superseded Ritchie at the head of the British forces, whipped his reinforcements into line for a determined stand and on July 1 stopped Rommel at El Alamein, only 70 mi. from Alexandria. There were local skirmishes in the desert before El Alamein, but the Afrika Korps was battle-weary and unable to press further. By the end of July, the balance of the forces had become too even for either antagonist to launch an offensive with real hope of success.

The British had averted disaster by a narrow margin. On July 2 Churchill disclosed that the British had lost 50,000 men and vast stores of supplies.

Many factors contributed to Rommel's success, the chief among which was his undoubted superior skill in tank tactics. Another was the superiority of his weapons. While the respective merits of the British, American and German tanks were still the subject of dispute, many allied observers asserted that the German tanks had more armour and firepower. The famed German 88-mm. anti-tank gun, a mobile weapon that could be used with equal effectiveness against both tanks and planes, was reported to be the best gun of its kind. Rommel's tank salvage system functioned efficiently; German salvage crews operating in the front lines would tow a battered tank back to machine shops in the rear for quick repairs and return it to action in a few hours. Co-ordination between the R.A.F. and ground forces in the summer desert battle was reported to be lacking; on the other hand, Rommel's tanks and Stukas synchronized their operations with faultless precision.

During the stalemate that followed Rommel's big drive, the British strengthened their defenses at El Alamein, where they held a 40-mi. corridor between the Mediterranean and the Qattara depression, an impassable salt marsh. Rommel retired behind his defenses, organized for miles deep and studded with minefields, barbed wire, concealed artillery, and anti-tank traps. Meanwhile, countless allied convoys were pouring supplies into Egypt. American planes joined the R.A.F. in the African desert and relentlessly pounded axis merchantmen and supply bases in Africa, Italy and Greece. Furthermore, Rommel was receiving fewer supplies, apparently because of Hitler's intention to concentrate on the Russian campaign. The majority of German supplies went to the eastern front; Rommel had to be content with leftovers. The British, on the other hand, had massed a huge air fleet, a powerful tank army and a large number of divisions.

The British launched their offensive on Oct. 23, dropping a heavy air and artillery barrage on Rommel's lines to wipe out gun emplacements. For the first 10 days of battle, the fighting swayed back and forth as the British Eighth army, under command of Gen. B. L. Montgomery, carefully filtered through axis minefields. After clearing out these obstructions, the Eighth army struck with such force that the main axis lines collapsed. Again, the Egyptian desert became the scene of a lightning war of manoeuvre. This time, however, the positions were reversed. Within 15 days, Rommel had lost half his tank force, a large part of his air support and more than half his manpower. By Nov. 7 his shattered armies had scurried 240 mi. backward toward the Libyan frontier, with the British in hot pursuit. On Nov. 11 Churchill told the commons that 59,000 Germans and Italians had been killed, wounded or captured in the early stage of the great battle.

As Rommel's remnants fled before the Eighth army in Egypt, a large force of British and American troops were landed in Morocco and Algiers on Nov. 8. (*See* below.) With his principal base of supplies, Tripoli, threatened by a possible American drive from Algeria and with his armies virtually shattered by the powerful British force, Rommel had no alternative but to retreat toward Tripoli.

Meanwhile the British Eighth army drove on westward. On Nov. 13 the Eighth army was almost at Tobruk, hot on the heels of the fleeing Afrika Korps. Rommel, having lost most of his armour and artillery, and with a force reduced to 25,000 men, made speed his first object. He abandoned all equipment that hampered his retreat, and the British armies that occupied Bengasi on Nov. 21 found the streets of the Cyrenaican port piled high with German war materials. Heavy rains in late November slowed the British advance, giving Rommel a brief respite to regroup what little was left of his Afrika Korps. The British opened a new offensive, and Rommel, whose army had been stripped of its mechanized equipment, resumed his retreat down the coast road toward Tripoli. But the British advance, though swift, was not all smooth sailing. Rommel studded the path of his retreat with skilfully concealed mine-traps which had to be cleared. By the middle of Jan. 1943 Montgomery's Eighth army was within 100 mi. of Tripoli. Two columns had passed through Misurata without encountering serious opposition, and on Jan. 24, 1943, Tripoli fell. Rommel's forces retreated into Tunisia and took up positions behind the Mareth line, a miniature Maginot defense system built by the French before the outbreak of World War II, and which was intended to protect Tunisia's eastern borders against a possible Italian attack. The arrival of Montgomery's armies before the Mareth line ended one of the longest military chases in history. In about 15 weeks, the British Eighth army had advanced more than 1,500 mi.

Invasion of French North Africa.—On Nov. 8, 1942, a large Anglo-American army landed on the shores of Algeria and Morocco, and opened a new front in Africa. The basic strategy of this campaign, which was co-ordinated with the British offensive against Rommel in Libya, was to oust the axis armies from the southern shores of the Mediterranean. The two allied armies, pressing their drives in unison, were to function as a giant press which would close tight on Tunisia and squeeze Rommel out of Africa. Their success would open the Mediterranean to allied shipping, and provide the United Nations with bases in Africa from which to invade southern France, Italy or the Balkans, which had been described as the weak spot or the "soft underbelly" of Hitler's defenses in Europe. Some allied observers enthusiastically hailed the new African front as an answer to Russia's repeated demands for the opening of a second front to divert German troops from soviet soil. The Russians, however, regarded this campaign at best a minor diversionary operation.

The invasion of French Africa was principally a political conquest. Long before the landings, U.S. diplomatic agents in Vichy and in Vichy-controlled Algeria and Morocco had sounded out French sentiment with regard to American occupation and had reported favourable findings to the allied high command. In October an American military mission landed secretly at a lonely spot somewhere on the North African coast, conferred with French officers of pro-allied sympathies and received assurances that American landings would meet with little resistance. A month later a huge armada of 500 troop transports and 350 warships steamed toward appointed landing zones on the Atlantic and Mediterranean shores of French North Africa. On the morning of Nov. 8, U.S. troops swarmed ashore near the harbours of Algiers, Oran, Casablanca and other French ports. Algiers fell with little resistance by nightfall; French garrisons in Oran and Casablanca put up a stiffer fight, although Oran surrendered on Nov. 10 and Casablanca a day later. After the fall of Casablanca, all French troops obeyed a cease-fire order issued by Adm. Jean Darlan, and all Morocco and Algeria passed under allied control. As a result of the allied landings, Hitler on Nov. 11 ordered axis troops to occupy all France. He temporarily spared the French naval base at Toulon, hoping that the French fleet based there would join the axis. But on Nov. 27, fearing that the French navy was no longer "trustworthy," he ordered his troops to seize the fleet. The French had long anticipated this move, however, and they scuttled the majority of the 60-odd warships before the Germans could seize them.

The Anglo-American drive in Tunisia got under way a few days after the initial landings. In the van was the British First army, led by Gen. K. A. N. Anderson, which attempted to speed its way to Tunis and Bizerte and

BRITISH six-pounder anti-tank gun firing in the El Alamein sector, Egypt, before the 8th army's great drive against Rommel's Afrika Korps began Oct. 23, 1942 crush axis opposition before reinforcements could arrive. German panzer units, however, slowed Anderson's drive, while axis transport planes ferried troops across the narrow Sicilian channel to Tunisia at an estimated rate of 1,500 daily. At the end of the year, the axis armies had grown from a mere 10,000 to an estimated 50,000 men. Some observers said the armies under Gen. Von Arnim exceeded 100,000 troops. The entire Anglo-U.S. force in French North Africa was believed to total about 150,000 men, the majority of whom were British. Another force of between 100,000 and 150,000 troops, drawn from the French armies in Africa, was available for allied operations, but lacked equipment.

The British First army, advancing along the coast road, was able to occupy Bone and Bougie by the middle of November. It then cut through the mountain passes to the southeast and drove the Germans out of Medjez-el-Bab and captured Djedeida, a small town 35 mi. east of Bizerte, on Nov. 19. German tank units counterattacked while low-flying dive-bombers destroyed bridges and roads to the rear of allied forces, disrupting their supply system. A fluid war of movement developed with German panzer stabs countering allied tank thrusts. By the middle of December nazi resistance hardened and a relatively stabilized front began to take shape. Gen. Anderson's First army held the left flank of allied forces at Mateur. The newly organized American Fifth army defended the centre at Medjez-el-Bab, while French forces held the right flank anchored at Pont-du-Fahs. The allied line ran in a north-south direction from a coastal point about 25 mi. west of Bizerte to the shores of the Djerid salt lake on the south, and was about 200 mi. long.

By Jan. 15, 1943, the allied advance on Tunisia was stalled. German dive-bombers were continuously in action, mercilessly strafing and bombing allied ground forces in the barren Tunisian mountains. German veteran tank units systematically chopped up the inexperienced American tank crews in a series of local battles and by the end of Feb. 1943 it was evident that the axis did not intend to relinquish Tunisia without the fiercest kind of a struggle.

VII.—MADAGASCAR

The island of Madagascar, close to Africa and controlling the British supply route around the Cape of Good Hope to Suez, was coveted by belligerents of both sides. The British had reason to believe that the Japanese, after the capture of the Andaman islands, would seize the island either by force or through Vichy treachery, and thus cut off the last supply route to the middle east.

In order to forestall Japanese invasion, a British naval force, including an aircraft carrier and two transports, landed a small force of shock troops on the island on May 6, 1942. After establishing beachheads at Courrier bay, the ground forces attacked the naval base at Diégo Suarez, capturing it on the following day. In early July the British occupied Mayotte island, 250 mi. northwest of Madagascar, and then resumed their offensive in Madagascar. Tananarive, the capital, fell to British troops on Sept. 23, and by early October almost all the island, including its important ports and the railway system, was in British hands. After another month of apathetic fighting, hostilities ceased and an armistice was signed, Nov. 5. The British then placed Fighting French authorities in control of the island.

VIII.—THE BATTLE OF THE ATLANTIC

The defense of convoys from U-boat attack was the great problem of the battle of the Atlantic in 1942. High shipping losses meant not only loss of valuable war material, but required the building of replacements which seriously strained shipyard capacity. The intensity of the U-boat drive was evidence that Germany, aware of the increasing importance American factories would play in the war, was determined to choke off the flow of American war supplies to England, Russia and Africa.

The German admiralty began its submarine campaign against coastwise shipping on the eastern shores of the United States in Jan. 1942. Nazi undersea raiders, operating in packs, ranged the unprotected coastline between Maine and Florida and took an ever-increasing toll of oil tankers, merchantmen and freighters. Soon supply ships were being torpedoed in the St. Lawrence and at the mouth of the Mississippi, and oil refineries in Aruba and Trinidad were shelled by U-boats. By April 1942 it was estimated that sinkings on the Atlantic coast alone matched or outstripped the building of new ships. By June 1942 the announced losses totalled 332 ships. These figures were believed to be far below the actual count, which was not revealed by the American or British naval commands.

Unprepared at the outset to cope with intensive submarine attack in its own waters, the United States began to develop effective anti-submarine measures in the spring of 1942. The coast guard received new anti-submarine vessels, and aerial patrols of the offshore waters were established. By May of 1942 an effective convoy system to protect merchantmen plying the Atlantic coastal waters had been placed in operation. In July the convoys were extended to cover merchantmen in the Gulf coast and the Caribbean zones.

The establishment of convoys, it was generally believed, resulted in a substantial reduction of sinkings in the western Atlantic. But losses in the middle Atlantic, the Gulf coast, the Caribbean and along the route to Murmansk increased at an alarming rate. It was reported that ship losses in May and June were phenomenally high, perhaps the largest in history to that date. The Murmansk route became a marine graveyard, littered with allied merchantmen sunk by co-operative action of submarine packs and dive bombers.

Thus, the Germans claimed the destruction of 38 merchantmen out of a convoy of 45, travelling the Murmansk route, on Sept. 13.

Another drain was imposed on allied shipping by the opening of the North African front in Nov. 1942. The necessity of providing strong escorts for the Africa-bound convoys resulted in the diversion of naval strength from the other transatlantic convoy routes. The U-boats immediately shifted their attacks to the more vulnerable sea lanes, and, by December, allied merchantmen were being sunk at the rate of two a day.

The big shipbuilding program of the United States was expected to offset the submarine casualties to some degree. In 1942 American shipyards produced 8,090,000 tons of merchantmen, while the output of British yards was believed to be more than 2,000,000 tons. At the end of the year, American losses were reported substantially reduced, but total allied losses were not lessening. The German admiralty claimed that its submarines, aircraft and surface raiders sank nearly 9,000,000 tons of allied shipping in 1942. A reliable source was authorized to announce that United Nations shipping, presumably toward the end of the year, was being destroyed at the rate of 1,000,000 deadweight tons a month. Thus over-all losses of the allies were believed to have been as great in December as they were in June. It was also said that the German submarine fleet in 1942 was eight times as large as it was in 1940. Despite heavy and frequent allied air attacks on German U-boat bases and submarine shipbuilding yards in Germany and on the coast of France, axis shipyards in late 1942 were reported turning out submarines at a rate of 25 per month. There were frequent charges in American newspapers, in early 1943, that the United States and British naval commands, by refusing to reveal their shipping losses on the ground that such disclosures would be giving valuable information to the enemy, were deliberately concealing the gravity of the U-boat menace.

American shipyards were scheduled to produce more than 16,000,000 tons of merchantmen in 1943. But even this record output could not be expected to solve the submarine problem so long as the United States and Britain did not realize their program to build enough destroyers and escort vessels to protect their farflung convoy routes.

There were few major naval engagements of importance in the Atlantic or in the Mediterranean in 1942. After the loss of the "Bismarck" in 1941, the Germans avoided using their few remaining large ships as commerce raiders in the middle Atlantic, and left this task to the submarines and planes. German bombers, surface vessels and U-boats worked together, however, in attacking allied merchantmen on the supply route to Murmansk. These co-ordinated air and sea raids were developed to a high peak of efficiency, particularly in the Mediterranean, where British convoys bound for Malta engaged in several pitched battles with Italian warships covered by axis bombers. R.A.F. units, operating from bases on Malta, frequently came to the aid of the convoys, screening them against air attack. Losses on both sides in these air-and-sea battles were heavy, and a substantial number of warships was sent to the bottom by bombs and aerial-launched torpedos.

The British suffered heavy losses in getting supplies through the narrow enemy-infested Sicilian channel between Sicily and Africa. On Aug. 11, a pack of axis submarines and a squadron of planes pounced on a strongly-escorted British convoy, sinking the aircraft carrier "Eagle," the cruiser "Manchester," an anti-aircraft cruiser and a destroyer. The axis lost 66 planes, 2 U-boats and 2 E-boats in this engagement.

A brilliant German operation demonstrated the effectiveness of the air arm in naval warfare. The battle cruisers "Scharnhorst" and "Gneisenau" and the cruiser "Prinz Eugen" had been confined to Brest harbour since 1941. Strong British naval forces lay at hand to engage them should they venture forth, and they were bombarded incessantly by R.A.F. squadrons. The German admiralty decided that swarms of German land-based fighter planes, rising from the airfields which had been constructed on the French channel coast, could be utilized to shield the vessels from hastily organized British attack, if they should make a sudden break through the channel to the North sea.

The plan was successful. On Feb. 11, 1941, the ships dashed out of Brest harbour with an escort of light, fast naval units. A dense channel fog enabled them to avoid detection until 11 A.M. on Feb. 12, when a hastily mobilized British force of aircraft, destroyers and torpedo boats attacked. But in a five-hour battle, in which more than 600 planes participated, the British were unable to break through the air and sea screen protecting the German warships and they steamed on into German harbours.

IX.—NAVAL WARFARE IN THE PACIFIC

In the Pearl Harbor attack eight American battleships were sunk or put out of action. Three days later, the British capital ships "Prince of Wales" and "Repulse" were sunk. These disasters combined to give Japan temporary naval supremacy in the Pacific at the outset of the war. The blow at Pearl Harbor enabled the Japanese to cut the United States lifeline to the Philippines and facilitated the Japanese conquest of Guam and Wake islands. The loss of the two British dreadnoughts put Singapore in a great peril. As a result of the two disasters, the allied navies had only a fleet of light cruisers and destroyers with which to challenge Japan's drive to the south. A prominent feature of both battles was the leading part played by Japanese aviation. At Hawaii, Japanese carrier-based planes destroyed American planes before they could leave the ground and scored direct hits on the battleships moored in Pearl Harbor. The sinking of the two British warships was a brilliant operation by land-based planes.

These initial Japanese successes in the Pacific showed the striking difference between Anglo-American and Japanese concepts of naval strategy at the time of Pearl Harbor. Anglo-American naval strategy was based on the battleship as the major offensive weapon. The Japanese, on the other hand, operated their land, sea and air forces together as a unit, placing emphasis on a particular arm at any time as circumstance might indicate. The primary function of the Japanese fleet was to escort troop transports and to cover landing parties, not to engage in decisive naval actions.

Battle of Makassar Strait.—But the avoidance of naval engagements was possible only with the adversary's acquiescence. Although the allied navies were outnumbered and lacked adequate air protection, they were determined to fight nevertheless. The first major naval clash of 1942 occurred on Jan. 24, when an allied task force attacked a large enemy convoy bound for the Dutch East Indies. For two consecutive nights allied destroyers and cruisers, aided by planes, bombarded the enemy convoy, which was caught in the Strait of Makassar, a narrow channel between Borneo and Celebes. No official estimate of the damage was published, although the United States navy declared that the Japanese suffered heavily and that one American destroyer was damaged.

Battle of the Java Sea.—Despite the American success in the Makassar strait engagement, the Japanese continued to pour troops into the Dutch East Indies. They closed in on Java, chief Dutch Indies stronghold, and by Feb. 25 a Japanese armada consisting of 40 transports escorted by 9 cruisers and 2 destroyer flotillas, was moving from the north across the

Java sea. British, American, Dutch and Australian naval forces, consisting of 5 cruisers and 16 or more destroyers, assembled and attacked the Japanese force on Feb. 27. After two days of sustained fighting, 19 allied ships, including the entire cruiser force and an American aircraft tender, had been sunk. Two American destroyers, all that was left of the allied fleet, broke through the Japanese naval cordon to safety. Only two enemy ships were reported definitely as having been sunk, although subsequent reports from Dutch sources said that many of the Japanese transports had gone down in flames. The battle of the Java sea was a staggering naval defeat for the allies and it sealed the doom of Java.

Naval Operations in the Indian Ocean.—After the conquest of the Indies, Japanese naval forces extended their operations to the Indian ocean, where, on April 9, Japanese planes caught the British cruisers "Dorsetshire" and "Cornwall" and sank them. The following day, Japanese bombers sank the British aircraft carrier "Hermes" in nearby waters.

Battle of the Coral Sea.—In early May, Japan's string of naval triumphs came to an end with the battle of the Coral sea. American carrier-based planes spotted a Japanese task force, presumably escorting a convoy, headed southward toward New Caledonia and New Hebrides. On May 4, carrier-based dive bombers from an American task force sank a light cruiser and two destroyers before the Japanese could retreat beyond bomber range. On May 6, the United States carrier bombers and torpedoplanes located a section of the Japanese forces and sank an enemy carrier and a cruiser in a five-minute raid. On May 7, the Japanese fleet finally located the American forces. Both Japanese and American planes took to the air and engaged in wild dogfights. While the United States aircraft were battering a Japanese aircraft carrier and setting her ablaze, Japanese dive bombers and torpedo craft attacked the American carrier "Lexington," damaging her so badly that she had to be abandoned and sunk by American torpedos. When the battle was over on May 7, the Americans had won their first complete naval victory. Seven Japanese warships, including a carrier and several transports, had been sunk. American losses were a carrier and two other ships. The battle of the Coral sea was unique in the history of naval warfare. It was the first major sea engagement fought entirely by planes from carriers. The surface ships apparently never came within gun range of each other and the only broadsides fired were at attacking planes.

The Battle of Midway.—A month after the battle of the Coral sea, a powerful Japanese force of some 80 ships, including 3 battleships, 4 or 5 carriers, and a number of transport and supply ships, struck eastward toward Midway and the Aleutians. The Japanese aims were apparent: to capture Midway as a steppingstone for an all-out assault against Hawaii. A small section of this fleet veered off toward the Aleutians to protect the northern flank. But the American forces were on the alert and when battle was joined at dawn on June 4, Midway's entire shore-based aircraft attacked the main Japanese striking force. At the same time, Midway's shore defenses and fighter craft crushed a Japanese dive-bomber attack on the island. The Japanese started a prudent withdrawal. But planes from American carriers pursued the retreating armada, bombing carriers and battleships. When the battle ended on June 7, American bombers had sunk 4 carriers, 2 cruisers and 3 destroyers, and had damaged 3 battleships and 4 cruisers, as well as a number of lighter ships. An estimated 275 Japanese planes were also shot down. The Americans lost the carrier "Yorktown" and a destroyer. While United States plane losses were not given, American air personnel casualties in the Midway battle totalled 307 officers and men.

The battle of Midway was similar to the battle of the Coral sea in that no surface vessels exchanged fire and that damage sustained on both sides was exclusively from air and submarine action. The battle of Midway, however, was a much more decisive victory since it halted a major Japanese effort to capture Midway and Hawaii and destroy the United States Pacific fleet.

The Battle of Savo Island.—The next naval engagement of importance was the battle of Savo island, fought at the beginning of the invasion of the Solomons. On the night of Aug. 9, Japanese vessels slipped through allied patrols and surprised the main allied fleet. After a two-day battle, four allied ships, the American cruisers "Astoria," "Quincy" and "Vincennes" and the Australian cruiser "Canberra," had been sunk. This naval defeat almost wrecked the American invasion of the Solomons, for it crippled the allied naval force holding open the supply lanes to the embattled marines on Guadalcanal.

However, in the battle of Cape Esperance later, American ships and planes succeeded in trapping a Japanese fleet trying to land reinforcements on Guadalcanal. The Americans sank six of the Japanese ships, losing only one destroyer.

The Battle of Santa Cruz.—As the Solomons campaign developed, Japanese planes, warships and undersea craft repeatedly raided American naval forces. A Japanese submarine sank the aircraft carrier "Wasp." As the American naval defense weakened, the Japanese landed more forces on Guadalcanal; and in early October, a major Japanese naval and transport force was concentrated in the northern Solomons. An American task force under Vice-Adm. William F. Halsey, who had succeeded Vice-Adm. Robert L. Ghormley at the head of American naval forces in the Pacific, intercepted the Japanese force as it moved southward near Santa Cruz on Oct. 25. A two-day battle ensued in which the Americans lost the first-line carrier "Hornet" and a destroyer. American fliers, however, sank 2 destroyers and damaged 2 carriers and 2 battleships; and the Japanese fleet was compelled to withdraw for repairs. Although the result was indecisive, Americans obtained a badly needed breathing spell.

Battle of the Solomons (Guadalcanal).—The Japanese retired, but less than a month later they made another bid to recapture the Solomons. A Japanese fleet of transports, screened by several battleships and a force of cruisers and destroyers, steamed southward from the Shortland area. They were met by an American cruiser-destroyer task force which attacked the battleships at close quarters on Nov. 13. The American cruiser force was hard hit, but succeeded nevertheless in disorganizing the Japanese. On the night of Nov. 14, American battleships closed in on the Japanese fleet and after a violent two-day battle, the Japanese limped away. The Japanese had been almost annihilated: 28 warships and transports, including a battleship, had been destroyed. The Americans had won a decisive victory and had strengthened their hold on Guadalcanal.

Japanese naval losses in the Pacific were far greater than American losses, according to American claims. Tallies kept by American newspapers and based on U.S. navy figures placed the proportion of Japanese losses to American losses at between three and four to one. Nevertheless, the Americans were not able to attain naval parity with the foe in the Pacific. The United States naval building program aimed to correct this disparity, but this means of attaining the goal would not be effective for a long time.

Naval Raids.—In addition to the naval engagements, U.S. naval forces also staged three raids on Japanese island bases far removed from the major battle zones of the southwest Pacific. The first occurred on Jan. 31, 1942, when an American task force comprising aircraft carriers, cruisers and destroyers, struck a surprise blow at principal Japanese bases in the Marshall and Gilbert islands. Sixteen ships, including a cruiser, were sunk; and port and shore installations were demolished in the raid, which was intended to prevent the Japanese from using these islands for raids on allied communications. A similar raid was conducted against Japanese-held Wake island on Feb. 24 and another against Marcus island—less than 1,000 mi. from Japan—on March 24, although the damage done was less extensive. On Aug. 17, an American marine force, landed from submarines, attacked the Japanese garrison on Makin island and slew approximately 700 of the defenders. After a 40-hour battle, the marines escaped to their own craft with few casualties. The raid was conducted along Commando lines and was apparently staged to obtain information about enemy dispositions in the Gilbert islands.

A great fleet of U.S. submarines, conducting a campaign similar to the axis U-boat drive in the Atlantic, inflicted severe losses on Japan's merchant fleet. Japan's situation in the Pacific was comparable to England's position in the Atlantic. Like England, Japan was dependent on shipping, for imports to keep her war industries going and to supply her troops in the new conquests in the Pacific. Although few details of American submarine warfare against Japan had been revealed at the close of 1942, one salient fact emerged: that the American submarine raiders sank between 100 and 150 enemy ships in 1942. It was also estimated that Japan's total shipping losses were in excess of 1,000,000 tons and that the rate of destruction in 1942 was twice the rate of Japan's construction.

(*See* also Advertising; Agriculture; Air Forces of the World; Architecture; Banking; Blockade; Business Review; Child Welfare; Crime; Education; Exchange Control and Exchange Rates; Fashion and Dress; Hispanic America and World War II; Hospitals; International Law; International Trade; Iron and Steel; Medicine; Mineral and Metal Prices and Production; Munitions of War; Navies of the World; Newspapers and Magazines; Pacifism; Police; Railroads; Strategic Mineral Supplies; Submarine Warfare; War Production, U.S. *See* also various countries.)

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WPA: *see* Federal Works Agency.

WPB: *see* War Production Board.

Wrestling. Oklahoma A. and M. college wrestlers completely dominated the amateur phase of the mat sport. The Oklahomans won both the National college and National A.A.U. championships, taking the collegiate title as members of Oklahoma A. and M. and the A.A.U. championship as members of the Crescent club, Tulsa. Dave Arndt, 145 lb., and Vernon Logan, 155 lb., were crowned champions in both meets. Two brothers from the University of Michigan, Merle and Burl Jennings, repeated their championship conquests in the 121- and 128-lb. divisions of the collegiate meet. Professional wrestling continued on its lackadaisical way, with interest so low that only two or three claimants to the world championship existed at the end of 1942. (M. P. W.)

Wyoming. A Rocky mountain state, admitted to the union July 10, 1890, as the 44th state. Leadership in the extension of rights to women gave it the name "Equality state." Land area, 97,506 sq.mi.; water area, 366 sq.mi.; pop. (1940) 250,742. The rural population was 157,165; urban, 93,577; 229,919 native white, 950 Negro, 17,107 foreign born. Capital, Cheyenne (22,474). Other principal cities: Casper (17,964); Laramie (10,627); Sheridan (10,529).

History.—Elective state officials in 1942 were: governor, Nels H. Smith (R.); secretary of state, Lester C. Hunt (D.); auditor, William Jack (D); treasurer, Mart T. Christensen (R.); superintendent of public instruction, Esther Anderson (R.). Elected in Nov. 1942 to take office in 1943 were: governor, Lester C. Hunt (D.); secretary of state, Mart T. Christensen (R.); auditor, William Jack (D.); treasurer, Earl Wright (R.); superintendent of public instruction, Esther Anderson (R.). There was no meeting of the state legislature in 1942.

Education.—In 1942 there were 837 elementary schools with an enrolment of 40,125 and 1,887 teachers. There were 117 high schools with an enrolment of 15,123 and 820 teachers.

Public Welfare, Charities, Correction.—WPA furnished 10,500 man months of employment during 1942. WPA employment declined from 1,836 assigned workers in January to 325 workers in December. The average for the year was approximately 875 workers. The state department of public welfare reported $1,072,010 spent in old-age assistance (42,489 cases); $288,847 spent in aid to dependent children (8,525 cases); $45,175 spent in aid to the blind (1,609 cases); and $425,396.05 spent in general relief (12,898 cases). Wyoming has three correctional institutions: penitentiary, industrial institute for boys, and girls' school. On Dec. 1, 1942 the penitentiary had 232 inmates, the industrial institute for boys, 48 and the girls' school, 90. State expenditures during 1942 were $219,215.22 for the penitentiary, $81,074 for the industrial institute for boys and $62,366.92 for the girls' school.

LESTER C. HUNT, Democrat, elected governor of Wyoming Nov. 3, 1942

Communications.—In 1942 there were 23,000 mi. of roads, of which 3,400 mi. were hard surfaced. The state highway department spent approximately $3,000,000 during the year ending Sept. 30, 1942. There were 1,991.98 mi. of railroad in the state.

Banking and Finance.—There were 31 state banks and 26 national banks in Wyoming on June 30, 1942. The state banks had deposits of $22,161,867.78 and resources of $25,222,280.08. The national banks had deposits of $57,845,710.94 and resources of $64,380,687.28. In 1941 the state had nine insured savings and loan associations with assets of $4,598,860. For the biennium ending Sept. 30, 1942, the total of state receipts was $30,542,919.96; total disbursements, $28,259,630.36.

The state's gross bonded debt, as of Sept. 30, 1942, was $3,528,500.

Ranching and Agriculture.—Wyoming livestock products sold for approximately $60,741,000 in 1942, and farm crops were valued at $31,479,120.

Shortage of harvest hands, untimely rains and early frosts curtailed agricultural production.

Table I.—*Leading Ranch and Farm Products of Wyoming, 1942 and 1941*

Product	1942 (est.)	1941
Cattle	362,000	287,000
Sheep	1,940,000	1,914,000
Wool, lb.	34,500,000	34,000,000
Hogs	130,000	110,000
Tame hay, tons	825,000	1,441,000
Wheat, bu.	4,856,000	5,598,000
Sugar beets, tons	500,000	526,000
Dry beans, cwt.	1,092,000	667,000
Corn, bu.	2,466,000	2,928,000
Potatoes, bu.	2,660,000	2,550,000

Manufacturing.—The value of all manufactures, excluding oil refining and dairying, was estimated at $10,000,000 in 1942, a considerable drop from an estimate of $26,000,000 in 1941.

Table II.—*Principal Industries of Wyoming, 1939 and 1937*

Industry	Value of products	
	1939	1937
Petroleum refining	$24,671,993	$29,993,494
Bread and other bakery products	1,315,075	1,419,501
Butter	968,000	1,076,855

Mineral Production.—The total value of Wyoming's mineral production in 1942 was estimated at $207,250,000. Petroleum was the principal mineral product as usual. The largest producer among numerous fields was Lance Creek.

Table III.—*Principal Mineral Products of Wyoming, 1942 and 1941*

Mineral	Value, 1942	Value, 1941
Petroleum (refined value)	$180,000,000*	$165,000,000*
Bituminous coal	20,000,000	18,750,000
Iron	4,000,000	3,500,000
Bentonite	1,750,000	1,500,000

*Estimates of state minerals supervisor; figures include oil refined in state, oil used on roads and oil piped outside state for refining.

(A. T. L.)

X-Ray.

Important reports were made upon an acute disease of the respiratory system widespread in many localities in which X-ray examination of the chest is of great value in diagnosis. Usually called "virus pneumonia" it received various names, among them acute diffuse bronchiolitis, acute pneumonitis, influenzal pneumonitis and atypical pneumonia. It is probably best to refer to it as "atypical bronchopneumonia" since a virus agent was proved to be the cause in only a small number of cases.

Excellent descriptions of the disease were given by Daniels and by Goodrich and Bradford. It differs from the common types of pneumonia in the absence of identifying organisms in the sputum, few physical signs other than rales, leukopenia instead of leucocytosis, and in its relatively low mortality. With regard to the latter, Goodrich and Bradford stated that "The increasing incidence and severity of virus type pneumonia indicate a rising virulence of the etiologic agent." The disease also differs from other pneumonia in that it fails entirely to respond to the sulphonamide drugs.

The X-ray changes revealed in the lungs include small, diffuse, patchy areas of increased density, a fine hazy or cloudy appearance which may involve a large area or an entire lobe, dense areas which closely simulate the consolidation seen in lobar pneumonia, and widespread miliary dissemination. A common characteristic is the tendency for the involvement to change its location to different parts of the same lung or to the opposite side and to completely disappear in one locality while another becomes involved. In at least half of the cases both lungs are ultimately involved.

These "atypical pneumonias" often closely simulate the X-ray appearance of pulmonary tuberculosis, so much so that it is sometimes impossible to distinguish one from the other. In all doubtful cases decision must be delayed until another X-ray examination is made after an interval of about three months. It is characteristic of the disease that the X-ray changes in the lungs in "virus pneumonia" may persist long after all clinical signs of the disease have disappeared, even as long as three months.

An improvement in the X-ray diagnosis of protrusion of intervertebral disks into the spinal canal was made during 1942. The method which was increasingly used for several years was the injection of lipiodol into the spinal canal. The principal objection to its use was the fact that a "foreign body" is left in the canal. Kubie and Hampton devised a method for removal of the iodized oil after the X-ray examination is made. Klemme, Scott and Woolsey perfected the procedure by the use of a special needle provided with a second opening which allows a free flow of the oil and its removal by suction.

Many cases of a condition called "march fracture," recognized for many years, were being reported among soldiers. It usually occurs in the metatarsal bones and is demonstrated as a narrow fracture line in good roentgenograms. In some cases the fracture line is not demonstrated but in one to three weeks the roentgenogram will show a spindle-shaped callus around the shaft of the bone. Two cases of "march fracture" of the femur were reported from England. The faint fracture line with subsequent periosteal reaction and callus formation may be mistaken for more serious conditions such as sarcoma or Ewing's tumour unless the possibility of "march fracture" is kept in mind. (*See* also PHOTOGRAPHY; TUBERCULOSIS.) (A. C. CH.)

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Yachting. While World War II had a drastic effect on yachting everywhere, its influence on the sport in the United States was less pronounced than elsewhere and the season of 1942 saw considerable activity, with racing schedules about as usual, but in nearly every instance with reduced fleets. Not only were there fewer yachts racing, but those that were out consisted of the smaller classes and very few of the larger yachts, either cruising or racing, were in commission. Most of the large yachts suitable for naval duty had been taken over by the navy or coast guard, and these included many large auxiliary cruisers and ocean racers that had formed the backbone of the yachting fleet. There was, of course, no building of new boats or classes, and no development in yacht design.

While the great fleets of other years that gathered for the two principal east coast yachting events, Larchmont race week and Marblehead's midsummer series, were missing, the turnout for both was good, with an average of 161 starters for the five race days at Larchmont and of 182 at Marblehead. On the west coast, wartime restrictions on the movements of yachts curtailed all the principal intersectional events.

On the Great Lakes, with fewer wartime restrictions, the sport was less affected. This region was the only one to sail long-distance events, ocean sailing being prohibited on the coasts. The classic Chicago-Mackinac race drew 30 starters. The Mackinac cup was taken by the cutter "White Cloud," owned by C. E. Sorensen, of Detroit, in 38 hours 14 minutes, elapsed time, the second fastest in the long history of the race. In the racing division, "Falcon II," owned by L. L. Karas and Clare Udell, was the winner of the 333-mi. event. The Port Huron-Mackinac race, the other big long-distance event on fresh water, drew 19 starters and the winners were "Hostess II," C. W. Beck, Jr., owner, and "Shamrock," Ernst Grates, owner, in the racing class.

International competition was, of course, out of the question and, while the International Star class sailed its championships, the only foreign entry was from Cuba. This race, held on Lake Michigan, was sailed for the first time in boats furnished by local fleets. It was won by Harry G. Nye, Jr., representing the Southern Lake Michigan fleet. The next championship event in the class was scheduled to be sailed in Cuba. The Star midwinter championship trophies, sailed for off Havana in January, went to Havana and Nassau boats. Charles de Cardenas, in "Kurush II," won the Cup of Cuba and A. de Marigny's "Concubine" took the Bacardi cup.

In the Intercollegiate Yacht Racing championship, sailed off Oyster Bay, five colleges were represented in the series for the McMillan cup. It was won by Dartmouth, with Harvard second. In the absence of international events, national championships in the big one-design classes took on added importance. In the popular Lightning class, which brought out 18 boats, the winner was David G. Cluett, representing the Cedarhurst, L.I., fleet. The Snipe class international title race, sailed on Lake St. Clair, saw 21 fleets competing and the winner was Ralph Heinzerling, of Lake Lackawanna, N.J. In both the Comet and the Penguin classes, national championships were cancelled due to the difficulty of transporting boats under war conditions. The various Junior championships of national importance were also cancelled. (H. L. ST.)

Yale University. An institution of higher education at New Haven, Conn. Outstanding during the academic year 1941–42 was the organization of students and faculty for participation in the war. The four-year curriculum was accelerated so that undergraduates could complete the same studies in two years and seven months. Simultaneously, requirements for the Master's degree were reduced from two years to one. A bureau of military information and a committee on student preparation for war service were established to guide students enrolling in reserves of the army, navy and marine corps. A total of 98% of the student body returned for the first Yale summer term since the Civil War, and 85% registered in the enlisted reserves.

Faculty members numbering approximately 225 left the university to serve in the armed forces, industry and government, while another 100 performed war tasks on the campus. Secretary of the Navy Frank Knox congratulated Yale on its "assumption of leadership in preparation for the war." The Yale unit, U.S. military hospital No. 39, was called to duty and began service overseas.

Many subjects received more emphasis than previously, including far eastern languages, with greatly increased enrolments in Japanese, Russian, Malayan and Chinese. For statistics of faculty, enrolment, endowment, etc., *see* UNIVERSITIES AND COLLEGES.

Yamamoto, Isoroku (1884–), Japanese naval officer, was born in April. He was graduated from the naval academy in 1904 and fought as an ensign in the Russo-Japanese war. He was naval attaché in the Japanese embassy in Washington, 1925. As Japanese delegate at the London naval conference in 1934–35, he successfully fought the Anglo-American proposal to extend the naval "holiday." The talks foundered on the issue of parity between the U.S. and Japan, and Yamamoto won rapid promotion for his work in London. Foremost Japanese advocate of combining air and sea power in naval attacks, he was promoted to commander-in-chief of the fleet in 1939. Referring to the Japanese surprise attack on Pearl Harbor, Domei (Japanese) news agency revealed in a dispatch on Dec. 17, 1941, that the strategy of surprise carried out by Adm. Yamamoto was planned by him earlier. Despite heavy Japanese naval losses in the Coral Sea, Midway and Solomons naval battles, Japanese communiqués insisted on regarding these defeats as "victories." After the Coral Sea battle in May, Premier Tojo congratulated Yamamoto on his "brilliant" achievements in this engagement.

Yamashita, Tomoyuki (? –), Japanese army officer, was a close student of German military tactics. An able strategist, he trained Japanese soldiers in the technique of jungle warfare and conceived the military plan for the Japanese invasion of Malaya, 1941–42. His troops infiltrated the Malayan wilderness as independent units and, aided by native fifth columnists, successfully marched through narrow jungle roads and paths that the British general staff thought were impenetrable. After a 10-week campaign, Singapore surrendered to Gen. Yamashita on Feb. 15, 1942. On March 9, after the failure of Gen. Masaharu Homma's drive to dislodge the U.S.-Filipino forces from the Bataan peninsula, Gen. Yamashita assumed command of the Philippines campaign. With a numerically superior army and air force, he won the battle of Bataan, April 9 and conquered the Corregidor island fortress, May 6, 1942.

Yemen: *see* ARABIA.

York, Archbishop of

(CYRIL FORSTER GARBETT) (1875–), English divine, was born on Feb. 6 and educated at Portsmouth Grammar school, Keble college and Cuddesdon, Oxford. He was ordained in 1899 and after various minor appointments became in 1909 vicar of Portsea, one of the most important parishes in Great Britain. There he made his reputation as the best organizer, administrator and trainer of junior clergy in England, displaying in his methods an inflexible discipline. His other dominant interests were housing, sweated labour and education.

On his appointment as bishop of Southwark in 1919 he acquired an unequalled first-hand knowledge of slum conditions. On his translation in 1932 to the historic diocese of Winchester he began his famous hiking expeditions, visiting the people in their own villages and homes and earning the reputation of being the greatest pastoral bishop and diocesan model in England. On his translation to York as archbishop in 1942 he immediately began similar hiking expeditions throughout the great diocese, where little villages that had not seen an archbishop for generations saw him in their midst talking to men clipping hedges, visiting women in their tiny cottages and bringing comfort to lonely, hard-pressed, single-handed clergy.

His later publications include *A Call to Christians* (1935); *The Church and Social Problems* (1939); *What is Man?* (1940).

Younghusband, Sir Francis (Edward)

(1863–1942), British soldier, explorer and author, was born May 31 in Murree, India. He led a British expedition to the forbidden city of Lhasa and negotiated a treaty with the Dalai Lama of Tibet in 1904. A renowned authority on geography and author of a number of philosophical works, he was named head of the Royal Geographic society in 1919, and helped organize the World Congress of Faiths in 1936. Among his later works were *Dawn in India* (1930), *The Living Universe* (1933), *Modern Mystics* (1935), *Everest: The Challenge* (1936), *A Venture of Faith* (1937) and *The Sum of Things* (1939). He died at Lytchett-Minster, Dorset, England, July 31. (See *Encyclopædia Britannica.*)

Young Men's Christian Association.

In 1942 Frank S. Bayley was president; Eugene E. Barnett, general secretary. The 1942 Y.M.C.A. Yearbook listed 1,279 U.S. local associations with 1,205,797 members in cities, high schools, colleges, rural areas, railroad and industrial centres, and near military establishments. Major emphasis was given in 1942 to young men in military and related services. The Y.M.C.A., as one of the agencies composing the United Service Organizations, carried responsibility for operating 271 clubs and centres, and extended its regular facilities to service men everywhere. Work among 4,000,000 to 6,000,000 prisoners of war, conducted under the World's Alliance at Geneva, continued to expand, a fund of $1,179,000 having been raised to finance this work for the year starting Oct. 1, 1942. Important meetings of the year were the 17th National Council meeting; 5th National Young Men's assembly; 4th National Hi-Y congress; 20th International Association of Y's Men's Clubs; National Council of Foremen's Clubs; Transportation institute; National Coloured Work conference; National Council of Student Christian associations; Southern Conference of Human Relations in Industry; and the 25th Anniversary Conference on Industrial Relations at Silver Bay, N.Y. Prominent activities included the development of 24-hour service in many industrial centres; special attention to needs of boys in wartime and problems of financing and rapid growth of war chests. (O. E. P.)

Young Women's Christian Association.

The Y.W.C.A. program in the United States was adapted and expanded in 1942 to meet the new and increased needs of women and girls caused by wartime conditions, with particular emphasis on women war workers. As a member agency of the U.S.O., the Y.W.C.A. provided special services and activities for women and girls in war industries and camp areas. The American Y.W.C.A. continued to assist the Y.W.C.A.s in China, Great Britain and other war-torn countries by grants of money and personnel; and also provided emergency service for refugees, evacuees and interned women in the United States. This work was financed through its World Emergency and War Victims fund, approved by the National Budget Committee for War Appeals for inclusion in local war chests. Special events in 1942 included a conference in New York on "The Role of Women in the War Effort," for which the National Board of the Y.W.C.A. was one of the three sponsoring women's organizations; and a luncheon at the Waldorf-Astoria, given by the National board and the New York City Y.W.C.A., in honour of Lieut. Commander Mildred H. McAfee of the WAVES and Mrs. Oveta Culp Hobby of the WAACs, with about 2,000 present. In 1942, nearly 3,000,000 women and girls shared in the program of the Y.W.C.A. in its 1,480 local centres in the United States. President in 1942: Mrs. Henry A. Ingraham. (M. S. Ss.)

Youth Administration, National: *see* NATIONAL YOUTH ADMINISTRATION.

Youth Movements.

Youth movements, organized efforts at political self-expression of young people, came into prominence in 1942 by two great international representative gatherings, of which the one held at the beginning of September in Washington was a demonstration of the youth of the nations fighting the axis. The impression which this meeting made internationally was so great that Germany called a youth congress of the axis and vassal nations to Vienna in the middle of September. At the youth congress in Washington were delegates from Great Britain, the soviet union, China, Latin America and many of the countries overrun by axis tyranny. They were addressed by President Roosevelt who pledged total victory to the United Nations and promised that this time political cynicism and timidity will not be allowed to mar the emergence of a better world after the war. The ambassadors of China and of Cuba warned that peace must not only be won but enforced and called for the establishment of an effective system of collective security. Harold Butler, director of the British Information service, reminded the audience that a major task was "to promote self-government among those who have never enjoyed it." There were 350 delegates present from 53 countries.

The Vienna meeting was presided over by Baldur von Schirach, who exhorted the youth of Europe "to oppose Roosevelt, the capitalist war criminal, with the idea of a new national and social order." A European Youth federation was formed under the joint presidency of Arthur Axmann, Reich youth leader, and Aldo Vidussoni, general secretary of the Italian fascist party. Delegates from Spain, Rumania, Hungary, Bulgaria, Croatia, Slovakia and Finland, and in addition a few representatives from small nazified youth groups in Belgium, Holland, Denmark and Norway, attended. It was decided to call a second congress in 1943 to Italy. No delegates attended from the existing neutral countries in Europe, like Sweden. The task was defined as the training of future Europeans from the cradle upwards to be "obedient fighters." (*See* also CATHOLIC YOUTH ORGANIZATION.)

(H. Ko.)

Yugoslavia.

A kingdom in southeastern Europe, partitioned as a result of German aggression in 1941. Area 95,576 sq.mi.; pop. (est. Jan. 1, 1940) 15,703,000. Capital: Belgrade (266,849). Other chief cities: Zagreb (185,581); Subotica (100,058); Ljubljana (79,056); Sarajevo (78,173). Religion: 6,785,501 Greek Orthodox; 5,217,910 Roman Catholic; 1,561,166 Mohammedans; 231,169 Protestants; 68,405 Jews. King: Peter II; prime minister (1942): Slobodan Yovanovitch.

History.—Life in Yugoslavia presented throughout 1942 a very unhappy picture. The country was divided into several parts, occupied by the troops of four foreign nations and in addition torn by bitter internal strife. The main divisions of former Yugoslavia under the "new order" imposed by the axis were: a remnant of Serbia, approximately within the boundaries of 1911, under a government of the Serb general Milan Neditch, a government somewhat comparable to that of Marshal Pétain in France, its whole territory being occupied by German and Italian troops; and the independent state of Croatia (*q.v.*), thoroughly fascist and a member of the axis, its territory being occupied by Italian troops. The former Slovene part of Yugoslavia had been divided up between Germany and Italy. Germany annexed the northern part, Italy the southern part. The stubborn resistance of the native peasant population against its denationalization led to savage and violent countermeasures on the part of the Germans and Italians. Many Slovenes were driven out or sent into exile, many executed and a number of villages were entirely destroyed. Montenegro (*q.v.*) and the larger part of Dalmatia (*q.v.*) were occupied by Italy. The Serbian part of Macedonia was occupied and annexed by Bulgaria, while the fertile Serb provinces of Bachka and Baranya were occupied and annexed by Hungary. A large number of German, Italian, Hungarian and Bulgarian divisions were kept busy in Yugoslavia suppressing and counteracting the military activities of the Serbs. The unrest was increased by the internal struggle between Croats and Serbs which led to much bloodshed and bitterness, and by the actions which the axis-supported governments of Croatia and Serbia took against those elements of their nation who were striving for liberty. The number of Yugoslavs killed in various ways during the first 20 months of axis occupation was estimated between 400,000 and 600,000.

It was most difficult to get an exact picture of the operations conducted by the Yugoslav patriots against the axis forces and the satellite governments. The number of patriot troops who acted from their mountain fastnesses was estimated at certain times to be as high as 150,000. They were under the command of General Draja Mikhailovitch (*q.v.*) who had been recognized by the Yugoslav government as commander in chief of the Yugoslav armies. Under his leadership the troops of the patriot army succeeded in breaking up axis communications, controlling at various times large parts of the country and supplying themselves from provisions captured from the enemy. They also maintained a broadcasting station which was in communication with the Yugoslav government in London. Yet the problem of getting supplies became more and more difficult, as it was almost impossible to send any supplies from outside. During 1942 a serious split seems to have occurred within the patriot army. Groups of partisans, some of them inspired by communism, others by nationalism and others again probably only by the general misery and unrest, undertook operations on their own account and found themselves soon in opposition to General Mikhailovitch. Toward the end of the year accusations were levelled against General Mikhailovitch of abandoning the struggle and seeking terms with the axis powers. The Yugoslav government in London, however, expressed its unchanged confidence in the loyalty of General Mikhailovitch. By the end of 1942 the internal situation of Yugoslavia presented a rather confused picture, yet in different parts of the country, especially in those occupied by Italians, the struggle went on relentlessly, and the patriot forces could always point toward some local successes.

Meanwhile the Yugoslav government in London was reorganized at the beginning of 1942. General Dushan Simovitch was succeeded as prime minister by Slobodan Yovanovitch, a former professor of the university of Belgrade. At the same time General Mikhailovitch was appointed minister of war, and Milan Gavrilovitch, former Yugoslav minister in Moscow, was made minister of justice. The new premier was well known as a promoter of Balkan unity. Colonel Dragutin Savitch was sent to Washington as chief of a Yugoslav military mission to confer with the general staffs of the United Nations and to arrange for support of the patriot army fighting in Yugoslavia. In July General Mikhailovitch was named chief of staff and was given full military and administrative power in the Yugoslav territory. In recognition of Yugoslavia's importance the United States raised its diplomatic mission to the Yugoslav government from a ministry to an embassy, and the Yugoslav minister in Washington, Constantin Fotitch, became Yugoslav ambassador.

A very important step for the future of Yugoslavia and of the Balkans in general was taken on Jan. 15, 1942, when the Yugoslav and Greek governments signed, in London, an agreement for close co-operation and mutual support after the war, corresponding to the similar Czechoslovak-Polish agreement concluded a short time earlier. The new agreement was intended as a starting point for a wider Balkan union to which, it was hoped, the other nations, especially Turkey, would adhere. (H. Ko.)

Yukon Territory.

Yukon Territory lies in the extreme northwest of continental Canada, bounded by Alaska, British Columbia, the Northwest Territories and the Arctic ocean. Area, 207,076 sq.mi.; pop. (1941) 4,914. Seat of government, Dawson. The territory is drained by the Pelly and Yukon rivers. The severity of the climate has been subject to much exaggeration. In summer, the average day-time temperature is in the neighbourhood of 70°. In the south, the range of sunlight is from 17 to 18 hours a day, while in the north it is from 20 to 22. From June to October, steamships ply regularly from White Horse to Dawson. The territory is generally mountainous. The chief industry is mining, followed by fur trading and fishing. Soon after the opening of the Yukon gold fields annual production passed 1,000,000 oz., but in 1940 it had sunk to 80,458 oz. In 1940, 2,259,343 oz. of fine silver were produced, valued at $864,176. The fur haul the same year represented a value of $288,292. With the completion of the Canada-Alaska highway in 1942, the Yukon was brought into direct communication with the rest of Canada. Communications within the territory are maintained chiefly by aeroplane, and, during the season of navigation, by steamship. A line of railway from White Horse to Skagway (Alaska) gives access to the Pacific. Local administration is in the hands of a territorial legislative council composed of three members elected triennially, and a commissioner (lately styled controller) appointed by the Canadian government. The Yukon is represented in the dominion parliament by one member.

(J. I. C.)

Zanzibar and Pemba: *see* British East Africa.

Zeitzler, Kurt

(1895–), German army officer, was born in Luckau, Brandenburg, Germany. He volunteered in World War I and served as infantry lieutenant, resigning his commission after the armistice. He rejoined the reichswehr in 1926 as a captain, became a major in 1934, a colonel in 1935, a major general early in 1942 and then a full general. He commanded an infantry unit during the Polish campaign in Sept. 1939, and was chief of staff to Gen. Von Kleist during the Battle of France, May–June 1940. He was also chief of staff to Gen. Von Rundstedt, when the latter was in command of German armies on the French invasion coast in 1942. Virtually unknown outside Germany, Zeitzler was made chief of the German general staff, replacing Gen. Franz Halder in the winter of 1942.

Zemlinsky, Alexander von

(1872–1942), Austrian composer, was born Oct. 4 in Vienna, Austria. He studied at the Vienna conservatory, where Johannes Brahms heard his first string quartet and encouraged him to continue his work. He composed an oratorio, three symphonies and six operas, including *Sarema,* which won the Luitpold prize in Munich, Germany. Zemlinsky conducted at the Vienna Volksoper, the Vienna Hofoper and the Mannheim opera in the early 1900s. He was director of the Neues Deutsches theatre at Prague, 1911–1927, and conductor of the Berlin Staatsoper and the Philharmonic choir, 1927–32. A refugee from Vienna, he spent the last three years of his life in the United States and died in Larchmont, N.Y., March 16.

Zhukov, Georgi Konstantinovich

(? –), Russian army officer, joined the Russian imperial army as a private in 1915. After the revolution, he attended the Frunze military academy, where he received his military training under Gen. Boris Shaposhnikov, crack soviet strategist. He was named chief of the red army general staff and vice-commissar for defense, Feb. 1941. During the nazi drive on Moscow in the fall of 1941, Zhukov was given command of the capital's defense forces on Oct. 23, replacing Gen. Timoshenko, who was sent to the southern front. The German offensive at one time reached a point some 20 miles from Moscow, but there Russian armies held fast. Zhukov's armies launched a series of counterattacks; in December, German defenses cracked under the hammering Russian blows, and Hitler's armies fell back on nearly all sectors of the immense Moscow front. Zhukov was made first vice-commissar for defense on Aug. 27, 1942, and then supplanted Timoshenko on the southern front. Zhukov was credited with planning the Russian counterdrives in the Don-Volga area late in 1942.

Zinc.

The world production table for zinc, presented herewith, ends with estimated values for 1940, no data having been received from major producers other than the United States after 1939.

Mine production of zinc in the United States in 1941 was 749,125 short tons, 13% above 1940. The output of primary metal from domestic ores increased 11% to 652,599 tons, while 169,421 tons was added from foreign ores; this latter figure is a material increase over 1940, so that the total primary output of 822,020 tons was 22% above 1940. Secondary recovery included 89,656 tons as metal, 145,807 tons in alloys, and 48,404 tons in chemical products, a total of 283,967 tons and an increase of 28% over 1940. Imports during the first nine months of 1941 were more than offset by exports, 25,212 tons against 57,909 tons, so that the amount available for consumption was presumably somewhat less than the total of the figures above, and this amount was reduced somewhat more by an increase in stocks during the year, from 86,876 tons to 89,494 tons. The consumption of new zinc in 1941 was up 13% from 1940, at 827,435 tons, which corresponds rather closely with primary production.

World Production of Zinc

(In thousands of metric tons)

	1929	1937	1938	1939	1940
Australia	50.8	70.9	70.9	70.8	85.0
Belgium	197.9	225.6	210.4	185.7	65.0
Canada	78.1	143.9	155.7	161.8	180.0
France	91.6	60.4	62.2	60.3	35.0
Germany	102.0	163.3	192.5	212.3	225.0
Norway	6.4	41.3	46.5	45.0	20.0
Poland	169.0	109.3	110.8	117.9	160.0
U.S.S.R.	3.4	70.0	80.0	90.0	95.0
United States	573.0	534.9	414.6	488.3	657.0
United Kingdom.	59.2	63.1	56.2	50.4	60.0
World Total	1,472.8	1,667.9	1,589.7	1,678.1	1,732.0
Ex. U.S.	899.8	1,133.0	1,175.1	1,189.8	1,148.0

There was little information from other sources at the close of 1942. Mexico produced 154,996 metric tons of zinc in ore in 1941, but only 34,600 tons in the first quarter of 1942, falling down badly in March. The recoverable zinc content of Peruvian ores in 1941 was 23,700 tons, while mine production in Argentina was 36,300 tons. (*See* also War Production, U.S.)

(G. A. Ro.)

Zirconium.

Zircon was being recovered in Florida as a by-product of the treatment of beach sands for titanium minerals, and in California as a by-product of gold dredging, but output was not reported. Imports were increasing heavily, 20,101 short tons received in the first nine months of 1941 being 20% greater than the receipts for the full year of 1940. Australia was in 1942 the chief producer, supplying 73% of the 1941 imports; 24% came from Brazil, while India, formerly an important source, furnished only 3% of the total.

(G. A. Ro.)

Zoological Gardens.

Dr. William Beebe's 42nd expedition set out to study animals in the Venezuelan jungles. Financed by the Simon Guggenheim foundation, its headquarters were at the Standard Oil company's camp.

Dr. Myron Gordon, elected fellow of the New York Zoological society, was appointed research associate in genetics. At the San Diego zoological gardens plans were made to replenish stocks of far eastern animals by breeding. This zoological society instituted two research fellowships.

Great Britain.—After some controversy, Dr. Julian Huxley resigned his post as secretary to the Zoological Society of London and Dr. Sheffield A. Neave, director of the Imperial Bureau of Entomology, was elected honorary secretary. Dr. Neave stated that the zoo would retain its popular side, but that Whipsnade might have to be closed because of transport difficulties. Attendance at both Regent's Park and Whipsnade improved during the summer. An "off-the-ration" exhibition at the London zoo was opened by the duke of Norfolk. The first black buck of the year was born in September. The Linnean society arranged to hold meetings of zoological interest jointly with the Zoological society. Chester, Dudley and Maidstone zoos reported better attendances than in 1941, but increased absorption in war work lessened interest and they expected difficulty in carrying on. In July an orang-utan was born, of parents from Sumatra, an event probably unique in Britain. Efforts were made to hatch nine emu eggs in Dublin zoo.

The scanty news of European zoos was not concerned with animals. In Copenhagen, the acute housing shortage resulted in animal houses being fitted up for human habitation. The monkey house in Paris zoo was transformed into a prison, while Stalingrad zoo was fiercely defended by the Russians against the German onslaught. (V. R.)

Zoology.

The year 1942 saw the beginning of changes in this science due to World War II. These changes centred about (1) loss of mature investigators, teachers and students to the war effort; (2) curtailment of curriculum and research in universities and colleges, and (3) curtailment of extra-curricular activities. The latter point is well documented by two examples. The annual convention of the American Association for the Advancement of Science, originally scheduled for New York in late December, was postponed in order to relieve the nation's transportation facilities. This meant that, since there were no meetings of such research organizations as the American Society of Zoologists, the Ecological Society of America and the Entomological Society of America, there were none of the usual opportunities to report zoological studies and catalyze zoological ideas. Another index of the war's effect on zoology is the registration of investigators at the Marine Biological laboratory at Woods Hole, Mass. On July 29, 1939, this institution, long a haven for serious zoological teaching and research, had 303 investigators registered. On the same date in 1940, 1941 and 1942 the comparable figures were 297, 284 and 140. It seemed patent, and was so stated by the laboratory, that the decline of more than 50% between 1941 and 1942 was due to the war. However, zoology was reasonably productive during the year.

Books.—*Voles, Mice and Lemmings* by Charles Elton of Oxford university was a significant contribution to the population dynamics of small mammals. Elton described population cycles for a number of rodents. He concluded that the important factors causing these cycles are predator activity, epidemics and senescence. These act on the population by affecting its reproduction, mortality and dispersion. *The Vertebrate Eye and its Adaptive Radiation* by Gordon L. Walls was a comprehensive study of the optical apparatus of vertebrates from a broad biological viewpoint. This book discusses such usual topics as the anatomy, physiology and biochemistry of the eye. In addition, and perhaps its greatest contribution, is the excellent treatment of the evolution and adaptive radiation of the eye throughout the vertebrate subphylum. The point is made once again that much can be learned about a group of animals through selecting some important structure possessed by all and studying its ramifications and specializations. In 1917 Sir D'Arcy Thompson published a volume entitled *On Growth and Form* that was destined to become a biological classic. In 1942, 25 years later, this book, revised, reset and enlarged, was placed before another generation of zoologists who received it most cordially.

Research.—One of the suggestive research trends in 1942 was a renewed interest in studying phylogeny (racial history) by precipitin tests (serology). Three papers are selected for mention here. These examine the question on three different taxonomic levels: kinship between phyla; within a class, and between species of the same genus. Wilhelmi used serology in testing a theory of the origin of vertebrates. This theory, in general good repute but based largely on embryological evidence, holds that the prochordates (vertebrate ancestors) were derived from a pre-echinoderm stock (starfish, etc.) while the Arthropoda (insects, spiders, crabs, etc.) were derived from annelid worms. Interestingly enough, the precipitin tests corroborated the theory. Thus, they indicated a closer serological relationship of echinoderms with prochordates than with annelids or arthropods, and a closer affinity of annelids with arthropods than with echinoderms and prochordates. Defalco examined the serological relationships of birds. Working with twelve different forms (leghorn, plymouth rock, buff orpington chickens; guinea hens; pheasants; turkeys; geese; ducks; buzzards; pelicans; gulls, and the emu) he concluded (1) that the systematic position of Aves (birds) is confirmed by precipitin tests, and (2) that birds are serologically an essentially homogeneous group. On the species level Mahr examined the kinship between two species of tapeworm parasites, both members of the same genus (*Monezia expansa* and *Monezia benedeni*). He found the precipitin reaction so delicate that, even at this evolutionary level, the species could be differentiated one from the other. The serological method thus emerges as an important tool in tracing phylogeny. Its greatest attribute is its objectivity. It is essentially independent of the investigator's bias.

An important monograph on the migration of butterflies was published in England by Williams, Cockbill, Gibbs and Downes. This unusually comprehensive study covered the following major topics: methods of observing butterfly migration; migrations of particular species; marking butterflies; how butterflies orient during their migrations; the density of flight, and conclusions. Of most general interest perhaps is the discussion on marking. The investigators attached a small label ". . . bearing a serial identification number and a well-known address to one wing with a plainly visible coloured mark on the other wing." The address, "London Zoo," was chosen because it is well known in England. As butterflies were caught the tag number would occasionally be reported to the zoo. This method was just getting underway but eventually it should yield data as valuable for butterfly dispersal as bird-banding is for bird migrations.

As usual there were a number of excellent review papers published in zoological science. Two that were authoritative and that illustrated the scope of the field were "Production of Life in the Sea" by H. W. Harvey and "On the Development of Feathers" by Frank R. Lillie. These appeared side by side in the same journal. The former typified the approach of the ecologist necessarily interested in a broad field with many ramifications. The latter illustrated a delimited, careful analysis of embryonic differentiation. (*See* also MARINE BIOLOGY.)

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(T. PK.)

Zweig, Stefan

(1881–1942), Austrian writer, was born Nov. 28 in Vienna and was educated in the Austrian capital. He wrote poetry in his youth and travelled widely in many parts of the world. A sensitive personality, Zweig underwent a profound emotional shock during World War I; he frequently decried the "lunacy of war" in his works. After the war he embarked on a serious literary career. He wrote numerous biographies and established a reputation as one of the great contemporary German writers. His works were widely translated. He fled Austria just before Hitler's legions overran his homeland in March 1938. The life of an exile was harsh on the aging Zweig. In despair over the spiritual future of Europe, and lacking the strength to carry on, he and his wife committed suicide at their home in Petropolis, Brazil, Feb. 23. One of his last works, *Amerigo: A Comedy of Errors in History*, was published the day of his death.

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